USE OF MASS MEDIA BY THE FARMERS IN ADOPTION OF RICE PRODUCTION TECHNOLOGIES IN BERA UPAZILA OF PABNA DISTRICT

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CERTIFICATE

This is to certify that the thesis entitled **"Use of Mass Media by the Farmers in Adoption of Rice Production Technologies in Bera Upazila of Pabna District"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension**, embodies the result of a piece of *bonafide* research work carried out by **Nasrin Naher Ruma**, Registration No. **08-02831** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diplomas elsewhere.

I further certify that any help or source of information received during the course of this investigation has been duly acknowledged.

Dated: December, 2014
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The Author

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LIST OF ABBREVIATIONS OF SYMBOLS AND TERMS

Abbreviation	Full Word
et al.	And others (at elli)
CV	Coefficient of Variation
Df	Degrees of Freedom
DAE	Department of Agricultural Extension
etc.	Etcetera
IPM	Integrated Pest Management
Ha	Hectare
Tk.	Taka
i.e.	That is
SD	Standard Deviation
MT	Metric tons
HYV	High Yielding Variety
NGO	Non-Government Organization
%	Percent
R	Pearson's Product Moment Correlation Co-efficient
BBS	Bangladesh Bureau of Statistics
BRRI	Bangladesh Rice Research Institute
BINA	Bangladesh Institute of Nuclear Agriculture
SAU	Sher-E-Bangla Agricultural University
BAU	Bangladesh Agricultural University
IRRI	International Rice Research Institute
FAO	Food and Agricultural Organization

ABSTRACT

The purpose of this study was to determine the extent of use of mass media in adoption of rice production technologies and to explore the relationship between the selected characteristics of the farmers and their use of mass media. Bera upazila under Pabna district was purposively selected for the study. Among nine union of the Bera upazila, Haturia Nakalia union was selected purposively for this study. There were fourteen villages in the union from which four villages were purposively selected for the study. From 806 farmers of these four selected villages 121 farmers were selected as the sample by using proportionate random sampling method. Data were collected personally by using interview schedule during 10 April, 2014 to 11 May, 2014. Use of mass media by the farmers was determined by using five point scale. Pearson's product moment coefficient of correlation (r) was computed to explore the relationships between the selected characteristics of the farmers and their use of mass media. The findings revealed that 42.1% of the respondents were very low user compared to 40.5% respondents were low user while 17.4% were medium user category of mass media in adoption of rice production technology. Findings also revealed that among ten characteristics age, education, farm size, annual family income, organizational participation, innovativeness and agricultural knowledge of the farmers had positive significant relationship with their use of mass media while family size, family assets and attitude towards modern agricultural technologies had no significant relationship with their use of mass media.

CHAPTER 1

INTRODUCTION

1.1 General Background

Bangladesh is an agro-based developing country having an area of 1,47,570 square kilometer with approximately 160 million people. The density of population is 1174 people per square kilometer (BBS 2013). Most of her inhabitants directly or indirectly involved in agricultural activities for their livelihood. Agriculture is the mainstay of Bangladesh economy and it has a great contribution (19.29%) to the Gross Domestic Product (GDP) of the country (BBS, 2012). So Agriculture is known as the most important sector of the country's economy. The development of Agriculture is mostly dependent on the use of modern technologies by the farmers.

Rice is the staple food for 160 million Bangladeshis. More than 95% of population consumes rice and it alone provides 76% of calorie and 66% of total protein requirement of daily food intake (Bhuiyan *et al.*, 2002). In fact agriculture sector is largely dominated by rice production. In Bangladesh Rice is grown in three main seasons, namely Boro (January to June), Aus (April to August) and Aman (August to December) covering almost 11.42 million hectares of land and total production was 33.83 million MT (BBS, 2013).

Agricultural production can be increased if appropriate technologies are used by the farmers who are the primary unit of adoption of improved practices. Different research organizations namely BRRI, BINA, BAU, SAU, IRRI and private organizations develop various rice production technologies like IPM, drum seeder , Gutee urea, Direct seedling, nursery seedling, etc. Diffusion of proper knowledge on those modern technologies among the rural people demands effective communication system. In addition immediate and effective means of communication are also important dimension for dissemination of technological messages. This suggests that the flow of information should be as fast as

possible and should also be understandable, well interpreted, accepted and liked by the users. But most of the farmers have not yet adopted improved rice production technologies even technologies are available. One may logically assume that message of rice production technologies has not yet been properly conveyed to the farmers. It may also happen that the technologies which are being developed do not reach to the bonafide users effectively for their application (Halim and Miah, 1996).

The Department of Agricultural Extension (DAE) and some other government and non Government Organization are working at the field level in transferring information from a research system (source of technology) through an extension system (interpreter and dissemination of technology) to the client system (users of technology) (Kashem and Halim, 1991). Technology should be made available to the people through right media within the quickest possible time. Extension agents follow a number of extension methods such as result and method demonstration, farm publications (leaflets, booklets bulletins, poster etc), agricultural radio and television program, contact with farmers local and opinion leader, field tour, field days etc. All communication media may not be appropriate to serve the people. The mass media channels can be used for accelerating dissemination of information for various aspect of agricultural and rural development . Mass media channels and other means of transmitting message involves television, radio, newspaper, leaflet, booklet, poster, agricultural fair etc.

In most of the cases, the effectiveness of extension educational programmes depends, to a greater extent, on the proper selection and use of the communication media. Mass media shows better result to create awareness and increase level of knowledge, attitude and practices (Adhikaria, 1994).

Many national programs and projects were undertaken for agricultural development from 1950s which had very limited success in the transfer of technology. In order to expedite the process of technology transfer the donor agencies now give more emphasis on mass contact media (amur 1994, Adhikarya 1994) which can develop a considerable

acquaintance with ultimate users very rapidly. Thus mass media brings about changes in the behavioral patterns of the farmers, about rice production technologies.

Against this backdrop the researcher has chosen this study entitled ***"Use of Mass Media by the Farmers in Adoption of Rice Production Technologies in Bera Upazila of Pabna District"*** for immediate benefit of farmers and food security.

1.2 Statement of the Problem

Mass media plays a vital role in the field of agricultural technology transfer. By mass media any technological knowledge can be reached to the users within very short time. In view of such phenomenon, use of mass media seems to be helpful by the farmers in adoption of rice production technologies for increased production and productivity to ensure food security. In this study mass media includes radio, television, newspaper, poster, agricultural fair etc and technologies included were HYV of rice, IPM, Gutee urea, Drum seeder etc. Against this backdrop,following questions may arise:

- which mass media are being preferred by the farmers?
- which rice production technologies are being used by the farmers?
- which characteristics of the farmers are relevant to their use of mass media in adoption of rice production technologies?

1.3 Objectives of the Study

The specific objectives of the study were the following:

1. To determine the extent of use of mass media in adoption of rice production technologies;

2. To determine and describe the selected characteristics of the farmers, such as:

   a) Age
   b) Education
   c) Family size
   d) Farm size

e) Annual family income
f) Family assets
g) Organizational Participation
h) Innovativeness
i) Attitude towards agricultural technologies
j) Agricultural knowledge;

3. To explore the relationship between the selected characteristics of the farmers and their use of mass media in adoption of rice production technologies.

1.4 Justification of the study

Bangladesh is an agrarian country. The development of socio-economic condition of the country greatly depends on the betterment of agriculture. Without increasing agricultural production no improvement is possible for this country. To fulfill the food demand for the ever increasing people, new agricultural technology development is a must. The adoption of technology by the farmers mostly depends on its diffusion. Mass media is the most effective, reliable and rapid disseminate channel for diffusing new technology. People like to adopt after knowing the detail about the technology. They can use mass media to learn about technical knowledge at a cost of little money. Moreover, mass media can help to diffuse the technology more rapidly than any other communication channel.

Findings of this study may be helpful to the policymakers, academics, researchers ,extension workers, development practitioners, NGO warkers and such other professionals who are directly and indirectly connected with technology transfer.

1.5 Assumptions of the study

The following assumptions were undertaken in conducting the study:

1. Respondents included in the sample of the study were able to provide their opinions without fear.
2. Information furnished by the respondents were reliable.
3. Mass media and technology included in the study were known to the respondents.

4. Views and opinions provided by the farmers were the representative of the whole population of the study area.
5. Collected data appeared to be reliable since the researcher who acted as interviewer was well known to the social environment of the study area.
6. Data collected by the researcher were free from personal biasness.
7. The items included in the interview schedule for using mass media measurement seemed to be adequate to reflect the extent of using mass media by the farmers of that locality.

1.6 Scope and Limitations of the Study

The purpose of the study was to have an understanding about the use of mass media and its extents by the farmers. Considering the time, money, labor and other necessary resources available to the researcher, the following limitations have been observed throughout the study:

1. The study was confined to Haturia nakalia union of Bera upazila under Pabna district.
2. The characteristics of the farmers were many and varied. Only 10 (ten) characteristics were selected for investigation.
3. The extent of using mass media by the farmers was measured on the basis of their response and scores assigned to the selected statements.
4. The findings could be applicable to other areas of Bangladesh where the physical, socio-economic and cultural conditions do not differ much with those of the study area.
5. This study was investigated about the use of mass media by the farmers in receiving agricultural information only.
6. Finally, for collection of information, the researcher had to depend on the data furnished by the respondents at the time of interview. As none of the farmers kept records of their farming activities, they provided information based on their memory and whatever they could recall.

7. In some cases, the researcher faced unexpected interference from the over interested side talkers while collecting data from target respondents. However, the researcher tried to overcome the problems as far as possible with sufficient tact, skill and humour.

1.7 Definitions of Terms

Mass media: The mass media are the means of communication or instrument or apparatus through which messages are transmitted towards relatively large, heterogeneous and anonymous audience within a relatively shorter time dimension. Mass media included in the study were radio, television, newspaper, poster and agricultural fair.

Radio: Radio is a powerful and popular audio media. It conveys message from one station to another who listen radio programme. It makes things excitingly alive and believable. Furthermore, it can motivate, stimulate, induce belief, create and change attitudes and reaches to a large number of people inexpensively.

Television: Television is an audio visual media for diffusing information under mass media along with news and views as well as various educational programmes. The Mati-O- Manus is one such agricultural programme, are being displayed through TV. It is a media that can support the effects of extension staff in spreading awareness, giving warnings, facilitating farmers to farmers communication etc.

Newspaper: It refers to a bunch of printed pages, properly folded. These contain news, views, advertisements, educational programmes and agricultural messages, published in daily or weekly basis, generally from the capital city to the district level.

Poster: Poster is a placard displayed in a public place with the purpose of creating awareness amongst the people.

Agricultural Fair: It is generally organized by the Department of Agricultural Extension and other agricultural government organizations to create awareness about improved

technology among a large number of people within a short time and to stimulate them for adoption of those new innovations for agro-rural development in a desired location.

Adoption: According to Rogers (1995) "Adoption is a decision to make full use of an innovation as the best course of action available." When an individual takes up a new idea as the best course of action for practices, the phenomenon is known as adoption (Ray, 1999). For example adoption of aquaculture technologies refers to one's use of different practices of aquaculture and the decision to continue their use in future. It is an individual decision making process.

Technology: A technology is a device of technique or procedure, usually generated through the combination of knowledge, inputs and management practices, which are used together with productive resources to gain a desired output.

IPM: An attempt to prevent pathogens, insects and weeds from causing harm to economic crop losses using a variety of management techniques that are effective with minimal damage to the environment.

High yielding varieties: High yielding varieties are a group of genetically enhanced cultivars of crops such as; rice, maize and wheat that have an increased growth potentiality, increased percentage of usable plant parts or an increased resistance against crop diseases.

Gutee urea: Urea briquette, popularly known as "gutee urea", is produced from traditional urea fertilizer using locally made machines. Traditional urea fertilizer is used thrice for a crop, gutee urea is used only once.

Drum seeder: Drum seeder is a mechanical device used for sowing seeds in the field with optimum spacing.

Age: Age of the respondent was defined as the period of time from his birth to the time of interview.

Education: Education is referred to the number of years of schooling completed by a respondent.

Family size: It refers to actual number of regular members in a subject's family who live in a fixed dwelling unit and eat from the same cooking arrangement.

Farm size: It refers to the farm area on which a farmer used to do his farming either possessed by him or taken in borga and lease from others during the years under investigation.

Annual family income: It is defined as the total earnings of an individual and the members of his family both from agriculture and other sources (business, service and others).

Family assets: Family assets mean responden`s total agricultural equipment, machinery, furniture and goods.

Organizational participation: It is defined as an association of two or more persons having at least one face to face meeting in a year. Participation in an organization refers to his taking part in the organization as ordinary member, executive committee member, or officer.

Innovativeness: Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in a social system.

Attitude towards technology: Attitude means one's feelings, beliefs and actions towards an object. The attitude towards agricultural technology means farmer's believes, feelings and action towards an improved farm practices in respect of its adoption in real situation.

Agricultural knowledge: It refers to the knowledge gained by the farmers on different practices of agriculture and other sources.

Variable: A general indication in statistical research of characteristic that occurs in a number of individuals, objects, groups etc. and that can take on various values, for example the age of an individual.

CHAPTER 2

REVIEW OF LITERATURE

This chapter refers to review literature having relevance to the present study. The purpose of this study was to ascertain the use of mass media by the farmers in adoption of rice production technologies and their relationship with the selected characteristics. Little work had been done in Bangladesh in this matter. The researcher, therefore, made an exhaustive effort to review researches directly or indirectly related to the present study. The available reviews are presented in two sections.

Section I: Review on studies relating to mass media.

Section II: Review on studies relating to relationships of selected characteristics of the farmers.

2.1 Use of mass media in General

Fariduzzaman (2010) revealed that majority (58.10%) of the SAAOs belonged to very low to low use category while 41.90% respondents were in medium category.

Hossain (2009) revealed that majority of women beneficiaries of BRAC were occasional to frequent users of communication media while 12% of the women beneficiaries of BRAC were regular users of various communication media for performing income generating activities.

Hoque (2007) revealed in his study that highest proportion (44%) of the farmers of the study area had low use of different media compared to 34 and 22 percent having medium use and high use of different media respectively.

Khatun (2004) observed that there was a highly significant positive relationship between women exposure to media and their participation in community activities and income generating projects in bangladesh.

Mazher (2003) in a study in Pakistan reported that Pamphlets, Magazines and newspapers were suitable for dissemination of sugarcane production technologies.

Singh *et al.* (2003) reported that the important source of acquisition of farm technology for extension personnel was state dept. of agriculture and the important modes were staff meetings, training, leaflets/pumplets, departmental circular and subject matter specialist while the least use modes were scientists, agro-industry,telecast, journal, radio and personal corresrpondence with researcher.

Egbule and Njoku (2001) in their study on mass media for adult education in Nigeria found that mass media have performed poorly than individual media in disseminating requisite agricultural information to farmers.

Islam (1996) in his study found that the highest proportion of the respondents (44.55) belonged to medium media exposure category and 38.18% belonged to low exposure and 17.27% belonged to high exposure group. He also found that among 15 media, radio ranked in 6, television 7, fair 8, agricultural publication 1-5 was for individual media.

Khan (1996) conducted a study on the use of information sources by the poor farmers and conducted that 75% of the respondents had medium use of various information sources for receiving agricultural information.

DAE (1995) in order to achieve the objectives of the extension programme consider the following extension programs consider the following extension methods and strategies:

- Media campaign including printed media, radio and television
- Thana and district fair
- Traditional and folk media
- Group meeting
- Farmers training; motivational tour, farm walk, method demonstrations, field days, results demonstration, individual farm visit, etc.
- Printed media commonly used are bulletins, posters, leaflet, circular letters, newspapers and magazines.

Rahman (1995) in his paper reported that the rural press can serve the farmers and families in the villages by providing timely information regarding farming and harvest. The rural press by providing up-to-date market prices of agricultural products can help the local farmers.

Westoff and Rodriguer (1995) reported that in Kenya, about 15% women neither saw nor heard radio messages. The proportion rose to 25% among those who have heard radio message, to 40% among those who were exposed to both radio and print messages and to 50% among those to radio, print and television messages of family planning activity. It was opined that mass media can have an important effect on reproductive behavior.

Khan and Paracha (1994) conducted a study in two villages in Pakistan, one innovative and other non-innovative, among the farmers of a cotton producing district, and reported that the main channel of communication were mass media and interpersonal communication. The mass media centrally organized and included radio, television and newspaper.

Molinar *et al.* (1994) in their paper concluded that radio would remain the most significant medium in the Pacific for some time because of the geographical nature of the islands. Continued training, radio, video and print are vital if they are to meet the spatial dimension of the communication process.

Chough (1991) in a study observed that press, radio and television were regarded as important vehicles of information which could help ensure the supply of inputs to those really who need them.

Wate and Rivera (1991) in their study examined the application of new technologies in agricultural information transfer process and explored future perspectives of new technologies as a force of change in developing countries. They found that print media, electronic media, radio, television, satellite computers and mobile audio-visual media were the important sources of spreading information.

Batte, Schnitkey and Jones (1990) conducted a study on cash grain farmers of Ohio. They found that radio broadcast and general farm magazine were the two marketing information sources and were most frequently cited as useful. Highly formalized and marketing specific sources such as marketing consultants, newsletters and computerized information sources were cited relatively infrequent. Radio and television broadcast were frequently cited as most source of marketing information by older farmers and operators of small farmers.

Hoque (1990) in his paper concluded that mass media can perform a better role in technology diffusion than what those do today. Therefore, planned efforts to introduce more of mass media strategies that are proven effective by experiments are highly recommended.

Dinampo (1989) conducted a study in Philippines to determine communication need and preferences. He observed that farmers were found to prefer an interpersonal media (extension agents) rather than mass media. Among mass media, first preference was radio followed by printed materials and audio visual sources.

Reinser and Hays (1989) reported that the agricultural press is a vital link in transplanting information to US farmers.

Chidanandappa and Veerabhadraiah (1988) examined different mass media sources used by extension personnel and reported that extension personnel made use of the package of practices like booklets, extension folders, radio, newspapers, and farm magazine to a large extent as media of information.

Van den Ban and Hawkins (1988) reported that in industrialized countries people spend more time with television and radio than printed word. Radio is most important mass medium for farmers of less industrialized countries. The urban middle class in less industrialized countries now also spend considerable time watching television but it is not yet a very important medium in rural areas of these countries.

Samanta (1986) reported that mass communication channels involved different mass media such as radio, TV, magazine, newspaper, etc. which enable a source of one or a few individuals to reach a large audience rapidly. These media are effective in the developed countries, while in the developing world their effectiveness is limited due to many factors. The modern media of communication like radio, TV, magazines, newspapers, etc. are available mainly to urban people and elite's, and the coverage of rural program by mass media are also inadequate.

Mekabutra (1985) conducted a study in Thailand and reported that among the mass media that offered more knowledge in agriculture was radio, followed by television and newspaper respectively. Considering knowledge gained from mass media that were applicable to their work, farmers opined that television provided about 83.5 percent, radio 78 percent and newspaper 77 percent.

Nataraju and Channegowda (1985) found in a study that respondents used radio (54%), newspaper (46%), neighbors (23.3%), demonstrations (10.6%) and group meetings (6%) in receiving information on improved dairy management practices.

2.2 Relationship between Selected Characteristics of Farmers and their Use of mass media

2.2.1 Age and use of mass media

Fariduzzaman (2010) conducted that age of the SAAOs had positive significant relationship with their use of television in receiving agricultural information..

Hoque (2007) concluded that age of the farmers had no insignificant effect on the use of information sources.

Anisuzzaman (2003) in his study conducted that age of the farmers had negative and significant relationship with the use of communication media.

Nuruzzaman (2003) conducted that age of the farmers had significant negative relationship with the use of mass media.

Khan (1996) concluded that age of the farmers had a negative and insignificant effect on the use of information sources.

Islam (1995) found that the age of the farmers had negative and significant relation with the use of communication media.

Sarker (1995) in his study concluded that age of the farmers had negative and insignificant effect on the use of communication media.

Galindo (1994) found that the exposure to the communication media was closely related with the age of the farmers.

2.2.2 Education and use of mass media

Fariduzzaman (2010) conducted that education of the SAAOs had no significant relationship with their use of television in receiving agricultural information. Aktaruzzaman (2006) and Hossain (2009) also found similar result in their study.

Islam (2005) in his study observed that education of the farmers had positive and highly significant relationship with their use of communication media.

Alam (2004) in his study revealed that education of the farmers had positive and highly significant relationship with their use of printed materials in receiving information.

Nuruzzaman (2003) in his study observed that education of the farmers had significant positive relationship with their use of mass media.

Islam (1995) found that education of the farmers had positive and highly significant relationship with their use of communication media.

Sarker (1995) in his study concluded that education of the farmers had positive and significant relationship with their use of communication media.

Kashem and Jones (1988) found in their study that education of the small farmers had significant positive correlation with their information sources.

Kumari (1988) from the study on communication effectiveness of six media showed that there was significant positive relation between education of women and attitude towards the message.

2.2.3 Family Size and use of mass media

Hossain (2009) revealed a non significant relationship between BRAC beneficiaries womens' family size and their use of communication media.

Anisuzzaman (2003) found no significant relationship between family size of the farmers their use of communication media in adoption of improved rice production technology. Sarkar (1995) also found similar result in his study.

2.2.4 Farm size and use of mass media

Hossain (2009) found a positive significant relationship between BRAC beneficiaries women farm size and their income generating activities.

Anisuzzaman (2003) found that the farm size of the respondents had no significant relationship with their use of communication media.

Nuruzzaman (2003) in his study conducted that farm size of the farmers had no significant relationship with the use of mass media.

Islam (1995) found that farm size of the farmers had a positive and significant relationship with their use of communication media.

Sarker (1995) in his study concluded that farm size of the respondents had a positive and significant relationship with their use of communication media.

Bhuiyan (1988) found that the farm size of the farmers had positive and significant effect on the use of communication media.

2.2.5 Annual family income and use of mass media

Fariduzzaman (2010) conducted that aannual family income of the SAAOs had positive significant relationship with their use of television in receiving agricultural information..

Anisuzzaman (2003) related that the annual income of the respondents had no significant relationship with their use of communication media.

Nuruzzaman (2003) reported that the annual income of the farmers had no significant relationship with their use of mass media.

Karim (1994) found a positive significant relationship between annual family income and communication behavior of extension workers.

Uddin (1993) reported that there was strong and highly significant relation between income of the sugarcane growers and their reception of information.

Bhuiyan (1988) in his study observed that income of the farmers had no significant effect on the use of communication media.

2.2.6 Family assets and use of mass media

No direct literature found showing the relationship between family assets and and use of mass media. But some other literature showing the relationship between wealth ownership and effectiveness of mass media was found that are cited below:

Roy (2006) reported a positive and highly significant relationship between wealth ownership and effectiveness of mass media.

Sarker (1996) in his study revealed that farmers' wealth ownership had no significant relationship with effectiveness of agricultural information disseminated through agricultural radio programme.

Hossain (1996) found that wealth ownership of the TV viewer had a significant relationship with their usefulness of Television as an agricultural information media.

2.2.7 Organizational participation and use of mass media

Hossain (2009) found a non significant relationship between BRAC beneficiaries' womens organizational participation and their use of communication media.

Hoque (2007) revealed a positive significant relationship between organizational participation and use of different media in his study.

Islam (2005) revealed that organizational participation of the respondents had positive significant relationship with their use of printed materials.

Nuruzzaman (2003) found that organizational participation of the farmers had positive and significant relationship with their use of mass media.

Islam (1995) in his study on wheat growers found that organizational participation of the farmers had positive significant relationship with their use of communication media.

Rahman (1991) found that organizational participation and credibility of Block of Block Supervisors showed insignificant relationship.

Bhuiyan (1988) in a study found that organizational participation of the farmers had no significant effect on the use of communication media.

2.2.8 Innovativeness and use of mass media

Hoque (2007) revealed a positive significant relationship between farmers' innovativeness and their use of different media.

Molla (2006) revealed a positive significant relationship between innovativeness of the respondents' and their use of communication media.

Islam (2005) found that respondents' innovativeness had positive significant relationship with their use of printed materials.

Nuruzzaman (2003) found that innovativeness of the farmers had positive and significant relationship with their use of mass media.

Khan (1996) concluded that there was no significant relationship between innovativeness and use of information by resource poor farmers.

Islam (1995) found that innovativeness of the farmers had positive and highly significant relation with their use of communication media.

Uddin (1993) reported that there was a highly significant relationship between innovativeness of the sugarcane growers and their reception of information on planting method.

2.2.9 Attitude towards modern agricultural technologies and use of mass media

No literature was found showing the relationship between attitude towards modern agricultural technologies and use of mass media.

2.2.10 Agricultural knowledge and use of mass media

Hossain (2009) found a positive significant relationship between BRAC beneficiaries' women agricultural knowledge and their income generating activities.

Anisuzzaman (2003) found that the agricultural knowledge of the respondent had positive significant relationship with their use of communication media.

Nuruzzaman (2003) in his study observed that agricultural knowledge of the farmers had positive and significant relationship with their use of mass media.

Khan (1996) found that there was a highly significant and strongly positive relationship between agricultural knowledge of the farmers and their use of information sources.

Islam (1995) in his study observed that agricultural knowledge of the farmers had positive and highly significant relationship with their use of communication media.

Sarker (1995) found a highly significant and positive relationship between agricultural knowledge of the farmers and their use of communication media.

Parveen (1995) found that mass media exposure of the respondents had a positive significant relation with their agricultural knowledge.

Kashem and Halim (1991) showed that the use of communication media in adoption of modern rice technologies had significant positive correlation with agricultural knowledge.

Kashem and Jones (1988) found in their study that agricultural knowledge of the small farmers rendered significant positive correlation with their contact with information sources.

2.3 Conceptual Framework of the Study

The present study attempts to focus on using mass media by the farmers and their selected characteristics. Use of mass media by an individual may be influenced and affected by different interacting forces and many characteristics that he possesses. It is not possible to deal with all the characteristics in a single study. A conceptual model of the study has been presented below in Fig. 2.1 showing relationship among the variables under study.

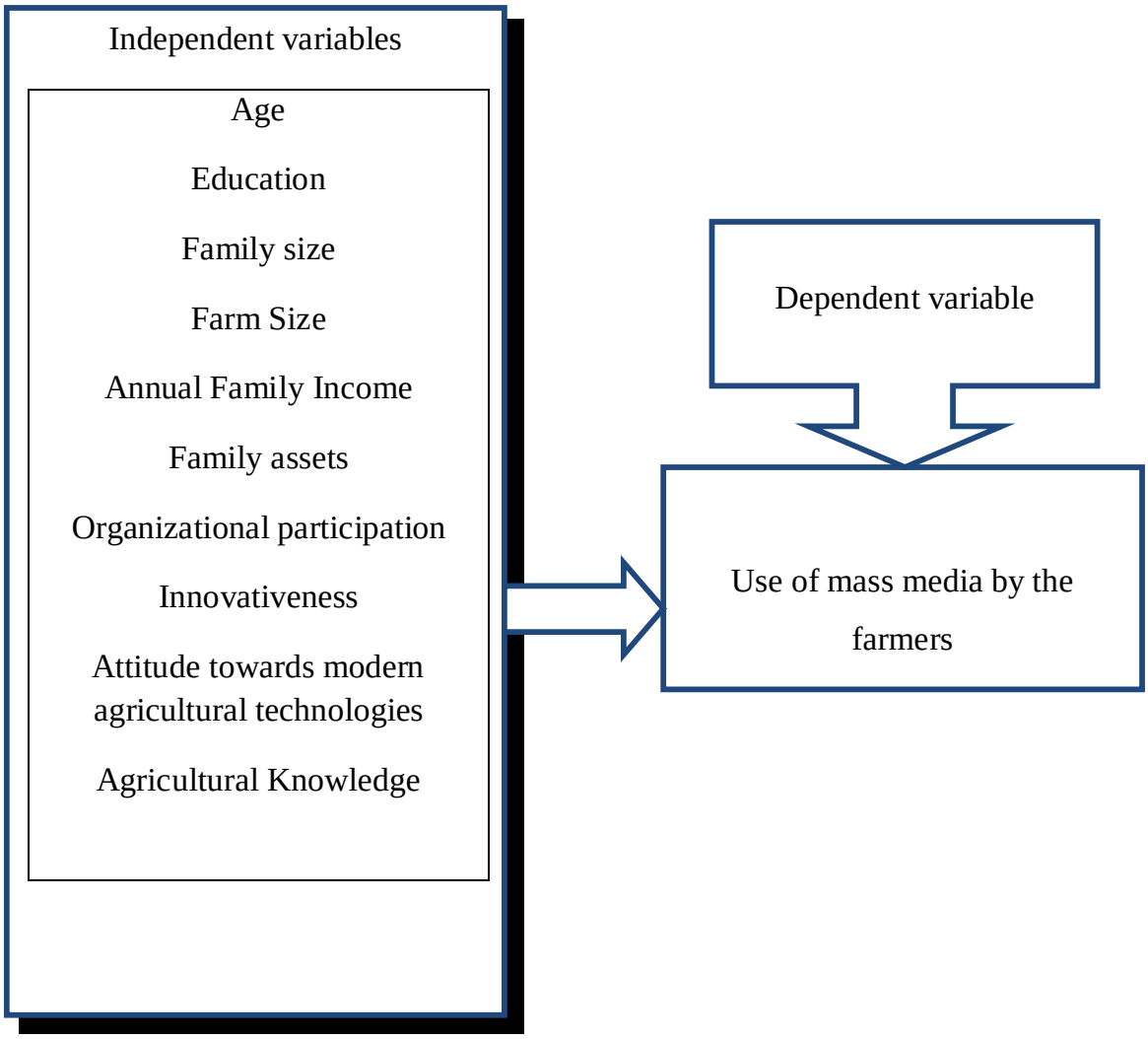

Fig. 2.1 A conceptual framework of the study showing relationship among the dependent and independent variables

CHAPTER 3

METHODOLOGY

Methodology plays an important role in a scientific research. A researcher should be careful in formulating methods and procedures in conducting research. Methodology should be such as would enable the researcher to collect valid data and reliable information and to analyze that information to arrive at correct decisions. The methods and procedures followed in this study are described in this Chapter.

3.1 Locale of the Study

Haturia Nakalia union of Bera upazilla under Pabna district was selected as the study area. There are fourteen villages in this union of which four villages namely Jogonnathpur, Nayanpur, Pachakola and Maldahpara were purposively selected. These villages constituted the locale of the study. A map of Pabna district showing the study upazila is presented in Figure 3.1 and Figure 3.2 depicts the particular study area.

3.2 Population and Sample Size of the Study

A list of all the farm families of the selected villages was prepared with the help of Agricultural Extension Officer (AEO) of Bera upazilla and Sub-Assistant Agriculture Officer (SAAO) of Haturia nakalia union. The total number of farmers in those villages were 806 who constituted the population of this study. Fifteen percent (15%) of the farmers were selected from that village by using proportionate random sampling. Thus one hundred and twenty one (121) farmers were selected which constituted the sample for this study. However, a reserve list of 17 farmers was also prepared. Farmers in the reserve list were used only when a respondent in the original list was not available. The distribution of the sample farmers and those in the reserved list from the selected village is shown in Table 3.1

Table 3.1 Distribution of population and sample including reserve list

Name of village	Total no. of population	Sample size	Reserve list size
Jogonnathpur	324	49	7
Nayanpur	138	21	3
Pachakola	164	24	3
Maldahpara	180	27	4
Total	806	121	17

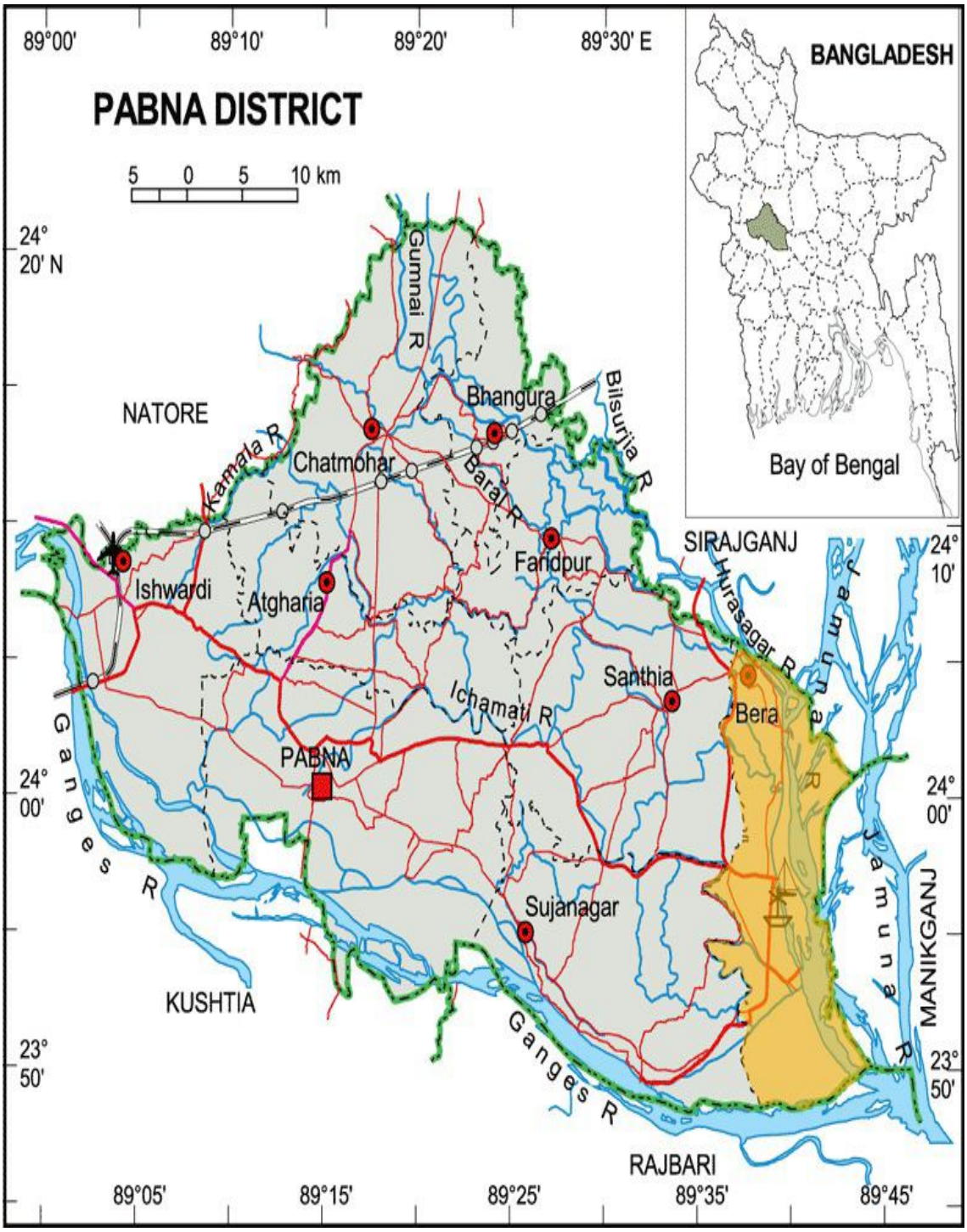

Fig. 3.1 A map of Pabna District showing the study upazila

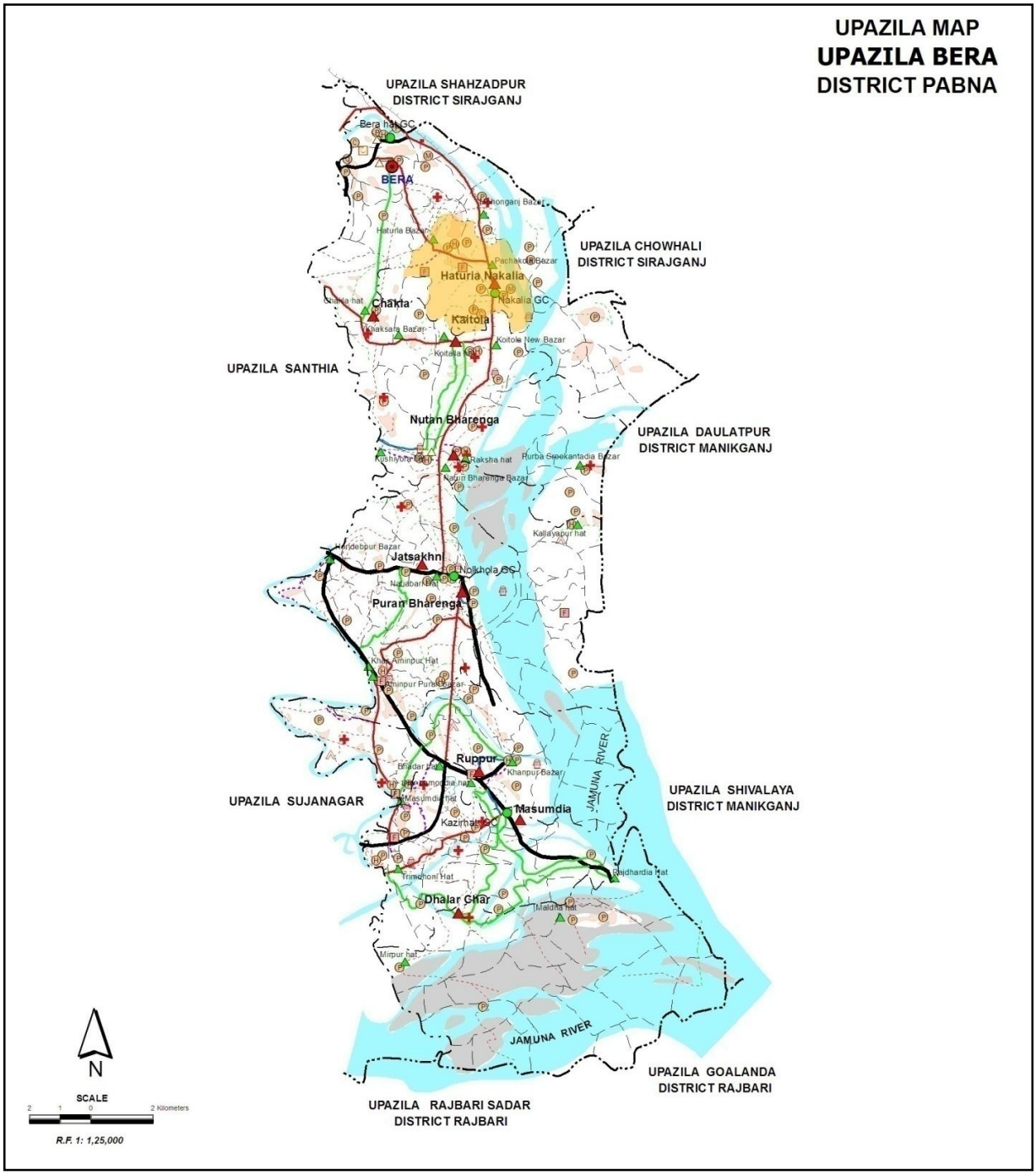

Fig. 3.2 A map of Bera upazila showing the locale of the study

3.3 The Research Instrument

An interview schedule was used as the research instrument in order to collect relevant information from the respondents. It was prepared considering the objectives of the study in mind. Interview schedule were simple, direct and easily understandable by the farmers. The schedule contained both opened and closed form of questions. Before finalization the interview schedule was pre-tested in the study area in actual field situations. The pre-test was helpful to locate faulty questions. Alterations and adjustment were done in the schedule on the basis of experience of the pre-test. During modification of the schedule the researcher incorporated valuable suggestions from her research supervisor and co-supervisor. Finally, the interview schedule was replicated to 121 farmers keeping in view the total number of the respondents.

3.4 Operationalization of variables

3.4.1 Variable selection

Success of a research, to a considerable extent, depends on the successful selection of the variables. Irrational, inappropriate and inconsistent selection of variables may lead to misleading and meaningless results. The researcher keeping all these in mind, took adequate care in selecting the variables of the study. Before the onset of the study the researcher visited the study area several times and talked to the crop growing farmers intimately. Moreover, by staying in the study area for some time, she was able to observe the personal, socio-economic, socio-cultural and psychological factors of the farming community, the researcher assumed, might have influenced on the behavioral pattern of the farmers. Based on this practical knowledge, side by side an extensive literature review and discussions with relevant experts and academicians, the researcher selected ten characteristics of the farmers for this study while use of mass media being the main focus of the study.

3.4.2 Measurement of variables

3.4.2.1 Selected characteristics of the farmers

The selected characteristics of the farmers were age, education, family size, farm size, annual family income, family assets, organizational participation, Innovativeness, attitude towards agricultural technology and agricultural knowledge.

Age

The age of a respondent was measured in terms of actual complete years from his birth to the time of interview. A score of one was assigned for each year of age.

Education

Education was measured in terms of years of schooling completed by an individual in educational institutions. The education score was computed for each respondent by giving one point for each year of successful schooling completed. The person who could sign only was given score 0.5 and who does not read and write was given score of 0 (Zero).

Family size

Family size of the respondents referred to the total number of members in his family including the respondent himself, his wife, sons, daughters and other members fully or partially dependent on him. The total number of family members were considered as the family size score of a respondent. For example, if a respondent has 6 members in his family, then his family size score was 6.

Farm size

The farm size of the respondents was computed in hectares using the following formula

Farm size = $A_1 + A_2 + ½ (A_3 + A_4) + A_5$

Where,

A_1 = homestead (including pond)

A_2 = Own land under own cultivation

A_3 = Land given to others on Borga

A_4 = Land taken from others on Borga

A_5 = Land taken from others on lease

Annual family income

The term annual family income has been used to refer to the total earning of the respondent from agricultural and non-agricultural sources during a year. Annual income of the respondent was measured on the basis of his total yearly income from agricultural and non-agricultural sources in Taka. The income sources from agriculture included crops, livestock, poultry, fish, fruits and vegetables. Non-agricultural sources of income included service, business and other sources of the respondents or other members of his family. A score was assigned 1 for one thousand Taka of income of a respondent.

Family assets

Family asset of the respondents was measured by the market value of respondents total assets.It was ascertained from three phases. In the first phase, the total agricultural equipment and machinery of the respondents was noted. then the prevailing market price of that goods converted into taka. In the second phase furniture and goods of the respondents was noted with their market value. In third phase the amounts of taka were added together to obtain a total number. A score of 1 was given for each thousand taka.

Organizational participation

Organizational participation of a respondent was measured by computing an organizational participation score according to his nature and duration of participation in nine (9) selected different organizations up to the time of interview. The organizational participation score of a respondent was measured by using the following formula:

Organizational participation score = $\sum$ PXD

Where,

P = Participation score

D = Duration score

Participation score was computed in the following manner:

Nature of participation	**Score assigned**
No participation	0
Participation as general member	1
participation as executive member	2
Participation as president/secretary	3

The duration was scored by assigning 1 for each year of participation subject to a maximum of 10 for participation for 10 years or more in an organization. The organizational participation score of a respondent was obtained by multiplying his participation score and his duration of participation score and then adding his scores for all the organizations he/she participated. This score could range from 0 to 270, where, 0 indicates no organizational participation and 270 indicate the highest level of organizational participation.

Innovativeness

Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in the social system (Rogers, 1995). The term innovativeness referred to the degree to which an individual is relatively earlier in adopting new ideas

than the other members of a social system (Rogers, 1995). Innovativeness of the respondent was measured on the basis of their adoption of 13 new technologies related to farming. Score was assigned on the basis of earliness in use of a practice by a respondent. Five point scale was used for computing the innovativeness score as follows:

Adoption period	**Score assigned**
Within 1 year after hearing	4
Within 2 year after hearing	3
Within 3 year after hearing	2
Within 4 year after hearing	1
Never Used	0

Thus, the innovativeness score of a respondent was obtained by adding the score for all thirteen items. The range of innovativeness score could vary from 0 to 52, where, 0 indicates no innovativeness and 52 indicate very high innovativeness.

Attitude towards modern agricultural technologies

Attitude towards agricultural technology of a respondent referred to his feeling, belief and action tendency towards the various improved technologies. Five point scale was used to determine the attitudes towards technology. The scale contained ten statements out of which 6 statements were positive and 4 statements were negative. These positive and negative statements were arranged alternately. A statement was considered positive only when it reflected the idea of favorable towards the modern technologies. The respondents were asked to express their opinion in the form of strongly agree, agree, no opinion, disagree and strongly disagree. Scores of 4, 3, 2, 1 and 0 were assigned respectively in case of strongly agree, agree, no opinion, disagree and strongly disagree

for a positive statement. On the other hand, for a negative statement reverse scoring method was followed.

Hence, attitude towards agricultural technology of a respondent was determined by summing up the score obtained by herself for all the statements in the scale. The possible attitude towards technology scores of the respondents could range from 0 to 40, where, 0 indicates unfavorable attitude and 40 indicates favorable attitude.

Agricultural knowledge

Agricultural knowledge is the extent of basic understanding of the farmers in different agricultural aspects. Agricultural knowledge of a respondent in the study was measured by asking him fifteen different questions related to crop varieties, name of seasonal crops, agricultural programmes etc. The total assigned score of all the questions was 30. The mark was given according to their response at the time of interview. Answering a question correctly an individual could obtain full score, while for wrong answer he obtained zero (0) score. Thus, the agricultural knowledge score of a respondent could range from 0 to 30, where, 0 indicates no knowledge and 30 indicate very high knowledge.

3.4.2.2 Use of mass media

Use of mass media by the farmers was the main focus of the study. Use of mass media score of respondent was computed on the basis of the extent of his use of mass media. Four technology and five mass media was particularized for this study. For each technology respondent was asked to indicate his extent of use of particular (5) mass media along a five point scale: regularly, often, occasionally, rarely, never. A score of 4 was given for regularly, 3 for often, 2 for occasionally , 1 for rarely and 0 for never. Same method was followed for rest of three technology. Mass media use score of a respondent was determined by summing the scores obtained by him for 4 technology. Use of mass media score of respondents could range from 0 to 80, where, 0 indicating no use of mass media, 80 for high use of mass media.

3.5 Data Collection Procedure

The researcher collected data from the farmers by using interview schedule through face to face interview. Before going to the respondents for interview, they were duly informed to ensure their availability at the proper place as per date and time. An excellent co-operation was rendered by Sub-Assistant Agriculture Officer (SAAO), local leaders and farmers. Adequate rapport was established by the researcher with the respondents. So, that they do not hesitate to furnish proper responses of the questions and statements. If any respondent failed to understand any question and statement, the researcher took care of to explain the issue. Nice co-operation and co-ordination were obtained from all respondents who were concerned in the field during data collection. Data collection was started on 10 April, 2014 and completed on 11 May, 2014.

3.6 Processing of Data

3.6.1 Editing

The collected raw data were examined thoroughly to detect errors and omissions. As a matter of fact the researcher made a careful scrutiny of the completed interview schedules to make sure that they were entered as complete as possible and well arranged to facilitate coding and tabulation. Very minor mistakes were detected by doing this which was corrected promptly.

3.6.2 Coding and tabulation

Having consulted with research supervisor and co-supervisor the investigator prepared a detailed coding plan. In case of qualitative data, suitable scoring technique was followed by putting proper weight age against each of the traits to transform the data into quantitative forms. These were then tabulated in accordance with the objectives of the study.

3.7 Categorization of Data

Following coding operation, the collected raw data were classified into various categories to facilitate the interpretation of the selected characteristics of the farmers and their use of mass media. These categories were developed for each of the variables by considering the nature of distribution of the data and extensive literature review. The procedures for categorization have been discussed while describing the variables under consideration in chapter 4.

3.8 Analysis of Data

Analysis was performed using some statistical treatments, such as number, frequency count, percentage, range, mean and standard deviation were used in describing the selected variables. In order to test the formulated hypothesis of the study, Pearson's product-moment correlation co-efficient (r) was used.

3.9 Statement of the hypothesis

As defined by Goode and Hatt (1952) 'A hypothesis is a proposition, which can be put to a test to determine its validity.' It may prove correct or incorrect of a proposition. In any event, however, it leads to an empirical test. In studying relationship between variables, research hypotheses are formulated which state anticipated relationships between variables. However, for statistical test it becomes necessary to formulate null hypothesis. A null hypothesis states that there is no relationship between the variables. If a null hypothesis is rejected on the basis of a statistical test, it is assumed that there is a relationship between the concerned variables.

Following null hypotheses were formulated for this study: ***There is no relationship between each of the selected characteristics of the farmers and their use of mass media.***

CHAPTER 4

RESULTS AND DISCUSSIONS

This Chapter is divided into three sections. First section deals with the use of mass media by the farmers in adoption of rice production technologies. Second section deals with the selected characteristics of the farmers. The last section deals with the relationship between farmers selected characteristics and their use of mass media.

4.1 Use of mass media in adoption of rice production technologies

Use of mass media by the farmers in adoption of rice production technologies was measured by computing the use of different mass media score according to the procedure described earlier in Chapter 3. The observed range was 6 to 35 against the possible range 0 to 80 with a mean of 17.89 and standared deviation 7.15. Based on the use of mass media the respondents were classified into three group which is shown in Table 4.1. Data contained in Table 4.1 show that the 42.1% of the respondents belong to very low user category while 40.5% low user and 17.4% were medium user category of mass media in adoption of rice production technologies.

Table 4.1: Distribution of the farmers according to their use of mass media

Category (Scores)	Farmers		Mean	SD
	Number	Percent		
Very low user (up to 15)	51	42.1	17.89	7.15
Low user (16-25)	49	40.5		
Medium user (above 25)	21	17.4		
Total	121	100		

Data reveal that 83% respondents belonged to very low user to low user category of use mass media in adoption of rice production technologies. Adoption depends on the use of mass media. By mass media people came to know about the innovation. But in the study area mass media usage was not up to the mark. People seem to be not aware about the importance of mass media in receiving information. It was observed that most of the respondents had television in the study area but they had less interest to see agricultural programme rather than other programme. Radio was not very much in use in the study area. Nowadays the importance of radio has been particularized in some pocket area as community radio. The broadcasting time for agricultural programme on radio or television was not accessible for most of the farmers in the study area. It was also observed that half of the respondents in the study area were not able to receive primary education. For that reason newspaper and poster were not beneficial to them. Moreover most of the farmers in the study area belong to low annual income category. They were unable to afford newspaper with their income. Agricultural fair may be beneficial to them but they were indifferent about the importance of it. It is very much understandable that mass media can increase the rate of adoption by disseminating innovation properly. But the use of mass media in the study area was not upto the expected level. Extension agent should come forward to overcome the above situation by making people motivate about the importance of mass media in disseminating information.

4.2 Selected Characteristics of the Farmers

Ten selected characteristics of the farmers were considered for the present study. Salient features regarding the ten characteristics have been presented in Table 4.2.

Table 4.2 Salient features of the sample farmers selected characteristics

SL no.	Characteristics	Measuring unit	Possible range	Observed range	Mean	Standard Deviation
1.	Age	Actual years	Unknown	23-65	40.61	10.69
2.	Education	Year of schooling	Unknown	0-10	2.74	3.13
3.	Family size	Numbers	Unknown	3-15	7.36	2.54
4.	Farm size	Hectares	Unknown	0.18-3.59	0.82	0.64
5.	Annual income	'000'tk	Unknown	39-278	85.24	38.29
6.	Family assets	'000'tk	Unknown	12-645	63.18	57.49
7.	Organizational participation	Score	0-270	0-18	7.35	3.58
8.	Innovativeness	Score	0-52	8-26	18.60	3.38
9.	Attitude towards modern agricultural technologies	Score	0-40	5-36	24.16	8.01
10.	Agricultural knowledge	Score	0-30	11-25	18.38	2.86

4.2.1 Age

The age of the farmers ranges from 23 to 65 years with an average of 40.61 and the standard deviation 10.69. The farmers of the study area were classified into three categories on the basis of their age. Distribution of the farmers according to their age has been shown in the Table 4.3.

Table 4.3: Distribution of the farmers according to age

Category	Farmers		Mean	SD
	Number	Percent		
Young (up to 35 years)	45	37.2	40.61	10.69
Middle aged (36-50 years)	51	42.1		
Old (above 50 years)	25	20.7		
Total	121	100		

Data presented in Table 4.3 indicate that the highest proportion 42.1% was middle aged farmers compared to 37.2% young and 20.7% old aged. It appears that 79.3% of the farmers in the study area were young to middle-aged as compared to 20.7% constituting the old aged category. That means young to middle-aged farmers in the study area were using mass media more than the old farmers in adoption of rice production technologies.

4.2.2 Education

Education of the respondents was measured by following the procedure as discussed earlier in Chapter 3. The education score ranged from 0 to 10 with an average of 2.74 and the standard deviation of 3.13. Based on their education score, the farmers were classified into five categories as shown in Table 4.4.

Table 4.4 Distribution of the farmers according to education

Category	Farmers		Mean	SD
	Number	Percent		
No education (0)	38	31.4	2.74	3.13
Can sign only (0.5)	25	20.7		
Primary education (1-5)	36	29.7		
Secondary education (6-10)	22	18.2		
Higher education (above 10)	0	0		
total	121	100		

Data presented in Table 4.4 indicate that the highest proportion (31.4 percent) of farmers had no formal education while 29.7 percent had primary education, 20.7 percent could sign only and 18.2 percent had secondary education respectively.

4.2.3 Family size

The family size of the respondents ranged from 3 to 15 members with an average of 7.36 and the standard deviation of 2.54. On the basis of their family size the farmers were classified into the following three categories: "small family" (up to 4), "medium family" (5-7) and "large family" (above 7). Table 4.5 contains the distribution of the farmers according to their family size.

Table 4.5 Distribution of farmers according to their family size

Category	Farmers		Mean	SD
	Number	Percent		
Small family (up to 4)	11	9.1	7.36	2.54
Medium family (5-7)	63	52.1		
Large family (above 7)	47	38.8		
Total	121	100		

Highest percent (52.1 percent) of the farmers had "medium family" compared to 38.8 percent of them having "large family". The proportion of "small family" was 9.1 percent only (Table 4.5). Thus 90.9 percent of the farmers had medium to large families.

The family structure of the farmers was also analyzed according to sex distribution and the results are shown in Table 4.6.

Table 4.6 Sex distribution of the farmers according to their nature of family

Category	Gender distribution of the respondents		
	Male	Female	Total
Small family	19 (49)	20 (51)	39 (100)
Medium family	197 (54)	171 (46)	368 (100)
Large family	284 (55)	229 (45)	513 (100)
Total	500 (54)	420 (46)	920 (100)

Note: Figures in parentheses indicate percentage

The proportion of the male members (54 percent) was quite higher than that of the female members (46 percent). The higher proportion of male members were observed in the large families (55 percent). The prevalence of more male members in the families of the

rice farmers may be considered as an advantage because more male members means more family labor to work in the rice fields.

4.2.4 Farm size

The farm size of the farmers varied from 0.18 to 3.59 hectares. The average farm size was 0.82 hectare with a standard deviation of 0.64. The farmers were classified into the following three categories based on their farm size: "small farm" (0.18-1.0 ha), "medium farm" (1.1 – 3.0 ha), and "large farm" (above 3.0 ha). The distribution of the farmers according to their farm size is shown in Table 4.7.

Table 4.7 Distribution of the farmers according to their farm size

Category	Farmers		Mean	SD
	Number	Percent		
Small farm (0.18-1.0 ha)	91	75.2	0.82	0.64
Medium farm (1.1 – 3.0 ha)	28	23.1		
Large farm (above 3.0 ha)	2	1.7		
Total	121	100		

Three-fourth (75.2%) of the farmers possessed small farms compared to slightly below one-fourth (23.1%) of them having medium farms and only 1.7% had large farms. Thus, the overwhelming majority 98.3 percent of the farmers were the owners of small to medium farms.

4.2.5 Annual family income

The annual income of the respondents ranged from 39 to 278 thousands taka with an average of 85.25 thousand taka and the standard deviation of 38.29. Based on their income scores, the farmers were classified into three categories: "low income" (up to 75 thousand), "medium income" (76-150 thousand) and "high income" (above 150

thousand). The distribution of the farmers according to their family income is shown in Table 4.8.

Table 4.8 Distribution of the farmers according to their annual income

Category	Farmers		Mean	SD
	Number	Percent		
Low income (up to 75 thousand)	61	50.4	85.25	38.29
Medium income (76-150 thousand)	50	41.3		
High income (above 150 thousand)	10	8.3		
Total	121	100		

Half (50.4 percent) of the farmers had low income compared to 41.3 percent of them having medium income and 8.3 percent had high income.

4.2.6 Family assets

Family assets score of the farmers ranged from 12 to 645. The farmers were classified into three categories based on their obtained scores considering mean and standard deviation 63.18 and 57.49 respectively. The categories and the distribution of the farmers are shown in Table 4.9.

Table 4.9 Distribution of the farmers according to their family assets

Category	Farmers		Mean	SD
	Number	Percent		
Low (up to 51 thousand)	46	38.0	63.18	57.49
Medium (52-79 thousand)	65	53.7		
High (above 79 thousand)	10	8.3		
Total	121	100		

The data presented in Table 4.9 shows that higher proportion of the respondents (53.7 percent) belong to medium family asset category compared to 38.0 percent low category and 8.3 percent high family asset category.

4.2.7 Organizational participation

Organizational participation scores of the farmers ranged from 0 to 18 with an average of 7.35 and a standard deviation of 3.58. On the basis of their organizational participation scores, the farmers were classified into four categories: "no participation" (0), "very low participation" (1-6), "low participation" (7-12) and “medium participation (above 12)”. The distribution of farmers according to their organizational participation is shown in Table 4.10.

Table 4.10 Distribution of the farmers according to their organizational participation

Category	Farmers		Mean	SD
	Number	Percent		
No participation (0)	4	3.3	7.35	3.58
Very low participation (1-6)	50	41.3		
Low participation (7-12)	59	48.8		
Medium participation (above 12)	8	6.6		
Total	121	100		

Almost half (48.8 percent) of the farmers had low participation in organizations, while (41.3 percent) of them had very low participation. Thus, although 96.7 percent of the growers had some organizational participation, but their level of participation was "very low" to "medium". The major reasons for such low participation could be existence of few organizations in the study area, lack of awareness and motivation of the respondents to participate in whatever organization exist.

4.2.8 Innovativeness

The maximum innovativeness scores of the farmers was 26 and the minimum was 8 against the possible range of 0 to 52. However, the average was 18.60 and standard deviation 3.38. Based on their innovativeness scores, the farmers were classified into three categories: “very low innovativeness” (up to 14) “low innovativeness” (15-20) and “innovativenesss” (above 20). The distribution of the farmers according to their innovativeness is shown in Table 4.11.

Table 4.11 Distribution of the farmers according to their innovativeness

Category	Farmers		Mean	SD
	Number	Percent		
Very low innovativeness (up to 14)	13	10.7	18.60	3.38
Low innovativeness (15-20)	74	61.2		
Innovativeness (above 20)	34	28.1		
Total	121	100		

Majority of the farmers (61.2%) were "low" in terms of their innovativeness, while 10.7% were very low and 28.1% were innovativeness. This means that there is a quite lack of proneness among the farmers to adopt agricultural technologies.

4.2.9 Attitude towards modern agricultural technologies

Attitude towards selected modern agricultural technologies of the respondents was quantified by computing scores for their attitude towards selected modern agricultural technologies. The attitude towards technology scores ranged from 5 to 36 against the possible scores 0 to 40 with an average of 24.16 and a standard of 8.01. Based on the observed attitude towards the technology scores, the respondents were classified into three categories: “slightly favorable” (up to 15), “moderately favorable” (16-30) and “highly favorable” (above 30). The distribution of the respondents according to their attitude towards selected modern agricultural technologies is shown in Table 4.12.

Table 4.12 Distribution of the farmers according to their attitude towards modern agricultural technologies

Category	Farmers		Mean	SD
	Number	Percent		
Slightly favorable (up to 15)	23	19	24.16	8.01
Moderately favorable (16-30)	79	65.3		
Highly favorable (above 30)	19	15.7		
Total	121	100		

Data presented in Table 4.12 show that the highest proportion (65.3 percent) of the farmers belonged to moderately favorable attitude towards technologies while 19 percent had slightly favorable attitude and 15.7 percent had highly favorable attitude. This indicates that 81 percent of the respondent farmers had slightly to moderately favorable attitudes towards technologies.

4.2.10 Agricultural knowledge

Agricultural knowledge scores of the respondents ranged from 11 to 25 against the possible range of 0 to 30. The average and standard deviation were 18.38 and 2.86, respectively. Based on the observed agricultural knowledge scores and the procedures described in methodology chapter, the farmers were classified into the following two categories: "medium knowledge" (up to 20) and "high knowledge" (above 20). The distribution of the farmers according to their agricultural knowledge is shown in Table 4.13.

Table 4.13 Distribution of the farmers according to their agricultural knowledge

Category	Farmers		Mean	SD
	Number	Percent		
Medium knowledge (up to 20)	95	78.5	18.38	2.86
High knowledge (above 20)	26	21.5		
Total	121	100		

The highest proportion (78.5 percent) of the farmer had medium agricultural knowledge compared to about 21.5 percent of them having high agricultural knowledge. Thus, in general the agricultural knowledge level of the farmers of the study area was quite satisfactory. Possession of comparatively high agricultural knowledge is likely to be contributory to the adoption of rice cultivation technologies.

4.3. Relationship between selected Characteristics of the farmers and their use of mass media in adoption of rice production technologies

This section deals with the relationship between each of the ten selected characteristics of the farmers and their use of mass media in adoption of rice production technologies. To explore the relationships between each of the selected characteristics and use of mass media in adoption of rice production technologies Pearson's Product Moment co-efficient of correlation (r) has been used. The relationships of each of the selected characteristics of the respondents with their use of mass media have been shown in Table 4.14. However, a correlation matrix for all variables has been presented in Appendix-B.

Table 4.14 Computed co-efficient of correlation (r) between farmers selected characteristics and their use of mass media (N=121)

	Selected characteristics of the farmers	Values of "r" with 119 df.	Table value of "r"	
			0.05 level	0.01 level
Use of mass media	Age	0.193*	0.179	0.237
	Education	0.682**		
	Family size	-0.068^{NS}		
	Farm size	0.428**		
	Annual family income	0.402**		
	Family asset	0.089^{NS}		
	Organizational participation	0.247**		
	Innovativeness	0.427**		
	Attitude towards technology	0.175^{NS}		
	Agricultural knowledge	0.517**		

^{NS} Not significant

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

4.3.1 Age and use of mass media

The computed value of correlation was found to be 0.193* as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relation showed a positive trend.

b) The computed value of r (0.193) was found to be greater than tabulated value (r = 0.179) with 119 degrees of freedom at 0.05 level of probability.

Based on the above findings, the null hypothesis could be rejected and hence, the researcher concluded that the age of the respondents had positive significant relationship with their use of mass media. Fariduzzaman (2010) and Nuruzzaman (2003) also found similar result in their study.

4.3.2 Education and use of mass media

The computed value of correlation was found to be 0.682** as shown in Table 4.14. Following observations were made regarding the relationship between two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.682) was found greater than the tabulated value (r = 0.237) with 119 degrees of freedom at 0.01 level of probability.

Based on the above findings the null hypothesis was rejected and hence, it is concluded that the education of the respondents had significant positive relationship with their use of mass media. This indicates that the higher is the level of the education of a person the more would be the extent of use of mass media. Education enables individuals to gain knowledge and thus increase their power of understanding, consequently their outlook is broadened and horizon of knowledge is expanded. The educated person used to have frequent contact with mass media which increase their power of understanding compared to the individuals with less educational background. Similar findings were also found by

Bhuiyan (1988), Kashem and Jones (1988), Islam (1995), Sarker (1995) and Islam (2005) in their studies.

4.3.3 Family size and use of mass media

The computed value of correlation was found to be -0.068 as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relation showed a negative trend.

b) The computed value of r (-0.068) was found to be smaller than tabulated value (r = 0.179) with 119 degrees of freedom at 0.05 level of probability.

Based on the above findings, the null hypothesis was accepted and hence, the researcher concluded that the family size of the respondents had no significant relationship with their use of mass media. Hossain (2009) and Anisuzzaman (2003) also found similar result in their study.

4.3.4 Farm size and use of mass media

The computed value of correlation was found to be 0.428** as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.428**) was found to be greater than the tabulated value (r=0.237) with 119 degrees of freedom at 0.01 level of probability.

Based on the above findings, the null hypothesis was rejected and hence, the researcher concluded that the farm size of the respondents had positive significant relationship with their use of mass media. Hossain (2009) and Islam (1995) also found similar result in their study.

4.3.5 Annual family income and use of mass media

The computed value of correlation was found to be 0.402** as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.402**) was found to be greater than the tabulated value (r = 0.237) with 119 degrees of freedom at 0.01 level of probability.

From the above findings, the null hypothesis was rejected and hence, the researcher concluded that the annual family income of the respondents had positive significant relationship with their use of mass media. That means higher the income, the more use of mass media. Fariduzzaman (2010) and Karim (1994) also found similar result in their study.

4.3.6 Family asset and use of mass media

The computed value of correlation was found to be 0.089 as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.089) was found to be smaller than the tabulated value (r=0.179) with 119 degrees of freedom at 0.05 level of probability.

Based on the above findings, the null hypothesis was accepted and hence, the researcher concluded that the family asset of the respondents had no significant relationship with their use of mass media.

4.3.7 Organizational participation and use of mass media

The computed value of correlation was found to be 0.247** as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under considerations:

a) The relationship showed a positive trend.

b) The computed value of r (0.247**) was found to be greater than the tabulated value (r=0.237) with 119 degrees of freedom at 0.01 level of probability.

Based on the above findings, the null hypothesis was rejected and hence, the researcher concluded that the organizational participation of the respondents had positive significant relationship with their use of mass media. Similar findings were found by Rahman (1991) and Islam (1995) in their study.

4.3.8 Innovativeness and use of of mass media

The computed value of correlation was found to be 0.427**as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.427**) was found to be greater than the tabulated value (r=0.237) with 119 degrees of freedom at 0.01 level of probability. Hence, the relationship was significant at 0.01 level of probability. Considering the correlation value the concerned null hypothesis was rejected. Hence, it can be said that innovativeness of the respondents had positive significant relationship with their use of mass media.

It indicates that with the increase of innovativeness, there was an increase in the use of mass media. Similar results were found by Islam (1995) and Uddin (1993).

4.3.9 Attitude towards modern agricultural technologies and use of mass media

The computed value of correlation was found to be 0.175 as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of 'r' (0.175) was found to be smaller than the tabulated value (r=0.179) with 119 degrees of freedom at 0.05 level of probability. Hence, the relationship was not significant at 0.05 level of probability.

Based on the above finding the concerned null hypothesis was accepted. This implies that attitude towards technology of the farmers and their use of mass media in adoption of rice production technology is independent to each other.

4.3.10 Agricultural Knowledge and use of mass media

The computed value of correlation was found to be 0.517** as shown in Table 4.14. Following observations were made regarding the relationship between these two variables under consideration:

a) The relationship showed a positive trend.

b) The computed value of r (0.517**) was found to be greater than the tabulated value (r=0.237) with 119 degrees of freedom at 0.01 level of probability.

Based on the above findings the null hypothesis was rejected and hence, the researcher concluded that the agricultural knowledge of the respondents had positive significant relationship with their use of mass media. Similar findings were found by Parveen (1995), Sarker (1995), Islam (1995) and Khan (1996).

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter presents summary of findings, conclusion and recommendations of the study.

5.1 Summary of Findings: The major findings of the study are summarized below:

5.1.1 Characteristics of the farmers

Age: Majority (42.1 percent) of the farmers were middle aged, 37.2 percent were young and 20.7 percent were old.

Education: The highest proportion 31.4 percent of the farmers had no education, compared to 29.7 percent had primary level of education where as 20.7 percent could sign only and 18.2 percent had secondary education.

Family size: Among 121 respondents 52.1 percent had medium size family compared to 38.8 percent had large size family while 9.1 percent had small size family.

Farm size: Among the respondents 75.2 percent had small farm size compared to 23.1 percent had medium farm size and 1.7 percent had large farm size.

Annual family income: Among the respondents 50.4 percent had low income compared to 41.3 percent had medium while 8.3 percent had high annual income.

Family assets: Majority (53.7 percent) of the farmers belonged to medium category while 38.0 percent and 8.3 percent belong to low and high category respectively.

Organizational participation: Among the respondents almost half (48.8 percent) of the farmers had low participation in organizations compared to 41.3 percent had very low participation while 6.6% and 3.3% belong to medium and no participation respectively.

Innovativeness: Majority (61.2%) of the farmers were in "low" category in terms of their innovativeness, while 10.7% were in very low and 28.1% were in innovativeness.

Attitude towards modern agricultural technologies: Among respondents highest proportion (65.3 percent) of the farmers belonged to moderately favorable attitude towards technologies while 19 percent had slightly favorable attitude and 15.7 percent had highly favorable attitude.

Agricultural Knowledge: Among the respondents the highest proportion (78.5 percent) of the farmer had medium agricultural knowledge compared to about 21.5 percent of them having high agricultural knowledge.

Use of mass media: Among the respondents 40.5% were belong to low user category while 42.1% and 17.5% were belong to very low user and medium user category of mass media respectively.

5.1.2 Findings of hypothesis testing

The null hypothesis was tested to examine the relationship of ten each of the selected characteristics of the farmers with their use of mass media. The results of hypothesis testing are briefly presented below:

Age, education, farm size, annual family income, organizational participation, innovativeness and agricultural knowledge of the farmers had positive significant relationship with their use of mass media while family size, family assets and attitude towards modern agricultural technologies had no significant relationship with their use of mass media.

5.2 Conclusions

Findings of the study and the logical interpretations of their meanings in the light of other relevant facts prompted the researcher to draw the following conclusions:

1. The findings of the study revealed that 42.1% of the respondents belonged to very low user category compared to 40.5% low user and 17.4% medium user category

of mass media in adoption of rice production technologies. This leads to the conclusion that mass media used in the study area was not up to the desired level.

2. Age of the respondents had significant positive relationship with their use of mass media in adoption of rice production technologies. The large majority (79.3%) of the respondents in the study area were young to middle aged. This leads to the conclusion that the young to middle aged farmers were using mass media to some extent in adoption of rice production technologies.
3. Education of the respondents had significant positive relationship with their use of mass media. This indicates that the higher is the level of education of a person the more extent of use of mass media.
4. Farm size of the respondents had positive significant relationship with their use of mass media. This tends to the conclusion that higher the farm sizes higher the use of mass media in adoption of technologies.
5. Annual family income of the respondents had positive significant relationship with their use of mass media. This means that higher the annual income, higher the use of mass media.
6. Organizational participation of the respondents had positive relationship with their use of mass media. This leads to the conclusion that higher organizational participation enhances the use of mass media in adoption of technologies.
7. Innovativeness of the respondents had positive significant relationship with their use of mass media. It can be concluded that with the increase of innovativeness, there was an increase in the use of mass media by the farmers.
8. Agricultural knowledge of the respondents had positive significant relationship with their use of mass media. This leads to the conclusion that higher the agricultural knowledge of the respondents higher the use of mass media in adoption of technologies.

5.3 Recommendations

5.3.1 Recommendations for policy implications

- More than four-fifths (82.6%) of the respondents belong to very low user to low user category of mass media. Steps should be taken to increase the use of mass media by the respondents in the study area which will be helpful for them to adopt technology and increase their production.
- The large majority (79.3%) of the respondents in the study area were young to middle aged. These farmers should be given preferences by the extension agent to make them aware of the importance of using mass media in the study area.
- More than half (52.1%) of the respondents in the study area belonged to no education to could sign only. DAE should come forward to create awareness among them about the importance of mass media by giving them non-formal education.
- Respondents belonged to small farm size should be brought under a programme of mass media. They should make understand that they can also use technology in their small farm. Mass media is the most effective channel that can give them the latest information. DAE should come forward to take initiative about above aspects.
- Organizational participation was not satisfactory among the respondents. President or secretary of different local organizations in the study area should take steps to increase the organizational participation of the farmers by motivating them.
- Level of Innovativeness of the respondents in the study area was very low. Extension agent or change agent should take care of increasing the innovation level of the farmers in the study area.
- More than three-fourths (78.5%) of the respondents in the study area belonged to medium agricultural knowledge category. To increase their knowledge on agriculture, mass media usage should be increased.

5.3.2 Recommendations for further research

This study was conducted only in four villages of Bera upazila under Pabna district. It is essential to make scope for further study in other places to justify the findings of the present study.

- The investigation explored the relationship of the 10 selected characteristics of the respondents with their extent of using mass media. Further research may be conducted to explore relationships of other characteristics of the respondents with their use mass media.
- Four technologies were used in this study. Other technology should also take into consideration for another study.
- This study was conducted only on using mass media in adoption of rice production technologies. Similar study may be undertaken on other crops of Bangladesh.
- Further research may be conducted with farmer's problem confrontation in using mass media.

BIBLIOGRAPHY

Aktaruzzaman, M. 2006. Functional Parturition of Landless Women in Income Generating Activities (IGAs) under SAIP of DAE. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Alam, S.M.A. 2004. Extent of Use of Communication Media by the Farmers In Receiving Agricultural Information. *M.S. (Ag. Ex. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Adikarya, R. 1994. Strategic Extension campaign: A Case study of FAOs Experience. FAO, Rome, Italy.

Amur, C. 1994. Agricultural Extension: A step beyond the next step. World Bank technical paper number 247. The World Bank, Washington, D.C.

Anisuzzaman, M. 2003. Use of communication Media by the farmers in the Adoption of Improved Rice Production Technology. *M.S. (Ag. Ex. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Batte, M.T., G.D. Schitkey and E. Jones. 1990. Source, Uses and Adequacy of Marketing Information for Commercial Midwestern Cash Grain Farmers. *North Central Journal of Agricultural Economics*, 12(2):187-196.

BBS, 2013. Statistical Year Book of Bangladesh Bureau of Statistics. Statistics Division, Ministry of Planning, Government of the people Republic of Bangladesh.

BBS, 2012. Statistical Year Book of Bangladesh Bureau of Statistics. Statistics Division, Ministry of Planning, Government of the People Republic of Bangladesh.

Bhuiyan, M.S.I. 1988. Use of Communication Media by the Farmers in the Adoption of Selected Improved Farm Practices in Rice Cultivation. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Bhuiyan, N.I., D.N.R. Poul and M.A. Jobbar. 2002. Feeding the extra million by 2025-Challenges for rice research and Extension in Bangladesh, national Workshop on Rice Research and Extension in Bangladesh, Bangladesh Rice Research Institute, Gazipur, 29-31 January.

Chidanandappa, G. and V. Veerabhadraiah. 1988. Mass Media Utilization by Extension Personal. Department of Agricultural Extension, University of Agricultural Science, Bangalore, Karnataka, India.

Chough, P.K. 1991. Communication through Mass Media. *Rural Development Abstract,* 15(3): 251.

DAE, 1995. Agricultural Extension Manual (June, 1995 regision), Department of Agricultural Extension, Ministry of Agriculture, Government of the People's Republic of Bangladesh.

Dinampo, E.C. 1989. Communication Study of Corn Farmers in Bukidon Philippines. Central Mindanao Univ., Musuam, Bukinon, Department of Development Communication, CMU. *Journal of Science,* 2(1): 27-62.

Egbule, P.E. and E.M.C. Njoku. 2001. Mass Media Support for Adult Education in Agricultural in Southern Nigeria. *Adult Education and Development,* 56: 179-186.

Fariduzzaman, M. 2010. Use of Television In Receiving Agricultural Information. M.Sc. (AEIS) Thesis, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Galindo, G. 1994. Communication Media used by Farmers in the Central Region of Zacateca. Mexico Turrialba, 44: 3.

Goode, W.J. and P.K. Hatt. 1952. “Methods in Social Research” as Quoted in: Wahhab, A.M.F. (1975) Attitude of Farmers Towards the use of Fertilizers. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension and T.T., Bangladesh Agricultural University, Mymensingh.

Halim, A. and M.A.M. Miah. 1996. “Appropriate Information Media for Communicating to Rural Farm Women”. Proceeding of Workshops, Achievements of the Gender Research and Training Project, Bangladesh Agricultural Research Council (BARC) . Farmgate, Dhaka, Bangladesh.

Hoque, M.M. 1990. The Role of Development Communication in Agriculture: Status and Trends with Special Reference to Language. An Article, Presented in Development Communication for Agriculture. B.R. Publishing Crop. New Delhi.

Hoque, M.E. 2007. Use of Different Media by the Farmers’ as Agricultural Information Sources. *M.Sc. (AEIS) Thesis*, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Hossain, M.A. 2009. Use of Communication Media by the BRAC Beneficiaries in income generating activities in a selected area of Nilphamari district. *M.Sc. (AEIS) Thesis*, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Hossain, M. 1996. Farmers’ Perception of the Effects of Agro-chemical on Environment. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.S. 2005. Use of Printed Materials by the Farmers in Sandwip. *M.S.* (*Ag. Ext. Ed.*) *Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.M. 1996. Farmers' Use of Indigenous Technical Knowledge (ITK) in the Context of Sustainable Agricultural Development. *M.Sc*. (*Ag. Ext. Ed.*) *Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.R. 1995. Use of Communication Media by the Farmers in Receiving Information on Wheat Technologices. *M.S. (Ag. Ext. Ed) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Karim, M.R. 1994. Communication Patterns in Farm Information Development and Dissemination Systems Related to Rice technology. *Ph.d. Thesis*, Bangladesh Agricultural University, Mymensingh.

Kamruzzaman, 2011. Use of Communication Sources in Receiving Agricultural Information by the Rural Women. *M.Sc. (AEIS) Thesis*, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Kashem, M.A. and G.E. Jones. 1988. Small Farmers Contact with Information Sources and its Relationships with Some Selected Characteristics. *Bangladesh Journal of Extension Education*. 3 (1): 1-7.

Kashem, M.A. and A. Halim. 1991. Use of Communication Media in the Transfer of Technologies to Farmers: A Farm Level Study. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Khan, M.M.R. 1996. Use of Information Sources by the Resource Poor Farmers in Receiving Information Related to Cultivated winter Vegetable. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Khan, M.A. and S.A. Paracha. 1994. Interpersonal Communication Network in Diffusion of Innovations at Innovative and Non-innovative Villages. *Journal of Rural Development and Administration*, Pakistan. 26 (2): 79-88.

Khatun, F. 2004. Participation of Rural Women in Homestead Management Activities. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Kumari, N. 1988. An Experimental study on Effectiveness of selected Mix media for Health Education. *Thesis Abstract,* Haryana Agricultural University, Hissar, India.

Mazher, A. 2003. Role of printed media in the dissemination of recommended sugarcane production technologies among farmers in the central punjab -pakistan.

Mekabutra, P. 1985. Farmers' Opinion towards Receiving knowledge in Agriculture from mass media in Chiyo District. Angthong province, Bangkok, Tahiland.

Molla, Y. 2006. Use of Communication Media in Receiving Information on Selected Winter Vegetable Cultivation. *M.Sc. (AEIS) Thesis*, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Molinar, H., T. Marjoram and T. Marjoram. 1994 .Communication Technology: in whose Interests? Island- technology: Technology for Development in the south pacific. pp. 104-117.

Nataraju, M.S. and N.B. channegowda. 1985. Source of Information Utilization for Adoption of improved Dairy Management Practices by Small, Marginal Farmers and Agricultural Labourers, *Indian journal of Extension Education* , xxxi, 3(4): 99-100.

Nuruzzaman, M. 2003. Use and preference of Mass Media in Receiving Agricultural Information by the Farmers. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Parveen, S. 1995. Awareness of Farm women on Environmental Degradation due to Use of Some Selected Modern Technologies. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rahman, G.M. 1995. Agricultural Information in Bangladesh: Half -way between the media and mass. J*ournal of Development Communication,* 6(2): 25-33.

Rahman, M.Z. 1991. Credibility of Block supervisors in sadar upazila under Mymensingh District. *M. Sc. (Ag. Ext. Ed) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Ray, G.L. 1999. Extension Communication and Management 3rd ed. Kolkata: Naya Prokash. P. 185.

Reisner, A.E. and R.G. Hays. 1989. Media Ethics and Agriculture: Advertiser Demands Challenge Farm press's Ethical practices. *Agriculture and Human values,* 6(4): 40-46.

Rogers, E. M. 1995.Diffusion of Innovation: 4th Ed. New York: The Free Press.

Roy, R. 2006. Effectiveness of Mass Media in Adoption of Rice Production Technologies. *M.Sc. (AEIS) Thesis*, Department of Agricultural Extension and Information System, Sher-E-Bangla Agricultural University, Dhaka.

Samanta, R.K. 1986. Effective Agricultural Communication Strategy. Need for Efficient Transfer of Technology. *Bangladesh Journal of Extension Education,* 1(2): 91-100.

Sarkar, M.M.R. 1996. Effectiveness of Agricultural Information Disseminated to Farmers' through Agricultural Radio Programme. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Sarker, S. 1995. Communication Media Used by the Small Farmers in Receiving Agricultural Information. *M.S. (Ag. Ext. Ed) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Singh, B., R.S. Narwal and J.S. Malik. 2003. Communication soueces used by extension personnel and farmers'. *Indian Journal of Extension Education*.39 (1&2):26-30.

Uddin, M.A. 1993. Information Received by the Sugarcane Growers in Kotchandpur Thana. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Van den Ban, A.W. and H.S. Hawkins. 1988. *Agricultural Extension*,. 2nd ed. New York: Longman Scientific and Technical.

Wate, F.N. and W.M. Rivera. 1991. New Technology for Transferring Agricultural Information. School of Mass Communications. University of Yaounda, Yaunda, Cameroon.

Westoff, C.F. and G. Rodriguer. 1995. The Mass Media and Family Planning in Kenya. International Family Planning Perspectives.

Appendix-A

(English version of interview schedule)

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

An Interview schedule on the study of

"Use of Mass Media by the Farmers in Adoption of Rice Production Technologies in Bera upazila of Pabna District"

Sample No: .....

Name of the respondent.....

Village Name: .....

1. Age

How old are you? .....Years

2. Education

Please mention your level of education

a) Don't know reading and writing

b) Can sign only

c) I have passed ..... class

3. Family size

How many members are there in your family?

a) Male.....female .....

b) Total.....

4. Farm size

Please mention your land area furnishing the following information

Sl. No	Type of land use	Area of land	
		Local Unit	**Hectare**
1.	Homestead (including pond)		
2.	Own land under own cultivation		
3.	Land given to others on Borga		
4.	Land taken from others on Borga		
5.	Land taken from others on Lease		
Total			

5. Annual family income

Please mention your annual income from the following different sources (last year):

Agriculture

Sl. No.	Source of income	Amount of (Taka)
	Crops	
	Rice Wheat Maije Jute Lentil Keshari Sugarcan	
	Vegetables	
	Brinjal Tomato Potato Onion	

	Fruits	
	Mango Banana Papaya Jackfruit	
	Livestock	
	Cow Goat Buffalo	
	Poultry	
	Duck Hen	
	Fish	
	Others (if any)	
Total =		

B. Non Agriculture

SL. No	Source of income	Amount (TK)
I.	Business	
II.	Service	
III.	Others	
Total=		

Grand Total= A+B

6. Family Assets:

Please provide the information on the following aspects-

A. Agricultural equipments and machinery-

SL. No	Items	Number	Value(taka)
i	Country plough		
ii	Power Thresher		
iii	Paddle thresher		
iv	Shallow tube well		
v	Weeder		
vi	Seeder		
vii	Transplanter		
viii	Seed treater		
Total =			

B. Furniture and goods:

SL. No	Items	Number	Value(taka)
i	House Thatched house Brick wall tin shed Building		
ii	Table		
iii	Chair		
iv	Dress stand		
v	Almirah		

vi	Showcase		
vii	Book Self		
viii	Boat		
ix	clock/watch		
x	Radio		
xi	Television		
xii	Electric fan		
xiii	Bicycle		
xiv	Mobile		
xv	Ornaments (gold)		
xvi	Ornaments (Silver)		
xvii	Computer or Laptop		
Total=			

Grand Total = A+B

7. Organizational Participation:

Please indicate the nature of your participation in the following organization.

SL. No.	Name of the organization	Nature of participation				
		No Participation	General member	Executive member	President/ Secretary	Duration (Year)
1.	Krishok Samabay Samity					
2.	Union Parisad					
3.	Youth Club					
4.	School Committee					
5.	Madrasa Committee					
6.	Mosque Committee					
7.	Different NGO's					
8.	Bazar Committee					
9.	Others					
Total						

8. Innovativeness:

If you use the following technologies, please indicate duration after hearing of its use

Sl No	Name of the technology	Nature of the innovativeness				Never used
		Within 1 Year after hearing	Within 2 Year after hearing	Within 3 Year after hearing	Within 4 Year after hearing	
1.	BRRI dhan 28 (Boro)					
2.	BRRI dhan 29 (Boro)					
3.	BRRI dhan 33 (Aus)					
4.	BRRI dhan 41 (Aus)					
5.	Hybrid dhan 1					
6.	Hybrid dhan 2					
7.	Use of Biofertilizer					
8.	Use of Vermicompost					
9.	Use of Agrosan 5W					
10.	Ribon Retting					
11.	IPM					
12.	Dry Seed bed					
13.	Drum Seeder					

9. Attitude towards modern agricultural technologies

Please give your opinion about the following information

SI. No.	Statements	Extent of agreement/disagreement				
		Strongly agreed	Agreed	No opinion	Disagreed	Strongly disagreed
1(+)	Recommended doses of fertilizers are necessary for increasing agricultural production.					
2 (-)	HYV Rice Cultivation involves a number of cluster technologies which create bothersome					
3(+)	Irrigation is necessary for increasing agricultural production.					
4(-)	Practicing modern agricultural technologies is complex and very costly.					
5(+)	Healthy and quality seed can increase agricultural production.					
6(-)	Country plough is more important than power tiller.					
7(+)	Organic manure improves soil fertility.					
8(+)	Integrated Pest Management (1PM) is environmental and friendly					
9(-)	Control measure of disease increase cost of production					
10 (+)	Alternative wet and dry system is important to increase agricultural production					

10. Agricultural Knowledge:

Please answer the following question

SI No.	Questions	Weight score	Marks obtained
1.	Mention two high yielding varieties of rice	2	
2.	Name two modern varieties of wheat	2	
3.	Name two modern varieties of potato	2	
4.	Name two modern varieties of tomato	2	
5.	Name two winter vegetables	2	
6.	Name two summer vegetables	2	
7.	Name two vegetables which can grow round the year	2	
8.	Mention two characteristics of good seed	2	
9.	Name two fruits of vit-C	2	
10.	Name two medicinal plants	2	
11.	How light trap is used	2	
12.	Mention two urea deficiency symptomps of rice	2	
13.	Mention two agricultural TV programs	2	
14.	Mention two agricultural radio program	2	
15.	Name two agricultural magazines	2	
Total=		30	

11. Use of mass media in adoption of selected rice production technologies

Please mention the extent of use of mass media in receiving information about rice production technologies.

SL. No	Name of Technology	Mass Media	Extent of use				
			Regularly	Often	Occasionally	Rarely	Never
i.	HYV of Rice	Radio					
		Television					
		Newspaper					
		Poster					
		Agricultural fair					
ii.	IPM	Radio					
		Television					
		Newspaper					
		Poster					
		Agricultural fair					
iii.	Gutee Urea	Radio					
		Television					
		Newspaper					
		Poster					
		Agricultural fair					

iv	Drum Seeder	Radio					
		Television					
		Newspaper					
		Poster					
		Agricultural fair					

Thank you for your cooperation

.....

Signature of the interviewer

Appendix - B

Correlation matrix showing intercorrelations among the variables

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
X_1	1.000										
X_2	-0.056	1.000									
X_3	0.592**	-0.299**	1.000								
X_4	0.580**	0.122	0.468**	1.000							
X_5	0.405**	0.099	0.335**	0.845**	1.000						
X_6	0.145	0.166	-0.038**	0.026	0.159**	1.000					
X_7	0.551**	0.094	0.184*	0.423**	0.328**	0.060	1.000				
X_8	0.143	0.467**	0.030	0.343**	0.300**	0.198*	0.201*	1.000			
X_9	0.076	0.298**	0.020	0.090	0.030	0.190*	0.055	0.095	1.000		
X_{10}	0.083	0.511**	-0.026	0.303**	0.244**	0.018	0.130	0.421**	0.081	1.000	
X_{11}	0.193*	0.682**	-0.068	0.428**	0.402**	0.089	0.247**	0.427**	0.175	0.517**	1.000

*= Correlation is significant at 0.05 level of probability
** = Correlation is significant at 0.01 level of probability
Table value of 'r' at 0.01 = 0.237 and 0.05=0.179 with 119 df

X_1 = Age
X_2 =Education
X_3 = Family size
X_4 = Farm size
X_5 = Annual family income
X_6 = Family assets
X_7 = Organizational participation
X_8 = Innovativeness
X_9 = Attitude towards modern agricultural technologies
X_{10} = Agricultural knowledge
X_{11} = Use of mass media by the farmers'