USE OF COMMUNICATION MEDIA BY THE FARMERS IN RECEIVING INFORMATION ON SELECTED WINTER VEGETABLE CULTIVATION

A Thesis

By

YAHIA MOLLA

Reg. No. 00497

DEPARTMENT OF AGRICULTURAL EXTENSION & INFORMATION SYSTEM
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
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Approved by

.....
(Prof. Mohammad Hossain Bhuiyan)
Supervisor

.....
(Prof. Md. Shadat Ulla)
Co-Supervisor

.....
(Prof. Md. Shadat Ulla)
Chairman
Examination Committee

CERTIFICATE

This is to certify that the thesis entitled, " ***USE OF COMMUNICATION MEDIA BY THE FARMERS IN RECEIVING INFORMATION ON SELECTED WINTER VEGETABLE CULTIVATION***" submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfilment of the requirements for the degree of ***MASTER OF SCIENCE in AGRICULTURAL EXTENSION AND INFORMATION SYSTEM***, embodies the result of a piece of bona fide research work carried out by ***YAHIA MOLLA Reg. No.*** **00497** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information, as has been availed of during the course of this investigation has been duly acknowledged by him

Dated: 8-8-07

Place: Dhaka, Bangladesh

.....8-8-07.....

(Prof. Mohammad Hossain Bhuiyan)

Supervisor

DEDICATED
TO
MY BELOVED PARENTS

ACKNOWLEDGEMENT

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The Author

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ABSTRACT

The purpose of the study was to ascertain the extent of use of communication media by the farmers in receiving information on selected winter vegetable cultivation. Attempt was also made to explore the relationship between the concerned variables. Nine selected characteristics (age, education, family size, farm size, annual income, organizational participation, innovativeness, opinion towards improved winter vegetable cultivation and agricultural knowledge) of the farmers constituted independent variables of the study, while use of communication media by the farmers were dependent variable. The findings revealed that 38% of the farmers were young aged, 44% had no education, 46% had large family size, 50% had marginal farm size, 35% had low income, 85% had low organizational participation, 64% had low innovativeness, 41% had low favorable opinion towards improved winter vegetable cultivation and 50% had medium agricultural knowledge. Data were collected during November 9 to December 8, 2006 from 100 randomly selected farmers, who were related to winter vegetable cultivation. Eighty two percent of the respondents had medium use and thirteen percent had high use of communication media in receiving information on selected winter vegetable cultivation. Seventy four percent of the respondents perceived medium effectiveness and 17 percent perceived high effectiveness of communication media of communication media in receiving information on selected winter vegetable cultivation. Sixty percent of the respondent's perceived medium credible and 21 percent perceived highly credible of communication media in receiving information on selected winter vegetable cultivation. Forty seven percent of the respondents perceived medium accuracy and 41 percent perceived high accuracy of communication media in receiving information on selected winter vegetable cultivation. As regard, to relationships, level of education, annual income, organizational participation, opinion towards improved winter vegetable cultivation and agricultural knowledge of the farmers had significant positive relationship with their extent of use of communication media. However, age, family size and innovativeness of the farmers had significant negative relationship with their extent of use of communication media while farm size of the farmers had no significant relationship with their extent of use of communication media. Experienced farmers, relatives, group discussion, input dealers, and neighbors come out as first five effective, credible and accurate communication media in receiving information on selected winter vegetable cultivation having rank order of effectiveness, credibility and accuracy of communication media index respectively.

CHAPTER I

INTRODUCTION

1.1. General Background

Bangladesh is predominantly an agricultural country. Agriculture is the main occupation of the people employing 51.7 percent of the labor force. This sector directly contributes 21.91 percent of the Gross Domestic Product (BBS, 2005). Agriculture supplies raw materials for industrial production and food stuff for human and animal consumption. Improvement of agriculture has crucial importance for economic development of the country. Crop production of Bangladesh needs to be maximized in order to meet the increasing food demand and other basic requirements.

Vegetables are rich source in minerals, vitamins and essential amino acids. Vegetables are considered as one of the most important groups of food crops due to their high nutritive value, labor-intensive production, relatively higher yield and higher return. These are considered as a cheaper source of natural supplementary food and can be grown within short duration. Being labor intensive, vegetable production creates opportunities for employment. In Bangladesh, half of the population are under the poverty line and suffer from various health problems. Severity of malnutrition and iron deficiency (anaemia) is the highest among females of all age groups and children. Approximately one million Bangladeshi children have clinical signs of vitamin A deficiency and more than 900,000 children under 6 years suffer some degree of Xerophthalmia and over 30,000 children go blind each year due to severe vitamin A deficiency. Almost 80% of blind children come from landless households. Recent studies have shown that vitamin A is not only important to prevent blindness but also has effect on digestion of food, child morbidity and mortality. It is estimated that about 80% of the population suffers from vitamin C deficiency (HRDP, 2002).Winter vegetables were grown in 1999-2000 during dry season from October to March in

about 3.52 lac acres of land. The combined winter and summer vegetables production was 9.78 lac tons in 1999-2000 (BBS, 2001). Winter vegetables accounted for 80.52 percent of the total vegetable in 1999-2000. The normal diet of the people of Bangladesh is cereal based, particularly rice based. The intake ratio of cereals and vegetable is about 5:1, whereas in many other developing countries it is about 1:2. Better provide a reference regarding intake of kilo calories per day per person which is less than minimum requirement. The traditional food and culture of Bangladeshi people is one of the reasons for such imbalance in the consumption of cereals and vegetable. Hence, vitamin and mineral deficiency diseases are very common in Bangladesh (HRDP, 2002).

Communication medium has a vital role to carry the messages of improved agricultural practices from the source to the intended audience. It is expected that the winter vegetable production can be increased significantly by improving farmers existing knowledge, skills and availability of the production inputs. A sound system of communication for the effective flow of scientific information through media to the ultimate users has become a burning question of the day. Rogers (1962) after reviewing many studies on media information by stages, made a generalization that impersonal communication media were most important at awareness stage and personal media were most important at the evaluation stage in the adoption process. The communication media suitable in receiving agricultural information to the farmers are not studied with greater emphasis as it should be. Considering the above facts, the researcher felt a thrust to conduct a study in order to identify the communication media used by the farmers in receiving agricultural information on winter vegetable cultivation.

1.2 Statement of the Problem

Agricultural information is now considered as an important input for increased farm productivity. Farmers usually use various media for obtaining farm information. Various research studies reported that the use of communication

media generally varies on the basis of social, economic and psychological setting of the farmers. For identifying the communication media used by the farmers in receiving farm information, it is necessary to find out the answers of the following questions. Moreover, the questions also can guide the study towards an appropriate direction.

1. To what extent the farmers receive information on winter vegetable cultivation from various media?
2. To what extent the farmers utilize the existing communication media for receiving information on winter vegetable cultivation?
3. Which of the communication media are preferred by the farmers in receiving horticultural information?
4. What characteristics of the vegetable growers influence them to use various communication media?
5. How much the communication media are credible to the vegetable growers?
6. To what extent the information are accurately conveyed by mass media?

The various characteristics and situational factors of the farmers might have some kind of relationships with the use of communication media which were also taken into consideration during the study. On the basis of the above discussion, the researcher undertook a piece of study entitled ``Use of communication media by the farmers in receiving information on selected winter vegetable cultivation``.

1.3 Specific objectives

The following specific objectives were formulated to give proper direction to the study.

1. To determine and describe some selected characteristics of the farmers.

   The selected characteristics were:

   i) Age

   ii) Level of education

   iii) Family size

iv) Farm size

v) Annual Income

vi) Organizational participation

vii) Innovativeness

viii) Opinion towards improved winter vegetable cultivation

ix) Agricultural knowledge

2. To determine and describe the extent of use of communication media in receiving agricultural information on winter vegetable cultivation.
3. To find out the effectiveness, credibility and accuracy of communication media used by the farmers in receiving agricultural information.
4. To find out the rank order of the effectiveness, credibility and accuracy of communication media used by the farmers in receiving agricultural information.
5. To explore relationship between the use of communication media by the farmers and their selected characteristics.

1.4 Scope and Limitations of the Study

The findings of the study will be particularly applicable to the Kashiani Upazilla of Gopalganj District. However, the findings may also be applicable in other areas of Bangladesh where the physical, socio-economic and cultural conditions do not differ much with those of the study area. Thus, the findings of the study may be profitably utilized by the planners, policy makers, extension personnel and field workers for successful planning and execution of programmes aimed at effective communication of agricultural information to the farmers in general and vegetable farmers in particular.

The purpose of the study was to have an understanding about the use of communication media by the farmers. However, in order to conduct the research in a meaningful and manageable way it became necessary to impose certain limitations as regard, to certain aspects of the study. Considering the time, money

and necessary resources available to the researcher, the following limitations were identified in conducting.

1. The study was confined to 2 villages of Kashiani Upazilla of Gopalganj district.
2. Population for the present study was kept confined within the heads of the farm families of the farmers, because they were the major decision makers in their families.
3. The investigator had depended on the data furnished by the selected farmers during their interview.
4. Communication media are used by the farmers for various purposes such as farming, business, politics, religion etc. This study investigated the use of communication media by the farmers in receiving information on winter vegetable cultivation.

1.5 Assumption

An assumption is "the supposition that an apparent fact on principle is true in the light of available evidence" (Goode, 1945). The following assumptions were made in connection with the study:

1. The respondents included in the sample were the actual representatives of the farmers in the study area in respect of the use of communication media and selected characteristics.
2. The information provided by the respondents was reliable.
3. The views and opinion, furnished by the farmers included in the sample were considered the views of the whole population of the study area.
4. The communication media included in the study were known to the respondents.
5. The findings of the study will have general application to other parts of the country with similar physical, socio-economic and cultural conditions of the study area.

6. The communication media used by the farmers are linearly related with their selected characteristics.
7. The questions, items and scales were adequate to reflect the use of communication media by the winter vegetable growers included in the study.

1.6 Statement of Hypothesis

According to Goode & Hatt (1952), "A hypothesis is a proposition which can be put to a test to determine its validity". The following hypotheses were formulated to test the relationship between the selected characteristics of the farmers and their communication media use in receiving agricultural information.

1.6.1 Research hypothesis (Ha), the formulated research hypothesis was:

"There is a relationship between age, level of education family size, farm size, annual income, organizational participation, innovativeness and opinion towards improved winter vegetable cultivation, agricultural knowledge of the farmer and their use of communication media". Null hypothesis (Ho) states that there are no relationships between the concerned variables.

For testing the hypothesis statistically, the following null hypotheses were formulated:

1. There was no relationship between age of the farmers and their use of communication media.
2. There was no relationship between level of education of the farmers and their use of communication media.
3. There was no relationship between family size of the farmers and their use of communication media.
4. There was no relationship between farm size of the farmers and their use of communication media.
5. There was no relationship between annual income of the farmers and their use communication media.

6. There was no relationship between organizational participation of the farmers and their use of communication media.
7. There was no relationship between innovativeness of the farmers and their use of communication media.
8. There was no relationship between opinion towards improved winter vegetable cultivation of the farmers and their use of communication media.
9. There was no relationship between agricultural knowledge of the farmers and their use of communication media.

1.7 Definition of Terms

For clarity of understanding, certain terms used throughout the study are defined as follows:

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

Level of education: Referred to the number of years of schooling completed by a respondent.

Family size: Family size of a farmer was defined as the number of individuals in his family living together including himself, his wife, children and other dependent member.

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

Annual income: The term referred to total earning of a respondent himself and other members of his family from agriculture and other source during one year previous to data collection. It was expressed in Taka.

Organizational participation: Organizational participation of a farmer referred to his taking part in different social organizations either as an ordinary member, executive committee member or an executive officer along with duration.

Innovativeness: Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in a social system (Rogers, 1983).

Opinion Towards Improved Winter Vegetable Cultivation: Opinion means one's feeling, beliefs and actions towards an object. The opinion towards improved winter vegetable cultivation means farmer's beliefs, feelings and actions towards an improved farm practice in respect of its adoption in the real situation in on selected winter vegetable cultivation.

Agricultural Knowledge: It referred to the knowledge grained by the farmers from different formal, non formal as well as informal sources and also through their experience of farming.

Communication: Van den Ban and Hawkins (1988) defined communication as the process of sending and receiving message through channels which establishes common meaning between a source and a receiver.

Individual media: The extension agent communicates with the people individually, maintaining separate identity of each person. Example: farm and home visit.

Group media: The extension agent communicates with the people in groups and not as individual persons. Example: group meeting.

Mass media: The extension agent communicates with a mass of people, without taking into consideration their individual or group identity. Example: mass meeting.

Interpersonal channels: Interpersonal channels are those that include peer farmers/neighbors, extension agents, commercial agents, group meeting etc. through which messages are exchanged in a face-to-face situation between communicator and receiver.

Mass media channels: Mass media channels are those that include printing and electronic media such as newspapers, farm magazines, radio, television etc. through which messages are transmitted to the audience.

Use of communication media by the farmers: Use of communication media refers to the channels through which various information are diffused to the farmers about three selected vegetables in winter vegetable cultivation. Fifteen media which were used in this study are:

Sub Assistant Agriculture Officers, experienced farmers, relatives, input dealers, neighbors, local leader, result demonstration, group discussion, farmers' rally, result demonstration meeting, agricultural exhibition, method demonstration, radio, agricultural printed materials and television.

Selected winter vegetable cultivation: The term was referred as the selected vegetables which are related with winter vegetable cultivation. Three vegetables were selected for the study. These were cabbage (Provati, agrodut), tomato (Wild improve variety, Apurbo) and radish (Tasakisanmula-1, pinki).

CHAPTER II

REVIEW OF LITERATURE

The reviews are conveniently presented in accordance with the major objectives of the study. This Chapter is divided into three sections. First section deals with the concept of communication media use in receiving agricultural information and the second section is devoted to a discussion on the findings of studies exploring relationships between the selected characteristics of the clients and their use of communication media. The third section presents the conceptual framework of the study.

2.1 Concept of Communication Media Use in Receiving Agricultural Information

Ahmed (1977) in his study on the use of communication media in jute cultivation found that the role of group contact (38.72 percent) was much greater than those of mass contact (21.23 percent), informal contact (20.44 percent) and individual contact (19.61 percent). However, when the single communication media was considered irrespective of categories, it was found that the highest proportion of citations was for the neighbors, friends and relatives (94 percent). The place of progressive farmer was second in order of individual citations (89 per cent). Islam and Halim (1975) determined that use of media by the farmers in adopting IRRI paddy at different stages of adoption. They found that media vary in relation to their standing on the stages in the adoption process. At awareness stage about 89 per cent of the farmers used personal of information while only 11 per cent used impersonal media. The percentage of citation of the informal media was much higher (58 percent) than that of the formal interpersonal media (31 percent).

In interest stage about 97 percent of the farmers cited interpersonal media of information compared to only about 3 percent who cited use of impersonal media. At this stage also the informal personal media were cited to a greater extent (68 percent) than the formal personal media (29 percent).At evaluation stage the

personal media of information were cited 90 times while the impersonal media were cited only 2 times. However, the formal personal media of information had a higher percentage of citations (63 percent) than the informal personal media (35 percent).

At trial and adoption stage it was observed that the citations of media were more or less like for all five practices. In each case the use of personal media fairly dominated over the use of impersonal media. Formal personal media always had a fairly higher percentage of citations compared to the informal personal media.

Rahman (1974) conducted a study on the use of communication media by the registered jute seed growers of Meherpur Thana and he observed that the extension agent was used to the highest extent (99 percent) which was followed in descending order by friends and neighbors (96.8 percent), model farmer and manager (52 percent) office call (52 percent), training at Thana Training and Development Centre (35 percent), farm and home visit (43 percent) publication (35 per cent), radio (21 percent), newspaper (13 percent) and demonstration (8 percent).

While conducting a study on the farmers` preference for mass media, Karim (1974) found that the farmers learned the selected farm practices from more than one mass media. Most of them became aware of the `use of fertilizers` from the radio farm forum (71 percent). The other media such as poster (26 percent), agricultural exhibition (22 percent) and film show (20 percent) were partially successful in the awareness and interest stages. A small number of them consulted Krishikatha (18 percent), agricultural bulletin (11 percent) and circular letter (7 per cent) for technical information.

Quite a large number of growers heard about the importance of `plant protection measure` from radio (81 percent). The film show (25 percent), poster (19 percent) and agricultural exhibition (9 percent) worked as the auxiliary media. The cultivators also read Krishikatha (20 percent) circular letter (8 percent) and

agricultural bulletin (7 percent) to meet their technical information about plant protection measure. On farmers preference, the mass media used expressed in descending order radio, film show, poster, agricultural exhibition, agricultural bulletin, krishikatha and circular letter respectively.

Field studies conducted by Wilson and Gallup (1955) on Extension Teaching Methods indicated wide differences in the influence of the various extension teaching methods upon the adoption of farm and home practices. The study showed that 81 practices out of 100 were adopted as the result of the various teaching methods, 25 were credited to individual contacts, 33 to group contacts, and 23 to mass media methods. The indirect influence resulting from the direct teaching effort accounted for 19 percent of the new practices.

Jain and Caldwell (1970) studied the use of communication media in different stages of adoption which may be summarized as follows:

Awareness stage- mass media were the most important information media at this stage, followed by commercial and informal media. **Interest stage-** informal media occupied the first position, followed by commercial and mass media. **Evaluation stage-** Commercial media ranked first, followed by informal and mass media. **Trial stage-** informal media ranked first, followed by commercial and mass media. **Adoption stage-** Commercial media occupied the first position, followed by mass media.

Karim (1969) found that respondents mentioned more than one communication media for learning about improved rice farming. He found that 97 percent of the entire study group mentioned friends and neighbors as communication media, while 26 percent named result demonstration, field tour, method demonstration, meeting, and short course training as the sources of farm information. About one-fourth (23 percent) of the farmers cited farm visit and office call as sources of farm information and about one-fifth (19 percent) mentioned radio, motion

picture, poster, agricultural magazine, newspaper and pamphlets as information source for improved rice farming.

Rahim (1963) in a diffusion study assessed how information on improved farm practices reached the farmers through some selected communication channels, and the variation in the use of these channels, if any, took place in relation to different stages in the adoption process. It was revealed that formal personal sources were the most frequently cited media at the awareness stage. These were closely followed by impersonal media. However, informal personal media were cited least often.

The situation was totally reversed at the information stage. Informal personal media were most frequently cited followed by formal personal media. Impersonal media received minimum citations. At the trial stage, however, formal personal media became the most frequently cited sources followed by informal media. There was no citation for impersonal media at this stage. Interestingly, some of the respondents consistently reported the use of same media from awareness to trial stages.

Impersonal media played a significant role in making people aware. Personal media remained a major media of communication for almost all the people at each stage of the adoption process. Among the personal media, the informal personal media (e.g. family, friends, neighbors and other persons within the community who have tried or adopted the practices) were the most important at the information stage. At the trial stage, the formal personal media were the most important ones.

Copp and others (1958) in a combined study on the function of communication media in farm practice adoption process found the following of commonly used communication media as the farmers moved from one stage to another in the adoption process. In the awareness stage, magazines and printed extension

materials were the commonly used media by the farmers. In the interest stage, printed and oral extension were the most cited media of farm information.

In the acceptance stage, personal influence in face- to - face situations was the most commonly cited media. Therefore, oral extension and peer group influence were the most effective media at this stage. Media furnishing detailed instructions for ``how do I apply it ``? Were quoted most often media in the trial stage. Therefore, printed extension materials, farm visits, demonstrations and neighbors who had already adopted the practice, were the commonly cited communication media in this stage.

Sarker (1995) is his study found that 99 per cent of the small farmer had low to medium use of communication media in receiving agricultural information for performing various farming operations. He also indicated that the small farmers mostly preferred locality and non-professional media for getting agricultural information.

2.2 Review of Studies on the Selected Characteristics of Farmers and Use of Communication Media

2.2.1 Age and use of communication media

Sawhney (1969) observed that the farmers of different age groups differed in their use of information media. He observed that with the increase of age there was increasing use of localite media and diminishing use of personal cosmopolite and mass media.

Karim (1969) reported that though three age levels had certain degree of influence upon the rice growers in using the communication media the relationship was found to be statistically insignificant.

Huque (1972) found no relationship between age of IRRI rice growers and use of communication media. Accordingly, the investigator concluded that age had no significant influence on the use of communication media.

Rahman (1974) observed no relationship between age of registered jute seed growers and use of communication media.

Ahmed (1977) in his study found that age of the farmers had no significant influenced on the use of communication media in the adoption of improved farm practices.

Roy (1981) reported that the age of the small income farmers had no significant effect in using communication media on use of balance dose of fertilizers.

Bhuiyan (1988) found in his study that age of the farmers had significant negative correlation with the use of communication media in the adoption of selected improved farm practices in rice cultivation.

Sarker (1995) observed a negatively insignificant relationship between age of the small farmers and their use of communication media in receiving agricultural information.

Most of the research findings on age and their use of communication media showed that either the variables were independent or they showed negative relationships. This means that age of the farmers did not possess any significant influence upon their use of communication media in receiving agricultural information and cases, use of communication media decreased with increase of age of the respondents.

2.2.2 Level of education and use of communication media

Rahman (1974) found that the level of education of the respondents had significant influence on the use of communication media.

Ahmed (1977) found that education had no effect on the use of communication media in the adoption of recommended variety of jute, recommended dose of fertilizer but showed an effect of education on the use of communication media and the relationship was positive.

Roy (1981), in his study found that education contributed positive relationship in receiving information on the use of balanced fertilizer dose by the small farmers.

Hossain (1981) in his study found that there was no relationship of education of the farmers with their adoption of improved practices.

Halim (1982) in his study on schooling, extension and agricultural production found that increase of educational level of the farm operators resulted increased per acre production of rice, jute and net farm income of the farm, but this positive trend between level of education and increased production tended to fall in those farms where the operator received more the secondary level of education. He found significant regression between level of formal schooling of the farm operator and per hectare production of jute and rice which also resulted significant increase in net farm income.

Bhuiyan (1988) showed that education had positive and significant contribution on the comprehensive use of communication media.

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

The above research findings suggested that in most of the cases level of literacy of the farmers encouraged them to maintain better contact with various communication media resulting more adoption of practices.

2.2.3 Family size and use of communication media

The family is the basic social institution with socially recognized rights and obligations. Research study relating to the effect of family size in receiving agricultural information are presented below:

Bose (1961) in his study on peasant values and innovations in India did not find any relationship between family size and adoption of improved agricultural practices.

Wilson (1963) opined that farmers with smaller families spent more time with mass media than those with larger families. Further, he added that those who read

and listened to the radio had smaller families and were older than the non readers and non listeners.

Hossain`s (1971) study in Gouripur union of Mymensingh district revealed a significant positive relationship between family size and adoption of each of the four recommended practices, namely, recommended variety of transplanted aman paddy, line transplanting methods, recommended doses of fertilizers and plant protection measures.

Ahmed`s (1977) study showed that family size had significant influence on the use of communication media in the adoption of plant protection measures.

Sarker (1995) reported a negatively insignificant relationship between family size of the small farmers and their communication media use.

Findings of the studies presented above indicate that majority members of smaller families had more exposure to mass media. As a result, these families collected more information than larger families and also had more adoption.

2.2.4 Farm size and use of communication media

Karim (1965) concluded in his study that the influence of farm size on the use of information media by the cotton growers was found to be statistically significant.

Sawhney (1969) showed that with increasing farm size there was increasing use of cosmopolite source and diminishing use of personal localite media.

Karim (1969) divided the rice growers into three categories according to the size of holsding namely small, medium and large. He then compared the three groups in respect of their use of the different information media such as individual contact method, group contact methods, mass contact methods and indirect contact methods. It was found that the use of all the four types of information media was increased as the size of holding increased. Wilson also found a positive relationship bvetween the size of crop land of the farmers and their time use for information media.

Hossain`s (1971) study in gouripur union of Mymensingh district revealed a significant positive relationship between farm size and adoption of each of the four recommended practices, namely, recommended variety of transplanted aman paddy, line transplanting methods, recommended doses of fertilizers and plant protection measures.

Rahman (1974) found that there was a positive relationship between farm size and use of communication media.

Ahmed`s (1977) study showed that farm size had significant influence on the use of communication meida in the adoption of plant protection measures.

Bhuiyan (1988) found in his study that farm size had significant positive correlation with the use of communication media in the adoption of selected improved farm practices in rice cultivation.

Sarker`s (1995) study showed that farm size of the small farmers possesses a significant amount of influence upon their decision on using communication media of information.

Majority of the researchers opined that the farm size had relationship with the use of various communication media and adoption of improved farming practices.

2.2.5 Annual income and use of communication media

Sawhney (1965) showed that income was positively related to use of different communication media.

Rahman (1974) showed that annual income of the farmers and their use of communication media are significantly related.

Latif (1974) observed a significant positive relationship between income of the farmers and their communication exposure.

Ahmed (1977) found that income of the farmers had significant effect on the use of communication media in the adoption of plant protection measures.

Roy (1981) showed that farmers annual gross income to certain extent increase the receiving of information through different communication media for the use of balanced fertilizer dose. He also found that the more the income of farmers, the greater was their tendency to use all possible communication media for getting modern farm technology like use of balanced fertilizer dose.

Bhuiyan (1988) reported that the regression co-efficient of income towards use of communication media were statistically not significant and was concluded that income was not related to the comprehensive use of the communication media by the farmers.

Majority of the research findings indicated that the annual income of the farmers had significant relationship with their use of communication media and adoption of technologies.

2.2.6 Organizational participation and use of communication media

Rahim (1963) showed a significant and positive association ship between contact scores and membership in organizations participation.

Sawhney (1969) found that the farmers who were more actively participating in formal organizations used for more cosmopolite media and less locality media than those who were participating less actively or not at all.

Beal and sibley (1967) concluded that there was a positive relationship between organizational participation by the farmers and their use of agricultural technology.

Haque (1972) found a high positive relationship between socioeconomic status of the farmers and use of communication media. The socio-economic status scale consisted of farm size, annual income, educational level and social participation of the farmers in addition to other items included in the scale.

Roy (1981) in his study indicated that organizational participation of small income farmers had significant positive effect on their communication behavior receiving information on the use of balanced doses of fertilizer.

Bhuiyan (1988) observed that the regression coefficient of organizational participation towards use of communication media was statistically not significant and was concluded that organizational participation was not related to comprehensive use of communication media by the farmers.

Sarker (1995) in his study revealed that the use of communication media by the small farmers had significant positive correlation with their organizational participation.

On the basis of research findings mentioned above it may be concluded that the organizational participation enable the farmers in maintaining better exposure with various communication media resulting greater adoption of improved farming practices.

2.2.7 Innovativeness and use of communication media

Rahim (1963) concluded in his study that adoption improved farming practices/agricultural technology by the farmers was positively related to their contact with communication media.

Beal and sibley (1967) found that there was a positive relationship between communication behavior of the Indian Guatemala and their adoption of agricultural technology.

Kashem and Halim (1991) found in their study that innovativeness of the farmers had significant positive correlation with their (farmers) self confidence, use of communication media in adoption of modern rice technology, use of communication media in livestock production, use of communication media in adoption of total agricultural technology.

2.2.8 Agricultural knowledge and use of communication media

Kashem and Halim (1991) found in their study that agricultural knowledge had significant positive correlation with competence as farmers, belief and attitudes towards agricultural technologies, behavior intent, innovativeness, self-

confidences cosmopoliteness, use of communication media in the transfer of modern rice technologies, use of communication media in livestock production, use of communication media in fish culture and use communication media in adoption of total agricultural technologies.

Sarker (1995) in his study on communication media used by the small farmers in receiving agricultural information found that the agricultural knowledge of the farmers is highly correlated with their communication media use.

This means that agricultural knowledge of the farmers played an important role in the adoption of farming practices. Therefore, it may be concluded that agricultural knowledge of the farmers influence them to maintain contact with various information sources and adoption of improved farming practices as well.

2.3 The Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. The hypothesis of a research while constructed properly contains at least two important elements i.e. "a dependent variable" and " an independent variable". A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variables. An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. A simple conceptual framework for the study is shown in Fig. 2.1. It anticipates that there are functional relationships of the 9 selected characteristics of the farmers (independent variables) with extent of use of communication media (dependent variable).

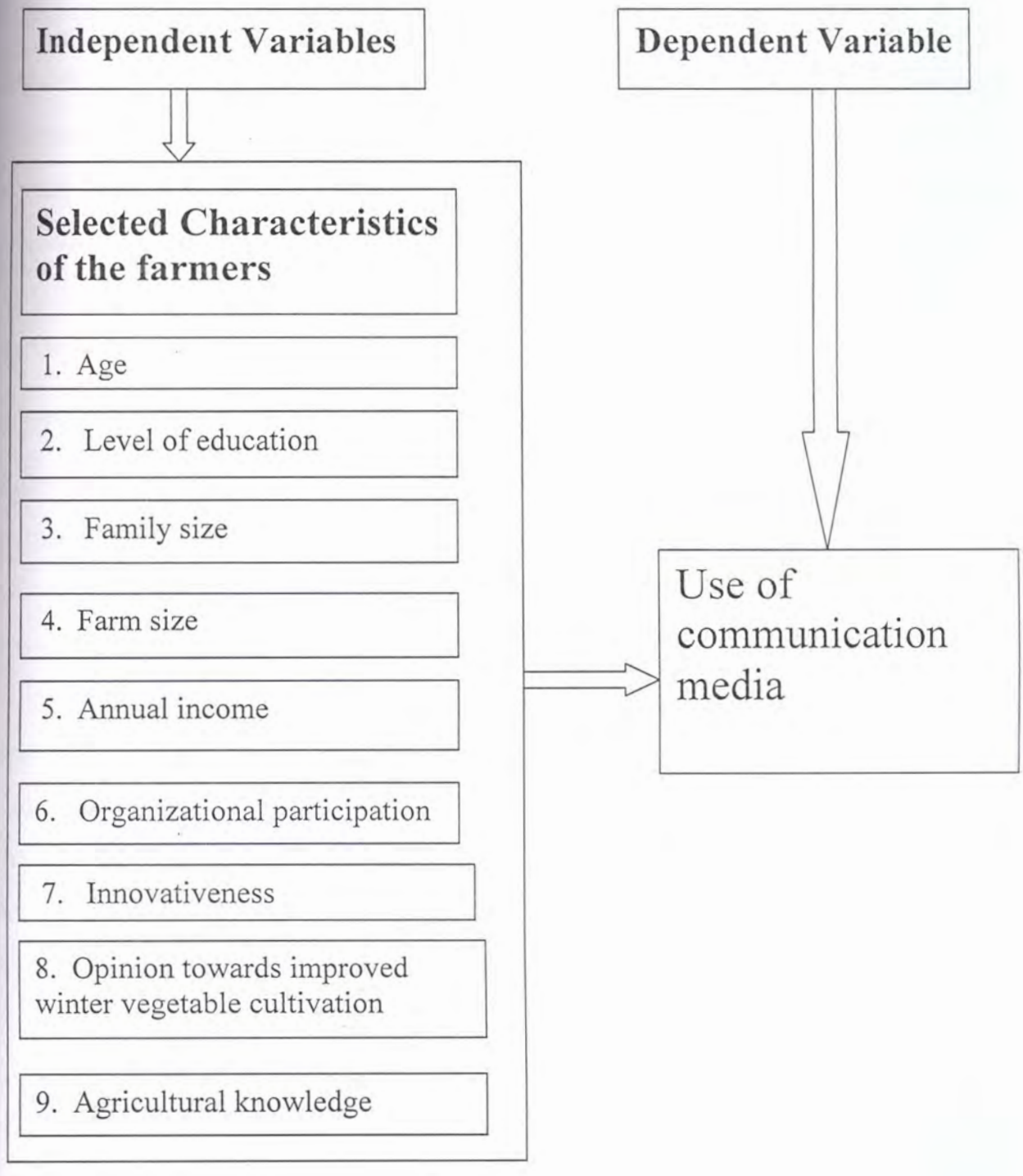

Figure 2.1 Conceptual Framework of the study

CHAPTER III

METHODOLOGY

Importance of methods and procedures in conducting any research can hardly be overemphasized. Methodology should be such as it would enable the researcher to collect valid information and to analyze that properly to arrive at correct decisions. Keeping this in mind the researcher took almost care for using proper methods in all aspects of this investigation. This Chapter describes the methodology used in conducting the study.

3.1 The Locale and Population of the Study

Fukra union of Kashiani Upazilla under Gopalganj District was selected purposively as the locale of the study. The study area is presented in figure 3.1. Out of 15 villages of these union two villages namely shaflidanga and Gojaria were selected by multi stages random sampling technique. The farmers of these villages were chosen as the population of the study. The area was purposively selected mostly because the farmers of this area grow vegetables (winter and summer vegetable) in large scale. Besides, the researcher had earlier familiarity of the area, and language and culture of its people.

3.2 Sampling Design

All the vegetable growers of Shaflidanga and Gojaria who cultivated winter vegetables constituted the population for the study. An up-dated list of farmers was prepared with the help of union parishad members, local educated persons, NGO workers and Sub-Assistant Agricultural Officer of these villages. The total number of vegetable grower families in the two villages were 502. Twenty percent of the farmers were selected at random by using Random Numbers of a Scientific Calculator which constituted the sample of the present study. Thus 100 vegetable growers constituted the sample of the study.

Study area

Figure 3.1 A map of Kashiani Upazilla of Gopalgonj District showing the study area

Distribution of farmers in accordance with the total population of the villages and the number included in the sample is presented in Table 3.1.

Table 3.1 Distribution of the farmers in population and sample for the study

Name of the village	Total number of farm families	Sample size
Gojaria	182	36
Shaflidanga	320	64
Total	502	100

3.3 The Research Instrument

In order to collect information, an interview schedule was developed considering the objectives of study. The schedule was constructed containing direct and simple questions in open form and close form keeping view the dependent independent variables. Bengali version schedule was used for clear understanding both interviewer and interviewee during data collection. Appropriate scales were developed to measure both independent and dependent variables.

The interview schedule was pre-tested with ten farmers in actual field situation before finalizing it for collection of data. Necessary corrections, additions, alternations, rearrangements and adjustments were made in the schedule based on pretest experience. The schedule was then cyclostyled in its final form. A copy of the English version of the interview schedule is presented in APPENDIX A.

3.4 Data Collection Procedure

Data were collected through house to house survey by the investigator himself. All possible efforts were made to explain the purpose of the study to the respondents. Before going to the respondents for interview, appointments were made earlier so that they could be available at their respective homes on the schedule date and time. While interviewing a farmer, the researcher took all the possible care to establish rapport with the farmers so that they did not hesitate to furnish proper responses to the questions and stated in the schedule.

Whenever any respondent faced difficulty in understanding questions, more attention was taken to explain the same with a view to enabling him to answer properly.

No serious problem was faced by the investigator during data collection. He obtained co-operation from the respondents, Sub-Assistant Agricultural Officer, NGO workers and others. Data collection was started on November 9, 2006 and completed on December 8, 2006.

3.5 Variables of the Study

Two types of variables such as dependent and independent variables were measured. The procedure followed in measuring dependent and independent variables are discussed below:

3.5.1 Measurement of independent variables

Age: Age of a farmer was measured in terms of years from his birth to the time of interview. The age of a respondent was measured in terms of actual years on the basis of his response.

Level of Education: Level of 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 score one for each year of the successful schooling. If a person acquired education from informal or non-formal sources, his education was assessed in terms of the standard of a normal school. Example, if a respondent did not know how to read and write his literacy was taken as zero (0). A score of 0.5 was given to that respondent who could sign his name only. Besides a respondent got actual score of one for every year of schooling i. e. 1 for class one, 2 for class two and so on.

Family size: Size of the family was measured by the total number of family members of a respondent including himself, his wife, children and others dependent fully or partially on his income. The total number of family members

were considered as the family size score of a respondent. For example, if a respondent has 7 members in his family score of his family size was taken as 7.

Farm size: Farm size was estimated in terms of full benefit to the respondent. It was measured in terms of hectares by using the following formula-

Farm size = $A_1+A_2+A_3+1/2(A_4+A_5)$

Where,

A_1 = Homestead area (including pond)

A_2 = Cultivated area owned by a respondent

A_3 = Cultivated area taken on lease by a respondent from others.

A_4 = Cultivated area given by a respondent to others on tenant.

A_5 = Cultivated area taken by a respondent from others on tenant.

Annual Income: Income of a respondent was measured in monetary term i.e. in Taka. It was computed on the basis of a farmer's total yearly earnings in thousand taka from farming and non-farming sources. At first the yields of all the crops produced in the immediate previous year of the study were converted into cash according to the market price. Earning from other non-farm activities (service, business, others) of the respondents were also included in calculating the income. Yearly earnings from farming and non-farming activities were added together to obtain the total income of a respondent.

Organizational participation: The organizational participation score was computed for each respondent on the basis of his membership with eleven different types of organizations as shown in the item number 6 of the interview schedule.

The following scale was used for computing the organizational participation score.

Categories of participation	**Score**
a. Participation as executive officer for one year	3
b. Participation as executive committee member for one year	2

c. Participation as ordinary member for one year 1

d. No participation 0

The score could range from 0 to 66, while 0 indicating no participation and 66 indicating high participation and observed range from 5 to 60. Organizational participation score of a respondent was obtained by multiplying the score of his participation status with the corresponding duration (in year) in all the organizations and then added together.

Therefore, the total score of organizational participation was computed in the following way:

Organizational participation score $=\sum O_1 \times 1 + \sum O_2 \times 2 + \sum O_3 \times 3$

Where,

O_1 = Total duration (year) of participation as ordinary member

O_2= Total duration (year) of participation as executive committee member

O_3= Total duration (year) of participation as executive officer

Innovativeness: Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in asocial system (Rogers, 1983). Here, innovativeness of a respondent was measured on the basis of the adoption of 6 improved selected varieties of cabbage (Provati, Agrodut), tomato (LIV, Apurbo) and radish (Tasakisanmula-1, Pinki) by the respondents. The score was assigned on the basis of time dimension which means actual number of years through which a respondent used the technology continuously. The scoring was done in the following manner:

Adoption period	Assigned score
6-7 years	4
4-5 years	3
2-3 years	2
1 year	1
Never used	0

Thus, the innovativeness score of a respondent was obtained by adding his scores for all the six items and it could range from 0 to 24 where 0 indicating never used and 24 indicating high innovativeness and observed range from 0 to 21.

Opinion towards improved winter vegetable cultivation: Opinion means one's feelings, beliefs and actions toward an object, concept etc.

This variable was operationalized by developing an opinion scale, following likert method of summated ratings, that reflected a farmer's belief, feelings and action tendencies towards improved winter vegetable cultivation. A five point scale was used to measure the opinion of the farmers towards improved winter vegetable cultivation. In case of positive statement weights were assigned to each of the responses such as 4 for `strongly agree` 3 for `agree` 2 for no opinion, 1 for disagree` and 0 for `strongly disagree`. In case of negative statement the score was reversed. The score could range from 0 to 80, while 0 indicating no opinion and 80 indicating high favorable opinion and observed ranged from 44 to 73.

Agricultural knowledge: It referred to the knowledge gained by the farmers from different media and also through their experience of farming. The farmers were asked 25 questions each carrying 2 scores on different aspects of agriculture. The total assigned score on all the questions was 50. A respondent obtained 2 from each question for each correct answer, for wrong answer he obtained zero. Partial score was given for partially correct answer. The total score obtained by a respondent was taken as the agricultural knowledge score of the respondents. The score could range of 0 to 50, while 0 indicating very low knowledge and 50 indicating very high knowledge and observed range from 8 to 38.

3.5.2 Measurement of the Dependent Variable

Use of communication media in receiving agricultural information on selected winter vegetable cultivation was the dependent variable of the study. The researcher selected three broad types of communication media namely, individual, group and mass media comprising of fifteen media in total. The researcher

selected the following media of information for studying their extent of use by the farmers.

1. Individual media: Sub- Assistant Agricultural Officer, experienced farmer, relatives, input dealers, neighbors, local leaders and result demonstration

2. Group media: Group discussion, farmers' rally, result demonstration meeting, agricultural exhibition and method demonstration

3. Mass media: Radio, agricultural printed materials and Television

The communication media used by the farmers were measured on the basis of their responses regarding the extent of use of the above mentioned 15 media in receiving information on winter vegetable cultivation during the immediate passed year. Hence, the use of each of the fifteen communication media was first ascertained by computing their using score. Five point scales were used to compute the extent of use of communication media. Then the extent of use of communication media score of a respondent for the fifteen media were added together to ascertain his total score in receiving agricultural information on winter vegetable cultivation. In this regard weight was assigned to each of the five types of responses provided by the farmers in the following manner.

Responses	Weight
Regularly	4
Often	3
Seldom	2
Rare	1
Not at all use	0

Thus, the use of communication media score of a respondent could range from 0 to 60 where, 0 indicates very low use and 60 indicate very high use of communication media in receiving agricultural information and observed range from 25 to 41.

3.6 Measurement of effectiveness of communication media: The effectiveness of the communication media was measured on the basis of responses provided by the farmers regarding the extent of effectiveness of information. Five point scales namely " very effective ", "effective", moderate effective", "less effective", not effective at all" was used to measure the extent of effectiveness of the above mentioned 15 communication media.

In this regard, weight was assigned to each of the five types of responses provided by the farmers in the following manner:

	Responses	Weight
a.	Very effective	4
b.	Effective	3
c.	Moderate effective	2
d.	Less effective	1
e.	Not effective at all	0

Thus, the effectiveness score of a respondent was obtained by adding the scores of all the fifteen items and it could range from 0 to 60, where, 0 indicated very low effectiveness and 60 indicated very high effectiveness and observed range from 23 to 53.

A media effectiveness index (MEI) was computed for each medium to measure the extent of its effectiveness more accurately. Procedure for computing the index has been given below:

$MEI = f_{ve} X4 + f_e X3 + f_{me} X2 + f_{le} X1 + f_{ne} X0$

Where,

MEI = Media effectiveness index

f_{ve}= Frequency of very effective

f_e= Frequency of effective

f_{me}= Frequency of moderate effective

f_{le}= Frequency of less effective

f_{ne}= Frequency of not effective at all

3.7 Measurement of credibility of communication media: The credibility of the communication media was measured on the basis of responses provided by the farmers regarding the extent of credibility of information. Five point scales namely, "highly credible", "credible", "moderately credible", "less credible" and "not at all credible" was used to measure the extent of credibility of the above mentioned 15 communication media.

In this regard, weight was assigned to each of the five types of responses provided by the farmers in the following manner:

Responses	Weight
a. Highly credible	4
b. Credible	3
c. Moderately credible	2
d. Less credible	1
e. Not at all credible	0

Thus, the credibility score of a respondent was obtained by adding the scores of all the fifteen items and it could range from 0 to 60, where, 0 indicate not at all credible and 60 indicate highly credible and observed range from 20 to 37.

A media credibility index (MCI) was computed for each medium to measure the extent of its credibility more accurately. Procedure for computing the index has been given below:

$MCI = f_{vc} X4 + f_c X3 + f_{mc} X2 + f_{lc} X1 + f_{nc} X0$

Where,

MCI = Media credibility index

f_{vc}= Frequency of very credible

f_c= Frequency of credible

f_{mc}= Frequency of moderate credible

f_{lc}= Frequency of less credible

f_{nc}= Frequency of not credible at all

3.8 Measurement of accuracy of communication media: The accuracy of the communication media was measured on the basis of responses provided by the farmers regarding the extent of accuracy of information. Five point scale namely " very accurate", "accurate", "moderate accurate", "less accurate" and "not accurate at all" was used to measure the extent of accuracy of the above mentioned 15 communication media.

In this regard, weight was assigned to each of the five types of responses provided by the farmers in the following manner:

Responses	Weight
a. Very accurate	4
b. Accurate	3
c. Moderate accurate	2
d. Less accurate	1
e. Not accurate at all	0

Thus, the accuracy score of a respondent was obtained by adding the scores of all the fifteen items and it could range from 0 to 60, where, 0 indicated no accuracy and 60 indicated very high accuracy and observed range from 26 to 52.

A media accuracy index (MAI) was computed for each medium to measure the extent of its accuracy more accurately. Procedure for computing the index has been given below:

$MAI = f_{va} X4 + f_a X3 + f_{ma} X2 + f_{la} X1 + f_{na} X0$

Where,

MAI = Media accuracy index

f_{va}= Frequency of very accurate

f_a= Frequency of accurate

f_{ma}= Frequency of moderate accurate

f_{la}= Frequency of less accurate

f_{na}= Frequency of not accurate at all

3.9 Methods of Analysis

Data collected from the respondents were complied, tabulated and analyzed in accordance with the objectives of the study. Various statistical measures such as number and percentage distribution, average and standard deviation were used in describing data. The categories and tables were also used in presenting data for better understanding.

For determining the association of the selected characteristics of the farmers with their use of communication media in receiving agricultural information, Pearson's Product Moment Correlation was used. Five percent (0.05) level of probability was used as the basis for rejecting any null hypothesis.

CHAPTER IV

RESULTS AND DISCUSSION

A sequential and detailed discussion on the findings of the study has been presented in this Chapter. The Chapter is divided into six sections. In the first section, independent variables i.e. characteristics of the respondents have been discussed. The second section dealt with dependent variable use of communication media by the farmers in receiving information on winter vegetable cultivation. The third, forth and fifth sections dealt with effectiveness of communication media, credibility of communication media and accuracy of communication media respectively and finally, the relationship between the dependent and independent variables have been discussed in the sixth section.

4.1 Characteristics of the Farmers

The prudent use of agricultural technologies is the key to agricultural progress (Kashem, 1990). Farmers use modern technologies when they find those useful in their own socio-economic set-up and agro-economic settings. Moreover, farmer's individual characteristics and personal make-up play a vital role in adopting any agricultural practice in the overall technology transfer process. A particular technology might be proved beneficial or suitable for a farmer but he may not be in a position to accept it due to his varied mental make-up and situational factors. The individual characteristics of the farmers may greatly vary and the various factors might have great impact on their use of various communication media.

4.1.1 Age

Age of the respondents ranged from 20 to 75 years, the mean being 42.72 years and the standard deviation 13.92. The farmers of the study group were classified into three categories on the basis of their age, such as (i) Young, (ii) Middle, (iii) Old (Table 4.1).

Table 4.1 Distribution of the farmers according to their age

Categories according to age	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Young (20- 35)	38	38	42.72	13.92
Middle (36-50)	34	34		
Old (above 50 years)	28	28		
Total	100	100		

Data presented in Table 4.1 indicate that the highest proportion (38 percent) of the respondents were young aged farmers compared to 34 percent middle and 28 percent old aged. Thus, 72 percent of the farmers were either young or middle aged. Young and middle aged people are generally more receptive to new ideas and practices. They maintain better communication with various communication media available in the rural areas. They are usually influential partner in making decisions regarding farming affairs.

4.1.2 Level of Education

The education score of the respondents ranged from 0 to 16 with a mean of 5.30 and standard deviation of 4.93. Based on their education scores, the farmers were categorized into 4 groups as shown below:

Categories	**Education score**
No education	0- 0.5
Primary education	1-5
Secondary education	6-10
Above secondary education	above 10

Data presented in Table 4.2 indicate that the highest proportion (44 percent) of the farmers had no education compared to 12 percent having above secondary level education and 36 percent had secondary education. Only 8 percent of the respondents in the study area had primary level of education. Thus more than half (52%) of the respondents had no primary level of education.

Table 4.2 Distribution of the farmers according to their education

Categories according to education	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
No education (0- 0.5)	44	44	5.30	4.93
Primary (1-5)	8	8		
Secondary (6-10)	36	36		
Above secondary (above 10)	12	12		
Total	100	100		

Farmers need to have some education in order to use various agricultural information media properly. It is evident that 56 percent of the farmers had education of various degrees from primary to above secondary level and 44 per cent of the farmers had no education in the study area. Thus, it can be said that in the study area the education of the farmers was relatively lower compared to the national average, 62.66% (BBS, 2004).

4.1.3 Family size

Family size of the respondents ranged from 3 to 13 with a mean of 6.41 and standard deviation of 2.31. Based on the family size, the farmers were classified into three categories such as (i) Small, (ii) Medium and (iii) Large (Table 4.3).

Table 4.3 Distribution of the farmers according to their family size

Categories according to family size	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Small (upto-4)	22	22	6.43	2.31
Medium (5-6)	32	32		
Large (above 6)	46	46		
Total	100	100		

Analysis of data indicate that the highest proportion (46 percent) of the farmers had large family size, 32 percent had medium family size and 22 percent had small size of family.

It is expected that the family having more number could invest better labor in their farming enterprises than those of the farmers having small size family. Seventy eight percent of the farmers having medium to large size families may have scope to invest more labor force in their vegetable farms.

4.1.4 Farm size

The respondents' farm size ranged from 0.15 hectares to 6.67 hectares with a mean of 1.54 hectares and standard deviation of 1.50. Based on their farm size, the farmers were classified into the following four categories.

Categories	Farm size
Marginal	upto-1 hectares
Small	1.01- 2 hectares
Medium	2.01 - 3 hectares
Large	above 3 hectares

Table 4.4 shows that 75 percent farmers of the study area belonged to either marginal or small farm size categories. And remaining 25 percent fell under either medium or large farm size categories. This means that 75 percent farmers are the owners of 25 percent of land area and inversely 25 percent of farmers occupy 75 percent of land area.

Table 4.4 Distribution of the farmers according to their farm size

Categories according to farm size	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Marginal (upto 1)	50	50	1.54	1.50
Small (1.01-2)	25	25		
Medium (2.01-3)	12	12		
Large (above 3)	13	13		
Total	100	100		

Marginal and small farmers cultivate their land by themselves and also take others land on lease or share cropping. So, they have commitment to their own family members and also to their landlords. In this condition they were supposed to seek innovation-information through various communication media. Medium or big farmers also seek innovation-information for themselves and for their tenant farmers. Particularly for vegetable growers, use of communication channels is invetible.

4.1.5 Annual Income

Respondents' annual income ranged between 15 to 871.00 Tk. with a mean of Tk. 191.07 and standard deviation of 181.18. The farmers were classified into the following four categories according to their income level.

Categories	Income ('000' taka)
Very low income	upto-50
Low income	51-100
Medium income	101-200
Large income	above 200

Table 4.5 indicates that twenty percent of the total farmers had medium income compared to 35 percent of them having low income. Thirteen percent of them had very low income and 32 percent of the total farmers fell in large income group respectively.

Table 4.5 Distribution of the farmers according to their annual income

Categories according to annual income	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Very low income (upto- 50)	13	13	191.07	181.18
Low income (51-100)	35	35		
Medium income (101-200)	20	20		
Large income (above 200)	32	32		
Total	100	100		

It is revealed from Table 4.5 that as regard, to annual income, three-fourth of the respondent farmers had very low to medium income. Very few of the respondents had income less than national average. However, the average annual income of the farmers of the study area is about 6 times high than that of national average. This might be due to the fact that the farmers of the study area were not engaged in only agricultural activities. They earned from other sources such as service, business etc.

4.1.6 Organizational participation

The organizational participation scores of the respondents ranged from 5 to 60, with a mean of 35.18 and the standard deviation of 31.39. The respondents were classified into three categories such as (i) Low participation, (ii) Medium participation and (iii) High participation (Table 4.6) on the basis of their organizational participation.

Table 4.6 Distribution of the farmers according to their organizational participation

Categories according to organizational participation	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low participation (1- 50)	85	85	35.18	31.39
Medium participation (51-100)	12	12		
High participation (above-100)	3	3		
Total	100	100		

Data presented in Table 4.6 indicate that the highest proportion (85 percent) of farmers had low organizational participation compared to 12 percent medium participation and only 3 percent high participation. This means that the respondents of the study area are mostly engaged in their farm works and do not participate in other social activities. Social participation was very much important for self actualization as well as technological information generation. However, a very few of them maintained high and medium social participation.

4.1.7 Innovativeness

The innovativeness score of the respondents ranged from 0 to 21, against the possible range of 0 to 24. The mean innovativeness score was 6.66 and the standard deviation was 4.50. Based on the innovativeness scores, the respondents were classified into the three categories such as (i) Low innovativeness, (ii) Medium innovativeness and (iii) High innovativeness (Table 4.7).

Table 4.7 Distribution of the farmers according to their innovativeness

Categories according to innovativeness	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low Innovativeness (1- 7)	64	64	6.66	4.50
Medium innovativeness (8-14)	30	30		
High innovativeness (15-21)	6	6		
Total	100	100		

Data furnished in Table 4.7 indicated that the highest proportion (64 percent) of the farmers had low innovativeness compared to 30 percent having medium innovativeness and only 6 percent had high innovativeness. The farmers with low innovativeness opined that they received agricultural information from their peer groups, while the others used interpersonal, group and mass media sources of information for getting agricultural information on selected winter vegetable cultivation.

4.1.8 Opinion towards improved winter vegetable cultivation

Opinion towards improved winter vegetable cultivation was operationalized by computing scores on the basis of the farmers' opinion towards twenty selected improved winter vegetable cultivation methods. The scores of the respondents ranged from 44 to 73, against the possible range of 0 to 80. The mean score was 56.99 with the standard deviation of 7.90. The respondents were classified into three categories such as (i) Low favorable opinion, (ii) Moderate favorable opinion and (iii) High favorable opinion (Table 4.8).

Table 4.8 Distribution of the farmers according to their opinion towards improved winter vegetable cultivation

Categories according to their opinions	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low favorable opinion (44- 53)	41	41	56.99	7.90
Moderate favorable opinion (54-63)	32	32		
High favorable opinion (above 63)	27	27		
Total	100	100		

Data presented in Table 4.8 indicated that the highest proportion (41 percent) of farmers had low favorable opinion compared to 59 percent having moderate favorable opinion (32%) to high favorable opinion (27%). The farmers having more favorable opinion towards improved winter vegetable cultivation practices are likely to use different communication media.

4.1.9 Agricultural Knowledge

It referred to the knowledge gained by the farmers from different media and also through their own experiences regarding different aspects of agriculture. The agricultural knowledge scores of the farmers ranged from 8 to 38, against the possible range of 0 to 50 with a mean of 16.82 and standard deviation of 6.72. The farmers were classified into three categories on the basis of their agricultural knowledge scores such as (i) Low agricultural knowledge, (ii) Medium agricultural knowledge, and (iii) High agricultural knowledge (Table 4.9).

Table 4.9 Distribution of the farmers according to their agricultural knowledge

Categories according to agricultural knowledge	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low agricultural knowledge (1-13)	41	41	16.82	6.72
Medium agricultural knowledge (14-26)	50	50		
High agricultural knowledge (above 26)	9	9		
Total	100	100		

Data presented in Table 4.9 show that the highest proportion (50 percent) of the farmers had medium agricultural knowledge compared to 41 percent of them having low knowledge and 9 percent high agricultural knowledge. It can be clearly seen from the table 4.9 that majority of the respondent farmers (59 percent) had both medium and high agricultural knowledge. The farmers who had more favorable opinion were also found to have more knowledge on winter vegetable cultivation.

4.2 Use of Communication Media by the Farmers in Receiving Information on Selected Winter Vegetable Cultivation

The extent of use of communication media score of the farmers ranged from 25 to 41 against the possible range of 0 to 60. The mean and the standard deviation were 31.59 and 3.53 respectively. The farmers were classified into three categories on the basis of their extent of use of communication media such as (i) Low use (ii) Medium use, and (iii) High use (Table 4.10)

Data in Table 4.10 indicate that eighty two percent of the farmers fell in the medium use category, 13 percent low use category and 5 percent of the respondents fell in the high use category. This means that majority (82%) of the farmers of the study area maintained moderate contact with 15 selected communication media for receiving agricultural information related to winter vegetable cultivation. Data also revealed that majority (95 percent) of the respondents of the study area had medium to high level of use of communication media in receiving information on selected winter vegetable cultivation.

Table 4.10 Distribution of the farmers according to their extent of use of communication media

Categories according to extent of use of communication media	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low use (upto 25)	5	5	31.59	5.53
Medium use (26-35)	82	82		
High use (above 35)	13	13		
Total	100	100		

4.3 Effectiveness of communication media perceived by the farmers

The effectiveness of media perceived by the respondents ranged from 23 to 53, against the possible range of 0 to 60. The mean effectiveness score was 40.05 and the standard deviation was 6.07. Based on the perception of effectiveness of media, the respondents were classified into the three categories such as (i) Low effectiveness (ii) Medium effectiveness, and (iii) High effectiveness (Table 4.11).

Table 4.11 Distribution of the farmers according to their opinion on effectiveness of communication media

Categories according to effectiveness of communication media	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low effectiveness (upto 30)	9	9	40.05	6.07
Medium effectiveness (31-45)	74	74		
High effectiveness (46-60)	17	17		
Total	100	100		

Data presented in Table 4.11 indicate that 74 percent of the farmers perceived medium effectiveness compared to 17 percent of the farmers high effectiveness and only 9 percent of the farmers perceived low effectiveness category. The findings indicated that all the vegetable growers had positive opinion toward the effectiveness of various communication media. Nobody said, "Not effective at all". Succeeding this trend, the communication planners should be careful to include vegetable information contents of information. It enhances communication behavior of the vegetable growers in future.

Table 4.12 Rank order of effectiveness of communication media used by the farmers in receiving information on selected winter vegetable cultivation (according to media effectiveness index)

Sl. No.	Name of communication media	Media effectiveness index	Rank order
1	Experienced farmers	292	1
2	Relatives	271	2
3	Group discussion	260	3
4	Input dealers	253	4
5	Neighbors	252	5
6	Local leaders	238	6
7	Result demonstration meeting	233	7
8	Result demonstration	231	8
9	Radio	216	9
10	Television	184	10
11	Agril. exhibition	183	11
12	Farmers' rally	178	12
13	Agril. printed materials	175	13
14	Sub- Asst. Agriculture Officers	173	14
15	Method demonstration	127	15

Comparative effectiveness of communication media used by the farmers in receiving information on selected winter vegetable cultivation

A media effectiveness index (MEI) was computed for each medium to measure the extent of its effectiveness more accurately. Procedure for computing the index has been described in chapter III. Media effectiveness index could range from 0 to 400. Computed media effectiveness index of 15 media, ranged from 127 to 292. Table 4.12 shows that the highest media effectiveness index was 292 and the lowest was 127. Effectiveness of experienced farmers as communication media

were the highest extent (292) and it was closely followed by relatives (271), group discussion (260), input dealers (253), neighbors (252), local leaders (238), result demonstration meeting (233), result demonstration (231), radio (216), television (184), agricultural exhibition (183), farmers' rally (178), agricultural printed materials (175), sub- asst. agriculture officers (173), and method demonstration (127).

4.4 Credibility of communication media perceived by the farmers

Agricultural information has recently been considered to be an important production input by the farmers like other inputs of agricultural production. In fact, judicious use of agricultural information can improve the quality of decision making ability of the farmers by changing their knowledge, skills and behavior in one hand, and can increasing farm output on the other. The information supplied by the media along with its utilization by the farmers is also equally important for increasing farm productivity. The credibility scores of the communication media perceived by the respondents ranged from 20 to 37, against the possible range of 0 to 60. The mean credibility scores were 28.19 and the standard deviation was 3.98. Based on the perception of credibility of media, the respondents were classified into the three categories such as (i) Low credibility, (ii) Medium credibility, and (iii) High credibility (Table 4.13).

Table 4.13 Distribution of the farmers according to their opinion on credibility of communication media

Categories according to credibility of communication media	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low credibility (18-24)	19	19	28.19	3.98
Medium credibility (25-31)	60	60		
High credibility (above 31)	21	21		
Total	100	100		

Data presented in Table 4.13 indicate that the highest proportion (60 percent) of the farmers opined the existing communication media as medium credible compared to 21 percent as high credible and 19 percent as low credible for getting

information. They might have maintained better contact with the available communication media. The farmers perceived high credibility category might have used more number of communication media than the farmers perceived medium credibility category, and those media might have satisfied their needs and interests.

Table 4.14 Rank order of credibility of communication media used by the farmers in receiving information on selected winter vegetable cultivation (according to media credibility index)

Sl. No.	Name of communication media	Media credibility index	Rank order
1	Experienced farmers	286	1
2	Relatives	267	2
3	Neighbors	248	3
4	Input dealers	239	4
5	Group discussion	226	5
6	Result demonstration meeting	218	6
7	Local leaders	211	7
8	Result demonstration	192	8
9	Radio	183	9
10	Sub- Asst. Agriculture Officers	161	10
11	Agril. exhibition	146	11
12	Farmers' rally	133	12
13	Agril. printed materials	128	13
14	Television	116	14
15	Method demonstration	105	15

Comparative credibility of communication media used by the farmers in receiving information on selected winter vegetable cultivation

A media credibility index (MCI) was computed for each medium to measure the extent of its credibility more accurately. Procedure for computing the index has been described in chapter III. Media credibility index could range from 0 to 400. Computed media credibility index of 15 media, ranged from 105 to 286. Table 4.14 shows that the highest media credibility index was 286 and the lowest was 105. Credibility of experienced farmers as communication media were the highest extent (286) and it was closely followed by relatives (267), neighbors (248), input dealers (239), group discussion (226), result demonstration meeting (218), local leaders (211), result demonstration (197), radio (183), sub- asst. agriculture officers (161), agricultural exhibition (146), farmers' rally (133), agricultural printed materials (128), television (116), and method demonstration (105).

4.5 Accuracy of communication media perceived by the farmers

The accuracy of communication media perceived by the farmers ranged from 26 to 52, against the possible range of 0 to 60. The mean and the standard deviation were 40.38 and 5.95 respectively. The farmers were classified into three categories on the basis of their perception on accuracy of communication media such as (i) Low accuracy, (ii) Medium accuracy, and (iii) High accuracy (Table 4.15).

Table 4.15 Distribution of the farmers according to their opinion on accuracy of communication media

Categories according to accuracy of communication media	Distribution of farmers		Mean	Standard deviation
	Number	Percent		
Low accuracy (23- 32)	12	12	40.38	5.95
Medium accuracy (33-42)	47	47		
High accuracy (43- 52)	41	45		
Total	100	100		

Data in table 4.15 indicate that forty seven percent of the farmers perceived medium accuracy category, 41 percent and 12 percent of the respondents fell in low accuracy and high accuracy respectively. They might have maintained better contact with the available communication media. The farmers perceived high accuracy category might have used them in a more perfect way than the farmers fell in the medium accuracy category.

Table 4.16 Rank order of accuracy of communication media used by the farmers in receiving information on selected winter vegetable cultivation (according to media accuracy index)

Sl. No.	Name of communication media	Media credibility index	Rank order
1	Experienced farmers	308	1
2	Relatives	281	2
3	Neighbors	261	3
4	Group discussion	259	4
5	Input dealers	256	5
6	Result demonstration	247	6
7	Result demonstration meeting	242	7
8	Local leaders	238	8
9	Radio	216	9
10	Television	187	10
11	Agril. exhibition	183	11
12	Sub- Asst. Agriculture Officers	178	12
13	Farmers' rally	175	13
14	Agril. printed materials	174	14
15	Method demonstration	125	15

Comparative accuracy of communication media used by the farmers in receiving information on selected winter vegetable cultivation

A media accuracy index (MAI) was computed for each medium to measure the extent of its accuracy more accurately. Procedure for computing the index has been described in chapter III. Media accuracy index could range from 0 to 400. Computed media accuracy index of 15 media, ranged from 125 to 308. Table 4.16 shows that the highest media accuracy index was 308 and the lowest was 125. Accuracy of experienced farmers as communication media were the highest extent (308) and it was closely followed by relatives (281), neighbors (261), group discussion (259), input dealers (256), result demonstration (247), result demonstration meeting (242), local leaders (238), radio (216), television (187), agricultural exhibition (183), sub-asst. agriculture officers (178), farmers' rally (175), agricultural printed materials (174), and method demonstration (125).

4.6 Relationship between the Dependent Variable and the Independent Variables

The purpose of this section is to examine the relationship between nine selected characteristics of the farmers and their use of communication media in receiving information related to the cultivation of selected winter vegetable cultivation. The characteristics included:

1. Age
2. Level of education
3. Family size
4. Farm size
5. Annual Income
6. Organizational participation
7. Innovativeness
8. Opinion towards improved winter vegetable cultivation
9. Agricultural knowledge

Each of the characteristics constituted an independent variable, while the use of communication media by the farmer in receiving information related to winter vegetable cultivation was the only dependent variable in this study. Table 4.17 has been used for descriptive interpretation of the meaning of 'r'.

Table 4.17 The meaning of 'r' values

r	Meaning
0.00 to 0.19	A very low correlation
0.20 to 0.39	Low correlation
0.40 to 0.59	A moderate correlation
0.60 to 0.79	A high correlation
0.80 to 1.00	A very high correlation

Source: Cohen and Holliday, 1982

Altogether nine null hypotheses were stated as indicated under Chapter 1 for testing the relationships. Each of the nine hypotheses has been tested in relation to the use of communication media by the farmers in receiving information. Co-efficient of correlation (r) was used to explore relationship between the selected characteristics and use of communication media in receiving agricultural information by the farmers. Five percent (0.05) level of significance was used as the basis for acceptance or rejection of any null hypothesis. The summary of the result of correlation analysis is presented in Table 4.18 and the correlation matrix is given in the APPENDIX-B.

Table 4.18 Relationship between the dependent variable and independent variables

Dependent variable	Independent variables	Values of `r` with 98 df.	Tabulated value of r with 98 df.	
			0.05 level	0.01 level
Use of communication media by the farmers in receiving information on winter vegetable cultivation	Age	-0.418**	0.196	0.256
	Education	0.423**		
	Family size	-0.447**		
	Farm size	0.090 NS		
	Annual income	0.315**		
	Organizational participation	0.256*		
	Innovativeness	-0.331**		
	Opinion towards improved winter vegetable cultivation	0.534**		
	Agricultural knowledge	0.402**		

* =Correlation is significant at 0.05 levels of probabilities

**= Correlation is significant at 0.01 levels of probabilities

NS= Not significant.

4.6.1 Age and use of communication media

The relationship between age of the farmers and their use of communication media was examined by testing the concerned null hypothesis. Computed value of the correlation co-efficient between age of the farmers and their use of communication media was found to be 'r'= (-0.418) as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient.

- The relationship showed a negative trend.
- A moderate relationship was found between the two variables.
- The computed value of 'r' (-0.418) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.

- The concerned null hypothesis was rejected.
- Correlation co-efficient between the concerned variable was significant at 0.01 level of probability

The researcher concluded that age of the farmers had a negative significant relationship with their use of communication media. This means that with the increase of age of the farmers, their use of communication media is decreased, i. e. young vegetable growers used more communication media in a larger scale than older growers.

4.6.2 Level of education and use of communication media

The relationship between level of education of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

Computed value of the correlation co-efficient between level of education of the farmers and their use of communication media was 'r'=0.423 as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient:

- The relationship showed a positive trend.
- A moderate relationship was found between the two variables.
- The computed value of 'r' (0.423) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- The correlation co-efficient between the concerned variable was significant at 0.01 level of probability.

The researcher concluded that level of education of the farmers had a positive significant relationship with their use of communication media. This means that with the increase of education of the farmers, the use of communication media in getting agricultural information is also increased, i. e. vegetable growers with high

education used various channels of communication compared to other education categories.

4.6.3 Family size and use of communication media

The relationship between family size of the farmers and their use of communication media was examined by testing the concerned null hypothesis. Computed value of the correlation co-efficient between family size of the farmers and their use of communication media was found to be 'r'= (-0.447) as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient.

- The relationship showed a negative trend.
- A moderate relationship was found between the two variables.
- The computed value of 'r' (-0.447) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- Correlation co-efficient between the concerned variable was significant at 0.01 level of probability

The researcher concluded that family size of the farmers had a negative significant relationship with their use of communication media. This means that with the increase of family size of the farmers, their use of communication media is decreased. That is, vegetable growers of small family size used more communication media compared to other groups.

4.6.4 Farm size and use of communication media

The relationship between farm size of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

As shown in the Table 4.18 the correlation co-efficient between the concerned variables were found to be 'r' 0.090 which led to the following observation:

- No relationship was found between the farm size of the farmers and their use of communication media in receiving information on selected winter vegetable cultivation.
- The computed value 'r' (0.090) was lower than that of the tabulated value (0.196) with 98 degrees of freedom at 0.05 level of probability.

The findings imply that the farm size of the farmers had no relationship with their use of communication media in receiving information on selected winter vegetable cultivation.

4.6.5 Annual Income and use of communication media

The relationship between annual income of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

Computed value of the correlation co-efficient between annual income of the farmers and their use of communication media was 'r'=0.315 as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient:

- The relationship showed a positive trend.
- A low relationship was found between the two variables.
- The computed value of 'r' (0.315) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- The correlation co-efficient between the concerned variable was significant at 0.01 level of probability.

The researcher concluded that annual income of the farmers had a positive significant relationship with their use of communication media. This means that with the increase of annual income of the farmers, the use of communication media in getting agricultural information also increased.

4.6.6 Organizational participation and use of communication media

The relationship between organizational participation of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

Computed value of the correlation co-efficient between organizational participation of the farmers and their use of communication media was 'r'=0.256 as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient:

- The relationship showed a positive trend.
- A low relationship was found between the two variables.
- The computed value of 'r' (0.256) was equal to the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- The correlation co-efficient between the concerned variable was significant at 0.01 level of probability.

The researcher concluded that organizational participation of the farmers had a positive significant relationship with their use of communication media. This means that with the increase of organizational participation of the farmers, the use of communication media in getting agricultural information also increased.

4.6.7 Innovativeness and use of communication media

The relationship between innovativeness of the farmers and their use of communication media was examined by testing the concerned null hypothesis. Computed value of the correlation co-efficient between innovativeness of the farmers and their use of communication media was found to be 'r'= (-0.331) as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient.

- The relationship showed a negative trend.
- A low relationship was found between the two variables.
- The computed value of 'r' (-0.331) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- Correlation co-efficient between the concerned variable was significant at 0.01 level of probability

The researcher concluded that innovativeness of the farmers had a negative significant relationship with their use of communication media. This means that with the increase of innovativeness of the farmers, their use of communication media is decreased. Fifty percent farmers of the study area had not enough land where they could to cultivate improved winter vegetables, and in most of the cases the extension agents do not regularly communicate with the farmers who belong to small farm size category. And as expected, the innovative farmers might have direct contact with Horticulture centers. The relationship between the innovativeness of the farmers and their use of communication media could be negatively significant due to these factors.

4.6.8 Opinion towards improved winter vegetable cultivation and use of communication media

The relationship between opinion towards improved winter vegetable cultivation of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

Computed value of the correlation co-efficient between opinion towards improved winter vegetable cultivation of the farmers and their use of communication media was 'r'=0.534 as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient:

- The relationship showed a positive trend.
- A moderate relationship was found between the two variables.
- The computed value of 'r' (0.534) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- The correlation co-efficient between the concerned variable was significant at 0.01 level of probability.

The researcher concluded that favorable opinion towards improved winter vegetable cultivation of the farmers had a positive significant relationship with their use of communication media. This means that with the increase of favorable opinion of the farmers towards the improved winter vegetable cultivation, the use of communication media in getting agricultural information also increased.

4.6.9 Agricultural knowledge and communication media

The relationship between agricultural knowledge of the farmers and their use of communication media was examined by testing the concerned null hypothesis.

Computed value of the correlation co-efficient between agricultural knowledge of the farmers and their use of communication media was 'r'=0.402 as shown in Table 4.18. The following observations were recorded regarding the relationship between the two variables on the basis of the correlation co-efficient:

- The relationship showed a positive trend.
- A moderate relationship was found between the two variables.
- The computed value of 'r' (0.402) was greater than the tabulated value (0.256) with 98 degrees of freedom at 0.01 level of probability.
- The concerned null hypothesis was rejected.
- The correlation co-efficient between the concerned variable was significant at 0.01 level of probability.

The researcher concluded that agricultural knowledge of the farmers had a positive significant relationship with their use of communication media. This means that with the increase of level of agricultural knowledge of the farmers, the use of communication media in getting agricultural information also increased.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

5.1.1 Introduction

Agriculture is the main occupation of the millions of people of Bangladesh and the largest segment of her national economy comes from this sector. So, the need for developing agriculture is a burning question of the time to mitigate food problem. Nowadays agricultural information is considered by the farmers as an important input of agricultural production like other inputs. From past researches it was found that the flow of agricultural information among the farmers of our country are inadequate and slow. The consequential reasons for poor communication media use in receiving agricultural information on selected agricultural technologies and winter vegetable cultivation resulting poor yield in both the cases. Moreover, the farmers have not been properly trying the modern technologies like improved agricultural practices, although they constitute the majority of the total farming population of the country. This is a major cause of poverty, low production, and backwardness and years- long food storage of the people of Bangladesh.

Vegetable is considered as one of the most important groups of food crops due to their high nutritive value, labor-intensive production, relatively higher yield and higher return within short duration. The winter vegetable accounted for the major proportion of the total vegetable production. The use of modern technology along with receiving agricultural information regarding improved winter vegetable cultivation, though proven to be remunerative, has not yet been in large scale acceptance by most of the farmers. But it will be of no use unless the ideas reach them. Therefore, in bringing about technological changes among the farmers, it is essential to improve their communication media using behavior in receiving agricultural information.

In Bangladesh dissemination of modern agricultural technologies are performed mostly by the Department of Agricultural Extension (DAE), NGOs and other extension organizations engaged in the work of agricultural development. Considering the national importance and economic contribution made by the farmers, the present piece of research work was designed.

The investigation was made keeping the following specific objectives in view:

1. To determine and describe some of the selected characteristics of the farmers. The selected characteristics are:
   i) Age
   ii) Level of education
   iii) Family size
   iv) Farm size
   v) Annual Income
   vi) Organizational participation
   vii) Innovativeness
   viii) Opinion towards improved winter vegetable cultivation
   ix) Agricultural knowledge
2. To determine and describe the opinion of the farmers regarding their use of communication media in receiving agricultural information on selected winter vegetable cultivation.
3. To find out the effectiveness, credibility and accuracy of communication media used by the farmers in receiving agricultural information.
4. To find out the rank order of effectiveness, credibility and accuracy of communication media used by the farmers in receiving agricultural information.
5. To explore relationship between the use of communication media by the farmers and some of their selected characteristics.

5.1.2 Methodology

The population of this study was 502 farmers, who cultivated winter vegetable in 2 villages of Kashiani Upazilla under Gopalganj District. However, data for this study were collected from a sample of 100 farmers selected by random sampling technique. The researcher personally collected data for this study by using an interview schedule in Bengali. Simple, easy and direct questions were included in the interview schedule. The data were collected from November 9, 2006 to December 8, 2006.

Use of communication media by the farmers in receiving information on production of selected winter vegetable was the dependent variable of this study. Nine characteristics of farmers were selected as independent variables. These characteristics were age, level of education, family size, farm size, annual income, organizational participation, innovativeness, opinion towards improved winter vegetable cultivation, and agricultural knowledge.

The farmers were classified into suitable categories in respect of communication media used by them in receiving information related to cultivation of selected winter vegetable. In developing the categories the investigator was guided by the nature of the data and standards criteria were taken into consideration of the existing social system. The statistical measures such as number, percentage distribution and mean were used in describing the findings related to communication media used by the farmers in receiving information related to winter vegetable cultivation.

Correlation analysis was used as the principal statistical method for analyzing the data. All these analyses were done by a computer using the SPSS (Statistical Package for Social Science). The level of probability fixed for the rejection of a null hypothesis was 0.05.

5.1.3 Findings:

5.1.3.1 Characteristics profile of the farmers

Findings in respect of the selected characteristics of the farmers are summarized below:

Age: Age of the farmers ranged from 20 to 75 years with a mean value of 42.72 years. Thirty four percent of the farmers were middle aged, 28 percent were old and 38 percent were young farmers. This indicates that the nature and extent for receiving agricultural information in the study area took place to a considerable level among the young aged group. Young farmers usually used group meeting, extension workers, radio etc. The old aged farmers relatively used interpersonal communication media for receiving agricultural information to a greater extent.

Level of education: Education attainment of the respondents ranged from no schooling to 16 years of schooling. Forty four percent of the farmers had no schooling, 36 percent had secondary, 8 percent had primary education and only 12 percent had above secondary level of education. It revealed from the study that majority of the farmers were illiterate.

Family size: Family members of the respondent ranged from 3 to 13 with a mean of 6.41. Thirty two percent of the farmers had medium family, 46 percent had large family and 22 percent had small family.

Farm size: The farm size scores of the respondents ranged from 0.15 hectares to 6.67 hectares with a mean value of 1.54 hectares. Among the respondents, fifty percent had marginal farm size, 25 percent had small farm size, 12 percent had medium and 13 percent had large farm size.

Annual Income: The respondents' annual income ranged from Tk. 15 to Tk. 871 thousands with mean of Tk. 191.07. Twenty percent of the total farmers had medium income compared to 35 percent of them having low income and 32 percent high income and 13 percent very low income.

Organizational participation: The organizational participation scores of the farmers ranged from 5 to 60, the mean being 35.18. It was found that eighty five percent of the farmers had low participation, 12 percent of them had medium participation and only 3 percent farmer had high participation.

Innovativeness: The innovativeness scores of the respondents ranged from 0 to 21, the mean being 6.66. The highest proportion (64 percent) of the farmers had low innovativeness, 30 percent had medium innovativeness and only 6 percent farmers had high innovativeness.

Opinion towards improved winter vegetable cultivation: Opinion towards improved winter vegetable cultivation score of the farmers ranged from 44 to 73 with a mean of 56.99. The highest proportion (41 percent) of the respondents had low favorable opinion towards improved winter vegetable and 32 percent had moderately favorable opinion and 27 percent had highly favorable opinion.

Agricultural Knowledge: The agricultural knowledge scores of the farmers ranged from 8 to 38 with a mean of 16.82. The highest proportion (50%) of the farmers had medium agricultural knowledge, 9 percent had high and 41 percent had low agricultural knowledge.

5.1.3.2 Use of communication media by the farmers

Farmers generally used several numbers of communication media in receiving information. The selection of communication media by the farmers varied from person to person, situation to situation. It also varied according to the nature, effectiveness, accuracy, credibility and availability of the media and even personal likings and disliking of the individuals.

It was found that 82 percent of the respondents had medium use of communication media compared to 13 percent high use, and only 5 percent farmers had low use of communication media in receiving information related to cultivation of winter vegetables.

5.1.3.3 Effectiveness, credibility and accuracy of communication media perceived by the farmers: It was found that 74 percent of the respondents had medium effectiveness, 17 percent had high effectiveness and 9 percent had low effectiveness, 60 percent had medium credible, 21 percent had high credible and 19 percent had low credible and 47 percent had medium accuracy, 41 percent had high accuracy and 12 percent had low accuracy of communication media in receiving information on selected winter vegetable cultivation

5.1.3.4 Effectiveness, credibility and accuracy of communication media used by the farmers: When effectiveness, credibility and accuracy of communication media used by the farmers in receiving information on selected winter vegetable cultivation observed combinedly, experienced farmers were effective, credible and accurate as the communication media to the highest extent and it was closely followed by relatives, group discussion, input dealers and neighbors having rank order of effectiveness, credibility and accuracy of communication media index respectively. Method demonstration was effective, credible and accurate to the lowest extent

5.1.3.5 Summary of hypotheses testing: The null hypotheses were tested to examine the relationship of nine selected characteristics of the farmers with their use of communication media in receiving information related to cultivation of selected winter vegetable. The results of hypothesis testing are briefly presented below:

Age, family size and innovativeness of the farmer had negatively significant relationship with their use of communication media

Education, annual income, organizational participation, opinion towards improved winter vegetable cultivation and agricultural knowledge of the farmers had significant positive relationship with their use of communication media.

Farm size of the farmers had no significant relationship with their use of communication media in receiving information related to winter vegetable cultivation.

5.2 Conclusions

Based on the findings of this study and its logical interpretations, the following conclusions were drawn.

1. The study indicated that 82 percent of the respondents maintained medium use of various communication media for receiving agricultural information. This is high enough for maintaining adequate flow of farm information among the farmers. The findings lead to the conclusion that the farmers maintained satisfactory contact with the communication media available to them in receiving agricultural information for performing various farming operations.

2. Seventy four percent of the respondents perceived medium effectiveness of communication media, 60 percent of the respondents perceived medium credibility of communication media and 47 percent of the respondents perceived medium accuracy of communication media in receiving agricultural information. If we want to solve food problem of the country, effectiveness, credibility and accuracy of communication media must be increased. However, to meet the ever-growing demand of food, there is a need to further enhance the effectiveness, credibility and accuracy of communication media in receiving information on selected winter vegetable cultivation. Particularly, both the Government organization and Non-Government organization workers should provide appropriate technical and management related information to the farmers through appropriate communication media and other support services. It may be concluded that the effectiveness, credibility and accuracy of the existing communication media are moderate and needs further improvement for making further contribution in the cultivation of winter vegetables in the study area.

3. The study indicated that age of the farmers had significant but negative relationship with their communication behavior. This means that the more age of the farmers the less use of their communication media.

4. The statistical analysis showed a significant positive relationship of education of the farmers with their use of communication media. Therefore, it may be concluded that education plays an important role for increased use of communication media in receiving information on selected winter vegetable cultivation.

5. Family size of the framers had negative significant relationship with the use of communication media in receiving information. This fact leads to the conclusion that small family size of the farmers encouraged them to use higher extent of communication media for selected winter vegetable cultivation.

6. Annual income of the farmers had a positive significant relationship with the use of communication media in receiving information. It leads to the conclusion that income of the farmers had significant relationship with the use of communication media in receiving agricultural information.

7. Organizational participation of the respondents had a positive and significant relationship with their use of various communication media. The findings lead to the conclusion that the farmers with more organizational exposure are expected to have more interest in using different communication media related to winter vegetable cultivation.

8. Opinion towards improved winter vegetable cultivation of the farmers had a significant positive relationship with their use of communication media. This means that the more the favorable feelings of the farmers towards the improved practices for winter vegetable cultivation, the more was their use of various communication media in receiving information related to winter vegetable cultivation.

9. A highly significant and strong positive relationship between agricultural knowledge of the farmers and their use of communication media in receiving

agricultural information implied that the more the agricultural knowledge of the farmers, the more was the use of communication media.

5.3 Recommendations

5.3.1 Recommendations for policy implications

On the basis of the findings and conclusions of the study, the following recommendations for policy implication were made:

1. The study reveals that the farmers having better education could improve the existing status of using communication media. As fifty two percent of the farmers in the study area had no education to primary level of education, non-formal education facilities (i.e. mass education program) should be extended to them by Extension Agents of both GOs and NGOs.

2. It was revealed that the farmers with better organizational participation could expose themselves more with various communication media. Therefore, group approach of extension could effectively be used by different extension agencies in disseminating information. Different motivational programmes by the concerned organizations could encourage them further in the use of more communication media to address their problems.

3. The opinion of the farmers on winter vegetable cultivation and agricultural knowledge showed a positive and significant relationship with their use of communication media. It is recommended to arrange adequate training programmes for the farmers and other instructional methods to increase their agricultural knowledge.

4. Considering the overall situation, it was recommended that care should be taken by the Department of Agricultural Extension (DAE) and other development agencies in properly handling communication media with the farmers. It should be remembered that failure of one effort may lead to reduce credibility of a particular

communication medium which may take long time to overcome associated psychological barriers for proper use of the source. Further, development in human societies results from their continuous improvement where agricultural and other socio-economic information available to them play a very important role.

5.3.2 Recommendations for Further Study

1. It is strongly felt that study of this nature be replicated in other parts of Bangladesh. This recommendation is made because the study area at Kashiani Upazilla in Gopalganj district is not typical of the situation in the entire country.
2. This study investigated the effects of nine characteristics of the farmers on their use of communications media. Therefore, it is recommended that further study should be conducted involving other characteristics (farm facilities, farm experience, cosmopoliteness etc.) in this regard to better interpret the unexplained variations.
3. Similar study should also be replicated in future for studying any change of pattern regarding effectiveness of communication media use among the same population of the present study area to arrive at generalizations for policy implications.
4. On the basis of the characteristics pattern of farming population, more researches should be conducted to investigate the comparative effectiveness of communication media with other extension method and also identify the factors influencing the use of communication media, its utilization as well as effectiveness in receiving information by the farmers. 5. In this study, only the survey method (quantitative tool) was used for collection of data. It is recommended to conduct further research using some other qualitative tools (eg. Focus group discussion (FGD), case study, problem free analysis etc.) in order to achieve more accuracy of information.

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APPENDIX-A

An English version of the interview schedule
Department of Agricultural Extension & Information System
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

An interview schedule on "Use of Communication Media by the Farmers in Receiving Information on Selected Winter Vegetable Cultivation"

Sl. No. .....

Name of the respondent: .....

Father's Name : .....

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

Upazilla : ..... District.....

(Please furnish the following information)

1. **Age**

   How old are you? : ..... Years

2. **Level of education**

   What is your educational level?

a) Can't read and write.....

b) Can sign only.....

c) I studied up to..... Class

3. **Family Size**

Please mention the total number of your family members

Male: ..... nos.

Female: ..... nos.

Total ..... nos.

4. Farm size (by benefits)

(Please indicate the area of land in your possession)

Sl. No.	Type of land	Land area	
		Local unit	Hectare (ha)
1.	Homestead area (including ponds)		
2.	Own land under own cultivation		
3.	Own land given to others on tenant		
4.	Land taken from other on tenant		
5.	Own land given to others on lease		
6.	Land taken from other on lease		
Total			

5. Annual Income (last year)

(Please provide your annual income from the following sources)

a) Crops Tk. . . ..

i) Rice. .....

ii) Wheat. .....

iii) Jute. .....

iv) Pulses. .....

v) Oil seeds. .....

vi) Vegetables. .....

vii) Maize. .....

viii) Potato. .....

b) Live stock Tk. . . ..

i) Milk. .....

ii) Meat. .....

iii) Cow head. .....

c) Poultry Tk. . . ..

i) Chicken. .....

ii) Duck. .....

iii) Eggs.....

d) Fish Tk. .....

e) Trading Tk. .....

f) Service.....

g) Others Tk. .....

Total Tk. .....

6. Organizational Participation

Please mention the extent of participation in the following institutions

Sl. No.	Name of Institute	Extent of Participation						
		No Participation	Ordinary Member	Duration (Yrs)	Executive Committee Member	Duration (Yrs)	Executive Officer of Ex. com	Duration (Yrs)
1.	School Com.							
2.	Mosque/Mondir Com.							
3.	Madrasa Com.							
4.	Bazar Com.							
5.	Mass literacy Com.							
6.	Krishak Samabay Samity							
7.	Gram Krishk Sangathan							
8.	NGO group							
9.	Youth society.							
10.	Sports Club							
11.	Irrigation com.							

7. Innovativeness

(please furnish information on the following issues)

Sl. No.	Crop	Variety	Cultivated land		Never used	Duration of cultivation after first hearing			
			Local Unit	Hectare (ha)		1 Year	2-3 Years	4-5 Years	6-7 Years
1.	Cabbage	Provati (HYV)							
		Agrodut (HYV)							
2.	Tomato	Wild improve variety (LIV)							
		Apurbo (HYV)							
3.	Radish	Tasakisanmula-1 (HYV)							
		Pingki (HYV)							

8. Opinion towards improved winter vegetable cultivation

Please give your opinion regarding the following statements on improved practices of winter vegetable cultivation (put tick mark)

Sl. No.	Statement	Extent of opinion				
		Strongly Agree	Agree	No Opinion	Disagree	Stongly disagree
1. +	During the time of seed sowing of cabbage, seeds should be treated with vitavex-200 or similar type of fungicide					
2. -	It is not necessary to use improve variety to get more vegetable production					
3. +	Rovral @ 0.2% should be used to control 'leaf spot 'disease of cabbage					
4. -	Excess use of fertilizers is essential for the vegetable cultivation					
5. +	Yield of cabbage, tomato and radish could be increased by the application of optimum irrigation					
6. -	Vegetable cultivation is more profitable than pulse crop					
7. +	A cabbage bed should be 15-20 cm height and 1 meter width					
8. -	Radish yields better by broadcasting method than line sowing					
9. +	A 30 cm furrow should be made between the two beds for drainage					
10. -	Diseases are less harmful in vegetable cultivation					
11. +	Shade should be made to protect the seedlings from excessive sunlight & rain water.					
12. -	Chemical control method is the only way for vegetable pest management					
13. +	Stick is to be used to protect tomato seedling from lodging					
14. -	Excessive use of fertilizer and insecticide is environment friendly					

15. +	Early sowing (last week of September or first week of October) is needed for early marketing					
16. -	Stagnant water is useful for cabbage, tomato and radish cultivation					
17. +	To get better tuberous formation of radish needs frequent weeding					
18. -	Country plough and power tiller are equally important radish cultivation					
19. +	Tasakisan mula-1 remains edible if it is harvested after three months					
20. -	Fertilizer application is not essential for the next crop after vegetable cultivation					

09. Agricultural knowledge

Please answer the following questions

Sl. No.	Questions	Score	Marks obtained
1.	Mention one function of urea a fertilizer.	2	
2.	Mention one function of phosphate fertilizer.	2	
3.	Mention one function of potash fertilizer.	2	
4.	Mention one variety of cabbage.	2	
5.	Mention one variety of tomato.	2	
6.	Mention one variety of radish.	2	
7.	Mention the fertilizer dose of cabbage.	2	
8.	Mention the fertilizer dose of tomato.	2	
9.	Mention the fertilizer dose of radish.	2	
10.	When to irrigate in cabbage?	2	
11.	When to irrigate in tomato?	2	
12.	When to irrigate in radish?	2	
13.	How to practice cabbage seed treatment?	2	
14,	What is the process of drying of tomato seed?	2	
15.	How to store the radish seed?	2	
16.	Mention one disease of cabbage.	2	
17.	Mention one control measure of disease of cabbage.	2	
18.	Mention one disease of tomato.	2	

19.	Mention one control measure of disease of tomato.	2	
20.	How to prepare radish land?	2	
21.	Mention one insect of cabbage.	2	
22.	Mention one control measure of insect of cabbage.	2	
23.	Mention one insect of tomato.	2	
24.	Mention one control measure of insect of tomato.	2	
25.	What are the demerits of excess irrigation to radish?	2	
	Total=	50	

10. Please indicate your extent of use of the following communication media in receiving information on selected winter vegetable cultivation (put tick mark)

Communication media	Name of the source of information	Extent of use of the communication media				
		Regularly	Often	Seldom	Rare	Not at all use
Individual	Sub Asst. Agriculture Officers					
	Experienced farmers					
	Relatives					
	Input dealers					
	Neighbors					
	Local leader					
	Result demonstration					
Group	Group discussion					
	Farmers rally					
	Result demonstration meeting					
	Agril. Exhibition					
	Method demonstration					
Mass	Radio					
	Agril. Printed materials					
	Television					

11. Please assess the effectiveness of the following communication media in respect of disseminating agricultural information (put tick mark)

Communication media	Name of the source of information	Extent of effectiveness				
		Very effective	Effective	Moderate effective	Less effective	Not effective at all
Individual	Sub Asst. Agriculture Officers					
	Experienced farmers					
	Relatives					
	Input dealers					
	Neighbors					
	Local leader					
	Result demonstration					
Group	Group discussion					
	Farmers rally					
	Result demonstration meeting					
	Agril. Exhibition					
	Method demonstration					
Mass	Radio					
	Agril. printed materials					
	Television					

12. Please evaluate the credibility of the following communication media in respect of disseminating agricultural information (put tick mark).

Communication media	Name of the source of information	Extent of credibility				
		Highly credible	Credible	Moderately credible	Less credible	Not at all credible
Individual	Sub Asst. Agriculture Officers					
	Experienced farmers					
	Relatives					
	Input dealers					
	Neighbors					
	Local leader					
	Result demonstration					
Group	Group discussion					
	Farmers' rally					
	Result demonstration meeting					
	Agril. Exhibition					
	Method demonstration					
Mass	Radio					
	Agril. Printed materials					
	Television					

13. Mention the accuracy of the information required through the following communication media (put tick mark).

Communication media	Name of the source of information	Extent of accuracy of information required				
		Very accurate	Accurate	Moderate accurate	Less Accurate	Not accurate at all
Individual	Sub Asst. Agriculture Officers					
	Experienced farmers					
	Relatives					
	Input dealers					
	Neighbors					
	Local leader					
	Result demonstration					
Group	Group discussion					
	Farmers rally					
	Result demonstration meeting					
	Agril. Exhibition					
	Method demonstration					
Mass	Radio					
	Agril. Printed materials					
	Television					

Name with signature of investigator
Date: ----------

APPENDIX B

Correlation matrix of the dependent and independent variables

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	Y_1
X_1	1.000									
X_2	-0.312**	1.000								
X_3	0.636**	-0.529	1.000							
X_4	0.156	0.312**	-0.004	1.000						
X_5	-0.051	0.623**	-0.249*	0.783**	1.000					
X_6	0.099	0.339**	-0.049	0.390**	0.600**	1.000				
X_7	0.363**	0.068	0.242*	0.275**	0.083	-0.096	1.00			
X_8	-0.574**	0.660**	-0.540**	0.163	0.440**	0.171	-0.070	1.00		
X_9	-0.352**	0.705**	-0.418**	0.341**	0.587**	0.226*	0.191	0.785**	1.00	
Y_1	-0.418**	0.423**	-0.447**	0.090	0.315**	0.256*	-0.331**	0.534**	0.402**	1.00

**= Correlation is significant at the 0.01 level of probabilities

* = Correlation is significant at the 0.05 level of probabilities

X_1=Age

X_2 = Education

X_3= Family size

X_4= Farm size

X_5=Annual income

X_6= Organizational participation

X_7=Innovativeness

X_8=Opinion towards improved winter vegetables cultivation

X_9= Agricultural Knowledge

Y_1= Extent of use of communication media