

**OPINION OF TOBACCO FARMERS TOWARDS ALTERNATIVE
AGRICULTURAL ENTERPRISES TO REPLACE TOBACCO
CULTIVATION IN MEHERPUR DISTRICT**

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AGRICULTURAL ENTERPRISES TO REPLACE TOBACCO
CULTIVATION IN MEHERPUR DISTRICT**

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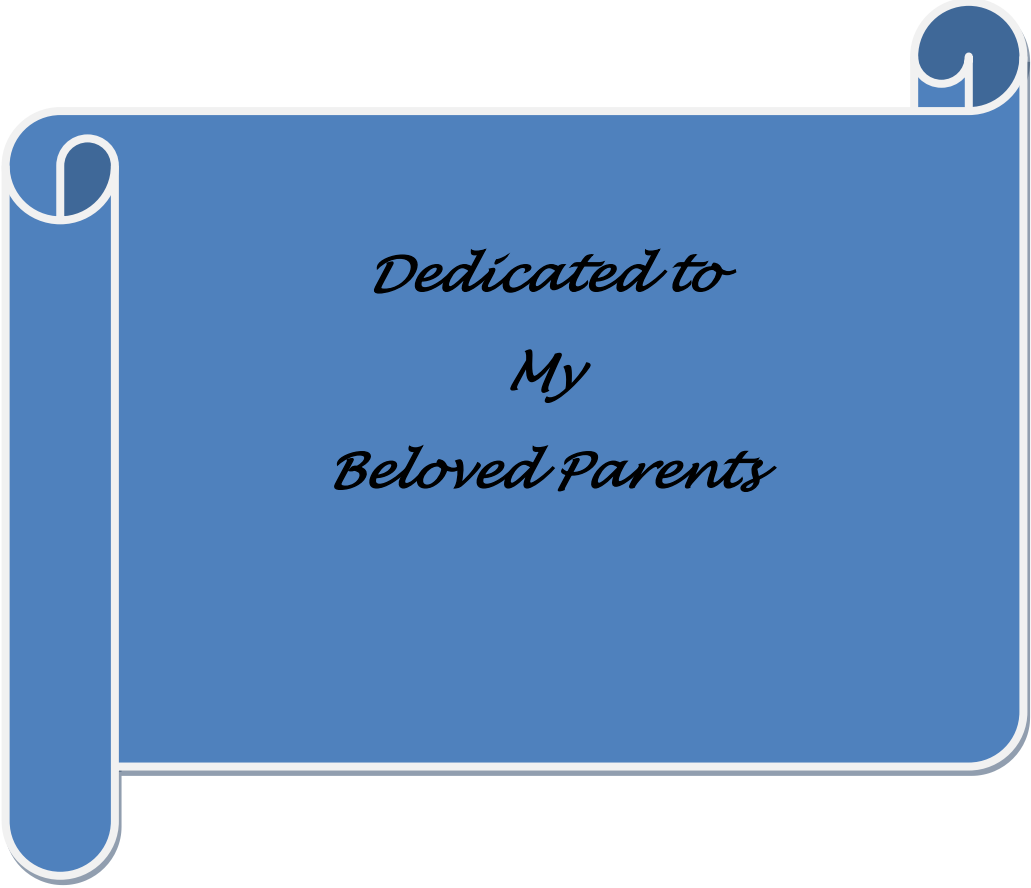
CERTIFICATE

This is to certify that the thesis entitled, "Opinion of Tobacco Farmers Towards Alternative Agricultural Enterprises to Replace Tobacco Cultivation in Meherpur District" submitted to the faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE (M.S.) IN AGRICULTURAL EXTENSION, embodies the result of a piece of bona fide research work carried out by Md. Amanotullah, Registration No.: 08-02887 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 been acknowledged by him.

Dated: December, 2014
Place: Dhaka, Bangladesh

(Prof. Md. Shadat Ulla)
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*Dedicated to
My
Beloved Parents*

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The Author

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**OPINION OF TOBACCO FARMERS TOWARDS ALTERNATIVE
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IN MEHERPUR DISTRICT**

ABSTRACT

The objectives of the study were (i) to determine and describe some selected characteristics of the tobacco farmers. The selected characteristics were - age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience, (ii) To assess opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation and (iii) to explore relationship between the selected characteristics of the tobacco farmers and their opinion to the alternative agricultural enterprises to replace tobacco cultivation. The study was conducted at four villages of Gangni upazila under Meherpur district. About ten percent of the farm families were randomly selected from a population of 996 tobacco farmers. Out of the total population 101 tobacco farmers were selected as the sample of the study. Data were collected from the farmers through using a pre-tested structured interview schedule from 14 September to 30 September, 2014. Pearson's product moment correlation co-efficient were used to test relationship between the dependent and independent variables. It was revealed that majority (50.5 percent) of the tobacco farmers opined for alternative enterprises as moderately suitable, 30.7 percent highly suitable and 18.8 percent less suitable in respect of timeliness and scope of application. Correlation analysis indicated that characteristics of the tobacco farmers such as age, education, agricultural knowledge, organization participation cosmopolitaness, extension contact, tobacco cultivation experience had significant relationship with their opinion towards the alternative agricultural enterprises to replace tobacco cultivation. However, farm size, annual income and innovativeness of the tobacco farmers had no relationship with their opinion towards the alternative agricultural enterprises to replace tobacco cultivation.

CHAPTER 1

INTRODUCTION

1.1 General Background

Over the last few decades, world tobacco consumption, production and trade have increased steadily. In Asia and Oceania, the production has been increasing constantly, from about 30% in the 1950s to about 63% at the end of the last century. Bangladesh is predominantly an agricultural country over 70% of its population dependent on farming as a livelihood and about 23% of the national GDP is derived from this sector (Akter F., 2011). Food production is of vital importance, and any threats are a national security concern.

In Bangladesh tobacco cultivation has been increasing day by day in certain parts of the country. Bangladesh is one of the largest tobacco consuming countries in the world. Over 58% of men and 29% of women use some form of tobacco, whether smoked (both cigarettes and bidis) or smokeless. In 2012, an estimated 46.3 million adults used some form of tobacco product smoked or smokeless. Most smokers are male, 28.3% of adult men smoke manufactured cigarettes and 21.4% smoked bidis. Both males and females use smokeless tobacco products such as zarda, gul, sada pata, khaini etc. In 2007, 6.9% of in-school youth ages (13 through 15) years reported current use of some tobacco product. Given the high level of tobacco use, Bangladesh faces considerable health and economic consequences from tobacco.

In Bangladesh tobacco is mostly grown in areas like Rangpur, Chittagong Hill tract region, greater Kusthia (Meherpur, Kusthia, Chuadanga), Jessore and Dhaka. Besides, this is extending to Rajshahi, Jhenaidah, Nilphamari, Lalmonirhat and even in Manikganj and Tangail district.

Bangladesh has become a net exporter in recent years, exporting about one-third of the tobacco grown. British American Tobacco Bangladesh (BATB), Dhaka Tobacco Industry (DTI), Akij group, Abul Khair group etc company export tobacco and they also give successive loan to encourage farmers for tobacco cultivation.

However, tobacco use impose considerable economic costs, health care expenses to treat disease caused by tobacco use, lost productivity due to tobacco related illness, premature death and lose to secondary/passive smokers. Each year, over 57,000 deaths was attributed to tobacco use (One in six deaths among 30years older). Given current trends, tobacco use will cause approximately 100 crore deaths in 21st century. Tobacco cultivation causes 30% of annual deforestation. In terms of severity of tobacco-mediated deforestation, Bangladesh is placed third globally (Barakat, A., 2013).

The impacts of tobacco cultivation on traditional agro-practices and knowledge, food security, agro-biodiversity and socio-economic conditions of tobacco growing area in Bangladesh were investigated. At this time it is a matter of concern to reduce tobacco cultivation in Bangladesh by using different strategies or replace by other agricultural enterprises.

In 2003, the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) set a new environment for policy makers to direct efforts towards helping tobacco farmers to transition from tobacco to alternative enterprises. Bangladesh signed the FCTC on 16 June, 2003 and ratified it less than one year later, on 14 June, 2004. Bangladesh has participation in FCTC, resulted in some advances in tobacco control policy, most notably the Smoking and Tobacco Products Usage (Control) Act, 2005. The FCTC suggested that a critical element of supply control is the provision of technical and financial assistance to ease the transition for tobacco growers to economically viable alternatives (Umana, M.P.M., 2011).

The researcher was interested to explore the probable alternative enterprises to replace tobacco cultivation in greater Kusthia region in Bangladesh. This study was undertaken to explore factors affecting farmers opinion, switch off to other important about the possibility to alternatives like grain crops, fibre crops, fruits and vegetables, cow/calf, dairy, beef cattle, other crops/livestock etc to replace tobacco production. Therefore, the researcher felt the necessity to conduct this study.

1.2 Statement of the Problem

In view of the foregoing discussion the researcher undertook a study entitled "Opinion of Tobacco Farmers towards Alternative Agricultural Enterprises to Replace Tobacco Cultivation in Meherpur District". In this study, various kinds of agricultural crops, livestock, business etc. were considered as replacing enterprises. This study also tried to explain the relationship of some selected characteristics of the farmers such as age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact, tobacco cultivation experience with their opinion towards alternative agricultural enterprises to replace tobacco cultivation. The purpose of the study was to answer the following research questions.

- i. What are the opinions of the tobacco farmers to replace tobacco cultivation among the concerned enterprises?

- ii. What relationship exists between the selected characteristics of the respondents and their opinion regarding the alternative agricultural enterprise to replace tobacco cultivation?

1.3 Objectives of the Study

Specific objectives of the study

1. To assess the opinion of tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation.
2. To determine and describe the following selected characteristics of the tobacco farmers;

The characteristics are :

- i) Age
- ii) Education
- iii) Farm size
- iv) Annual income
- v) Agricultural knowledge
- vi) Organizational participation
- vii) Cosmopolitaness
- viii) Innovativeness
- ix) Extension contact
- x) Tobacco cultivation experience

3. To explore the relationship between the selected characteristics of the tobacco farmers and their opinion to the alternative agricultural enterprises to replace tobacco cultivation.

1.4 Scope of the Study

The findings of the study would particularly, help the researcher to determine the opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation. The relationship between the selected characteristics of the tobacco farmers and their opinion could also be learned. The findings of the study were expected to be applicable to the study areas as well as other areas of the country. Thus, the findings of the study were expected to explore farmers opinion to replace tobacco cultivation of the study area as well as other areas of the country. The findings would also be helpful to the

extension workers in formulating different strategies suited to different clientele. It was felt that, these findings of the study would be helpful for policy makers and administrators of the country to formulate an appropriate extension approach in this regard. This would also discover the selected factors of the farmers affecting alternative enterprises to replace tobacco cultivation. The problems faced by the farmers could be minimized after the findings reveal which might help the farmers to replace tobacco cultivation in a desired direction.

1.5 Limitations of the Study

The study was undertaken with a view to have an understanding about the opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation. But considering the time and money the study was conducted with the following limitations:

- i. The study was confined to selected area Tentulbaria, Motmura, Bamundi and Kazipur Union of Gangni Upazila of Meherpur district. Only 4 villages from 4 unions were selected randomly for this study.
- ii. The characteristics of the tobacco farmers were many and varied. Only 10 (ten) characteristics were selected for investigation in the study.
- iii. Landless families were excluded from the study, because they were not directly concerned with the use of agricultural enterprises.
- iv. The facts and figures collected by the investigator applied to the situation prevailing during September to October, 2014.
- v. Population of the study was limited to the heads of the farm families of the selected villages.

1.6 Assumption of the Study

An assumption is the supposition that an apparent fact or principle is true in the light of the available evidence (Goode and Hatt, 1952). The researcher had the following assumptions in mind while undertaking this study:

1. The respondents included in the sample were capable of furnishing proper responses to the questions set up in the interview schedule.
2. Views and opinions furnished by the respondents included in the sample were the representative views and opinions of the whole population of the study area.
3. The responses furnished by the respondents were reliable. They expressed the truth about their convictions and awareness.
4. The researcher acted as interviewer and was very well adjusted to the social and cultural environment of the study area. Hence, the respondents furnished their correct opinions without any kind of hesitation.
5. The data collected by the researcher were free from bias and they were normally and independently distributed.
6. The items included in the interview schedule for opinion measurement were adequate to reflect opinion towards alternative agricultural enterprises to replace tobacco cultivation.

1.7 Statements of the Hypothesis

The research hypothesis was put forward to test the relationship between each of the 10 selected characteristics of the farmers and their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

1.7.1 Research hypothesis

The opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation was related to each of their characteristics such as: age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience.

1.7.2 Null hypothesis

For statistical testing of the research hypothesis it was converted into null form. The null hypotheses were as follows:

There is no relationship between the opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation with each of their characteristics such as: age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience.

1.8 Definitions of Terms

In order to clarify some terms frequently used in this study, they are defined as follows:

Opinion

In this research opinion refers to one's impression about alternative agricultural enterprises to replace tobacco cultivation, which was formed on the basis of his attitudes and beliefs.

Farmer

Farming may be defined as the occupation of raising crops or livestock from the land. In this study, the term farmer refers to an individual who is engaged in farming directly or indirectly on lands owned by himself or received from others (by barga, lease, etc.) or partly owned and partly received from others.

Enterprise

In this research an enterprise is a business unit, a company or firm, where systematic activity is conducted and directed toward profit. It may also be defined as an organization, especially a business or a difficult and important plan, especially one that will earn money.

Agricultural enterprise

In this research agriculture enterprise is a component of agriculture business or firm such as agricultural crops, livestock rearing, or other agricultural products.

Age

Age of the respondents refers to the period of times from his birth to the time of interview. It was measured in terms of year.

Level of education

Education refers to the total production of desirable changes in individual behaviour through the experience of reading, writing, observation and other related activities. It has been assumed that schooling in educational institutions helps production of such desirable changes.

Farm size

It refers to the farm area on which a farmer is used to do his farming either possessed by him or taken up by borga and lease from other during the year under investigation.

Annual income

The term refers to total earning of a respondent himself and other members of his family from agriculture and other sources during just previous year of data collection. It was measured in Taka.

Agricultural knowledge

It refers to the knowledge gained by the farmer on different aspects of agriculture from different sources and also through their experience.

Organizational participation

Organizational participation of a farmer refers to active participation in different social organizations either as an ordinary member, executive committee member or an officer (President/Secretary) for different terms and duration.

Innovativeness

It refers to the degree to which an individual is relatively earlier in adopting new ideas than the other members of the social system.

Cosmopolitanness

It is defined as the orientation of an individual external to his own social system.

Extension contact

Extension contact refers to the communication of farmers with extension personnel and works through which farmers are exposed to various agriculture information.

Tobacco farmer

In this research tobacco farmer means, the farmer who cultivates tobacco in their field.

Tobacco cultivation experience

In this research tobacco cultivation experience of a respondent refers to the period of time they cultivate tobacco. The experience was measured in terms of years from his/her first adoption of innovation to the time of interview.

Bidis

Bidis are small, thin, hand-rolled cigarettes which may be secured with a colorful string at one or both ends.

Zarda, Khaini, Sada pata and Gul

Zarda, Khaini, Sada pata and Gul are essentially 'Smokeless' or 'Chewable' tobacco leaf products.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this chapter is to review previous studies and opinions of experts having relevance to this investigation. But, unfortunately, very few studies were available which were directly related to the "opinion of tobacco farmer towards alternative agricultural enterprises to replace tobacco cultivation in meherpur district". However, some studies were found on attitude, adoption and repayment behaviour, the results of which were indirectly related to the present study. As the study relates to 'opinion', a brief discussion of the term opinion and the related concepts of attitude and belief have also been included. The reviews are presented based on the major objectives of the study. Presentations of reviews are made in three sections. The first section deals with the concepts of opinion, attitude and belief. The second section deals with the relationships of the selected characteristics of the farmers with their opinions. The third section deals with the conceptual framework of the study.

2.1 Concept of Opinion, Attitude and Belief

Though the terms opinion, attitude and belief have similarity in their meaning they are not synonymous. A brief discussion of these terms is presented below.

Opinion

According to Kendler (1963) an opinion falls somewhere between an attitude and belief. Like a belief it is a response to a specific proposition but not necessarily an unequivocal one.

According to Webster's (1962) New World Dictionary, opinion is an evaluation of impression or estimation of the quality or worth of a person, thing or event. It is the formal judgement of an individual on a matter in which his views are sought.

Best (1959) stated that how an individual feels, or what he believes, is his attitude. It is, however, possible to have an understanding about an individual's attitude and belief from his verbal statements in respect of the objects concerned. This is the area of opinion.

Psychologically, attitude, beliefs and opinions are similar in that they predispose a person to respond towards an object in a certain way. However, attitudes are thought of somewhat more general and less definite than beliefs.

Opinion is thus, one's impression about an object, which is formed on the basis of his attitudes and beliefs. It falls somewhere between attitude and belief. It is neither as broad as attitude nor as specific as belief.

Attitude

Kendler (1963) defined attitude as an individual's predisposition to respond in a characteristic way to some stimuli in his social environment. An attitude is a tendency to behave either positively or negatively toward any social cue whatever an institution, a person, a situation, an idea, or a concept.

Krech *et al.* (1962) defined attitude as an enduring system of three components centering about a single object. The components are: the belief about the object- the cognitive component; the affect connected with the object- the feeling component; and the disposition to take action with respect to the object- the action tendency component.

In the light of the above discussions, an attitude may be regarded as the predisposition of an individual to react toward an object in his social environment in a certain manner. It is an enduring system consisting of three components- cognitive components, feeling component, and action tendency component.

Belief

Kendler (1963) stated that belief implies the unequivocal acceptance or rejection of a specific proposition.

According to Fairchild (1962), belief is the acceptance of any given propositions as true without empirical verification. Such acceptance is essentially intellectual although it may be strongly coloured by emotion. In any case it establishes a mental condition in the individual which may serve as the basis for voluntary action. A particular belief may be based on sound factual evidence or upon prejudice, institution or misleading appearances.

According to Oxford English Dictionary (1961) belief is the mental acceptance of a proposition, statement or fact as true on the ground of authority or evidence.

In the light of the above discussions, a belief may be regarded as the mental acceptance of a proposition as true. It serves as a basis for voluntary action irrespective of whether it is based on factual evidence or not.

2.2 Review of Studies Exploring Relationship of the Selected Variables with Opinion

This section attempts to present a brief review of the findings of previous studies relevant to the association between the selected characteristics of individuals and their opinions.

Age and opinion

Sohel (1998) conducted a study to determine the opinion of farmers on tobacco. He found that age of the farmers had a significantly positive relationship with their opinion on tobacco. Similar findings were obtained by Hossain (1991), Shetty (1968) and Iqbal (1963) in their respective studies. Anwar (1971) conducted a study on the opinion of adults and youths and found that the age of neither the youths nor the adults was related with opinion. Similar findings were obtained by Baadgoankar (1984) in Uttar Kannada district of Karnataka state in India, Wahhab (1975) regarding attitude of farmers towards the use of fertilizers, Karim (1973), Sharma and Sharma (1970) and Rogers and Lewthold (1962) in Miami.

Education and opinion

Halich (2009), Sohel (1998) found that education of the farmers had no relationship with the opinion on tobacco cultivation. Singh (1991), Ali and Anwar (1987), Hossain (1981), Rahman (1974) and Anwar (1971) found similar findings in their respective studies. On the country, Altman et al., (1996, 1998), Beach et al., (2008), Hossain (1991) in his study found a significant positive relationship between education and their opinion with adoption of improved farm practice. Rahman (1986) in his study found that education had a significant and positive relationship with adoption of improved farm practices. Similar findings were obtained by Haque (1995) and Hossain (1983) in their respective studies. Wahhab (1975) observed a positive relationship between education and attitude towards the use of phosphorus and potash fertilizer while he found no relationship in case of use of urea fertilizer and their education.

Farm size and opinion

Altman et al., (1996, 1998), Beach et al., (2008), Mendieta & Velandia (2010), Sohel (1998) found a positive relationship with the area under cultivation of farmers and their opinion on agroforestry. Such findings were supported by Khan (1993), Shirazi (1984), Gogai and Gogai (1989), Kaur (1988), Karim *et al.*, (1987), Baadgoankar (1984), Karim (1973), Iqbal (1963) and Rahim (1961) in their respective studies. Miah and Rahman (1995) found no relationship between farm size of the farmers and their awareness regarding farming environment.

Annual income and opinion

The principal reason behind farmers choosing to grow tobacco was that it is considered to be more profitable than other crops due to its guaranteed market and that the farmer receives his entire money for his produce at once (Naher and Efroymsen, 2007). Sohel (1998) and Ochola and Kosura (2003) found a positive relationship between annual income of the farmers and their opinion on tobacco cultivation. Similar findings were obtained by Altman et al., (1998), Beach, Jones, & Tooze, (2008), Snell, Powers, &

Halich (2009), Strader & Alston (2009), Khan (1993), Singh (1991), Kaur (1988), Karim *et al.*, (1987), Haque (1995), Baadgoankar (1984) and Rogers *et al.*, (1962). Hossain (1991) found no relationship of income with the adoption of improved farm practices in tobacco cultivation. Such findings were supported by Hossain (1983) and Iqbal (1963).

Agricultural knowledge and opinion

Ali's (1999) study on unemployed rural youth in Mymensingh revealed that agricultural knowledge had no relationship with their opinion on self-employment by undertaking selected agricultural income generating activities. Further he found that agricultural knowledge had positive significant relationship with their anticipated problem confrontation in self-employment by undertaking selected agricultural income generating activities.

Rashid's (1999) study on dropout rural youths in Rangpur revealed that agricultural knowledge had no relationship with their willingness for undertaking selected agricultural entrepreneurship in their self-employment. He also found that relationship was absent between agricultural knowledge and problem perceived by the youth, for undertaking selected agricultural entrepreneurship in their self-employment.

Organizational participation and opinion

Strader & Alston (2009), Sohel (1998) found a positive relationship between organizational participation of the farmers and their opinion on tobacco cultivation. Such findings were supported by Khan (1993), Hossain (1991), Rahman (1986), Karim (1973) and Hossain (1983) in their respective studies.

Hamid (1995) observed a positive relationship between awareness of the farmers and their participation organizational incase of less progressive village and found no relationship incase of progressive village.

Cosmopolitanism and opinion

Ali's (1999) study revealed that cosmopolitanism had no relationship with their opinion on self-employment by undertaking selected agricultural income generating activities. Further he found that relationship was present between cosmopolitanism and anticipated problem confrontation in self-employment by undertaking selected agricultural income generating activities.

Rashid's (1999) study revealed that cosmopolitanism had no relationship of the rural youth and their willingness for undertaking selected agricultural entrepreneurship in their self-employment and with their problem perceived for undertaking selected agricultural entrepreneurship in their self-employment.

Extension contact and opinion

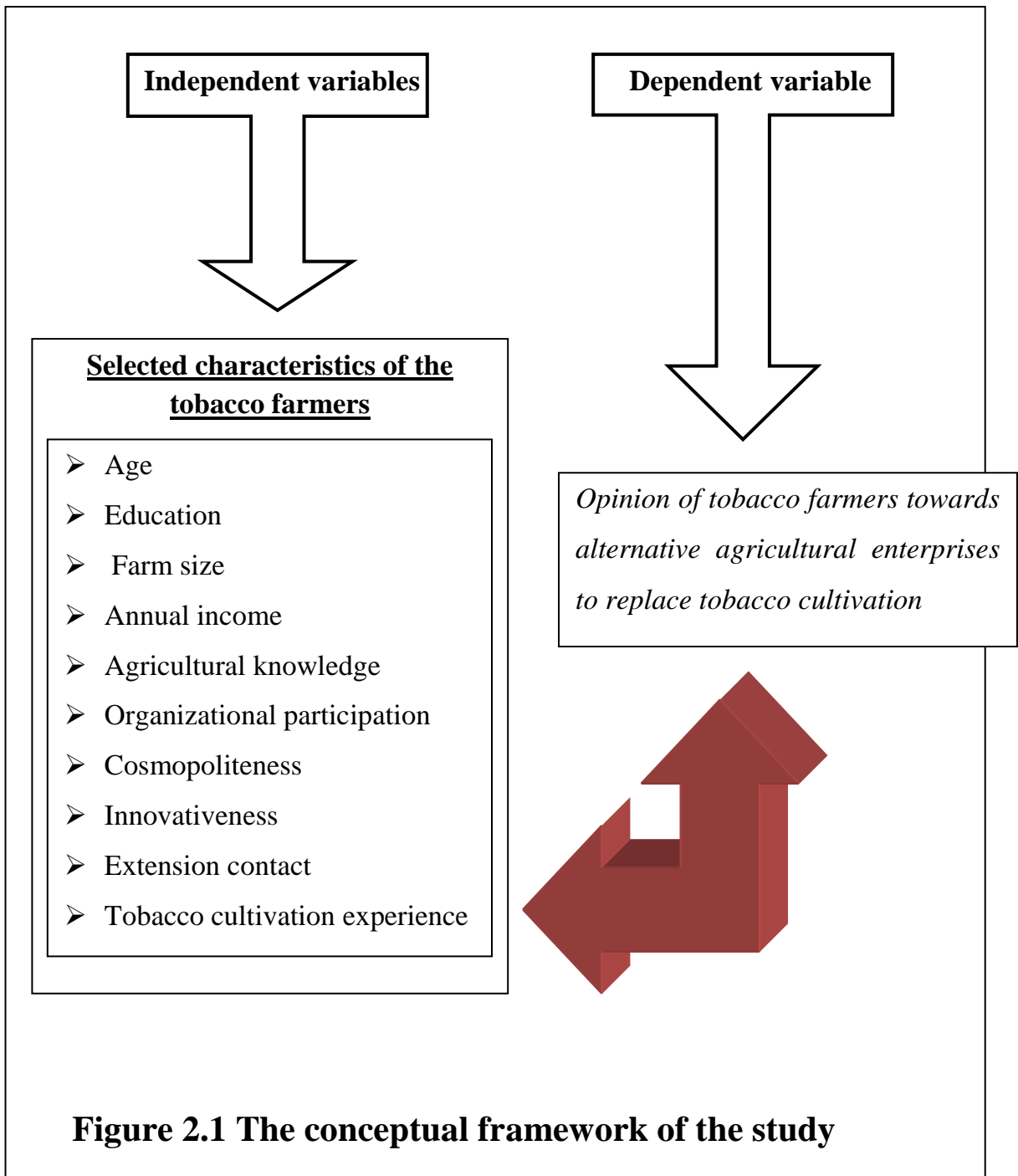
Rhea (2001) and Sohel (1998) found a positive relationship between mass media exposure of the farmers and their opinion on tobacco cultivation. Such findings were supported by Miah and Rahman (1995), Islam (1994), Singh (1991), Kaur (1988), Thomas *et al.*, (1990) and Azore (1989) in their respective studies.

Tobacco cultivation experience and opinion

Beach *et al.*, (2008), Mendieta & Velandia (2010), Sohel (1998) in their studies attempted to determine opinion of the farmers on tobacco cultivation. It was found that experience of the farmers had a significantly positive relationship with their opinion on tobacco cultivation. Similar findings were obtained by Hossain (1991), Shetty (1968) and Iqbal (1963) in their respective studies. Anwar (1971) conducted a study on the opinion of experienced adults and less experienced youths and found that the experience of neither the youths nor the adults was related with opinion. Similar findings were obtained by Baadgoankar (1984) in Uttar Kannada district of Karanataka state in India, Wahhab (1975) regarding attitude of farmers towards the use of fertilizers, Karim (1973), Sharma and Sharma (1970) and Rogers and Lewthold (1962) in Miami.

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 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 (Townsend, 1953). Independent variables 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 made on the basis of review of literature, which is shown in Figure 2.1. It was expected that the selected independent and the dependent variables were interrelated.



CHAPTER 3

METHODOLOGY

In any scientific research, methodology plays an important role, and an appropriate methodology enables the researcher to collect valid and reliable information and to analyze that information properly in order to arrive at correct conclusions. The methods and procedures used in this study are discussed in this chapter, under the following sections.

3.1 Locale of the Study

Four villages namely, Karamdi of Tentulbaria Union, Motmura of Motmura Union, Nishipur of Bamundi Union and Haravangga of Kazipur Union under Gangni Upazila of Meherpur District were selected as the study area. The Unions were close to each other but outside of Upazila head quarter. The site was located at about 35 km west of Kusthia district and 24 km east of Meherpur district. Agriculture was the major occupation in the study area and the area had well accessibility through road and water ways. Each of the village has at least 4 primary schools, one high school, one college, market, hospital and 3-4 local NGOs. For clarity of understanding, a map of Meherpur district showing Gangni Upazila and a separate map of Gangni Upazila showing the study area have been furnished in Fig. 3.1 and 3.2 respectively.

3.2 Population and Sample

Among the farm families of the study area, agriculture was the major occupation. Few were service holders and businessmen. Those four villages had 996 tobacco farm families who constituted the population for this study. About ten percent of the farm families were randomly selected from each village. Thus, 101 farm families constituted the sample for this study. Moreover, 11 tobacco farm families heads were selected from the study area covering all four villages. These 11 tobacco farm families heads were included in the reserve list. The distribution of the farm family heads included in the population, the sample and reserve list of the 4 villages of the study area have been shown in Table 3.1.



Source: <http://mapofbangladesh.blogspot.com/2011/09/meherpur-district.html>

Fig. 3.1 Map of Meherpur District showing Gangni Upazila



Source: <http://mapofbangladesh.blogspot.com/2011/12/gangni-upazila.html>

Fig. 3.2 Map of Gangni Upazila showing Tentulbari, Motmura, Bamumdi and Kazipur Union

Table 3.1 Distribution of the farm family heads included in the population, sample and reserve list

Sl. No.	Name of the selected villages	Population of the farm family heads	Number of the farm family heads included in the sample	Number of farm family heads included in reserve list
1	Karamdi	323	32	4
2	Motmura	190	20	2
3	Nishipur	237	24	2
4	Haravangga	246	25	3
	Total	996	101	11

3.3 Instrument for Collection of Data

In order to collect desired information, an interview schedule was prepared keeping the objectives of the research in view. The schedule was prepared in Bangla for clear understanding of the respondents. Farmers opinion based question have been included in the schedule along with the selected characteristics of the respondents.

It may be recalled that the schedules were pre-tested in actual field situation before using the same for final collection of data among 15 respondents of the study area. Necessary correction, additions and alterations were made in the interview schedule on the basis of results of pre-test. The interview schedule was then cyclostyled in its final form. An English version of the interview schedule has been shown in Appendix-A.

3.4 Collection of Data

Data were collected personally by the researcher himself from the sample by using interview schedule. Data collection was started on September 14 and completed on September 30, 2014. Very good co-operation was obtained from the field extension workers and the local leaders. No serious difficulty was faced by the researcher during the collection of data. Data obtained from the respondents were transferred to the master sheet and then compiled to facilitate tabulation. The qualitative data were converted into quantitative one by means of suitable scoring techniques.

3.5 Variables of the Study

The hypothesis of a research contains generally two variables, an independent variable and a dependent variable. An independent variable is that factor which manipulated by the experimenter in his attempt to determine its relationship to an observed phenomenon. A dependent variable is that factor which disappears or varies as the experimenter introduces, removes or varies the independent variables.

In this study 10 selected characteristics of the farmers constituted the independent variables. These were: age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience.

Opinion of tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation was the dependent variable. Alternative enterprises were crop cultivation, animal rearing and several kinds of business, undertaken by the farmers.

3.6 Measurement of the Variables

3.6.1 Measurement of the independent variables

The 10 selected characteristics of the farmers were independent variables of the study. The independent variables were measured as follows:

3.6.1.1 Age

Age of a respondent refers to the period of time from his birth to the time of interview. The age were measured in terms of years on the basis of verbal response of the farmers. A score of one (1) was assigned for each year of one's age. It appears in item number 1 in the interview shedule as presented in Appendix-A.

3.6.1.2 Education

Education of the farmers was measured in terms of years of successful schooling by a respondent. For example, if a respondent passed the final examination of class five or equivalent examination, his education score was given as 5. Each illiterate respondent was given a score of zero (0). A person not knowing reading or writing but being able to sign only was given a score of 0.5. It appears in item number 2 in the interview schedule as presented in Appendix-A.

3.6.1.3 Farm size

The term refers to the cultivated area either owned by the farmers, or cultivated on borga, lease or other means including homestead area. Farm size of a respondent was measured in hectares by using the following formula:

$$\text{Farm size} = A_1 + A_2 + A_3 + \frac{1}{2}(A_4 + A_5)$$

Where,

A_1 = Own home and homestead area

A_2 = Own cultivated area

A_3 = Cultivated area taken on lease from others

A_4 = Cultivated area given to others on barga systems

A_5 = Cultivated area taken from others on barga.

The data were first recorded in terms of local measurement unit i.e. bigha or katha and then converted into hectare. It appears in item number 3 in the interview schedule as presented in Appendix-A.

3.6.1.4 Annual income

The term annual income has been used to refer to the total earning of the respondents from agriculture and non-agricultural sources during a year. Annual income of the respondent was measured on the basis of his total yearly income from agricultural and non-agricultural sources in taka. The income sources under agriculture included crops, livestock, fish, fruits and vegetables. Non agricultural sources of income included service, business, day labour and others income sources of the respondents or other members of his family. A score was assigned 1 for one thousand taka of income of a respondent. It appears in item number 4 in the interview schedule as presented in Appendix-A.

3.6.1.5 Agricultural knowledge

Agricultural knowledge of a respondent was measured by asking him 20 questions related to different components of agriculture e.g. different crop varieties, livestock, fisheries, pests, pesticides, fertilizer etc. It was measured in scores. The total assigned score for all the questions was 40. The assigned score of each question was equal. The mark was given according to their response at the time of interview.

Answering a question correctly an individual could obtain full score. While for wrong answer he obtained zero score. Thus, the agricultural knowledge score of a respondent could range from 0 to 40, where 0 indicates no knowledge and 40 indicates very high knowledge. It appears in the item number 5 in the interview schedule as presented in Appendix-A.

3.6.1.6 Organizational participation

The organizational participation score was computed for each respondent on the basis of his membership with ten 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.

<u>Categories of participation:</u>	<u>Score</u>
a. No participation	0
b. Participation as ordinary member	1
c. Participation as executive member	2
d. Participation as president or secretary	3

If a respondent had membership in two or more organizations his scores were computed by adding the scores obtained for each organization according to the categories of his membership. Ten organizations were in existence in the study area. The organizational participation scores of the respondent could range from 0 to 30, where 0 indicates no participation and 30 indicates very high participation.

3.6.1.7 Cosmopolitaness

Cosmopolitaness of a respondent was measured by computing a cosmopolitaness score. The cosmopolitaness score was assigned on the basis of visit of places and frequency of his visit external to his own social system. The 7 places outside own village included other unions, own upazila, other upazilas, own district town and other district towns and capital city.

Cosmopolitaness score was computed in the following manner:

Sl. No.	Place of visits	Assigned score
1.	Visit to other villages	0 = Not even once a month 1 = 1 time/month 2 = 2-3 times/month 3 = 4 times or above/month
2.	Visit to other unions	0 = Not even once a month 1 = 1-2 times/month 2 = 3-5 times/month 3 = Above 5 times/month
3.	Own upazila sadar	0 = Not even once a month 1 = 1 time/month 2 = 2 times/month 3 = 3 times or above/month
4.	Other upazila sadar	0 = Not even once a year 1 = 1 time/year 2 = 2 times/year 3 = 3 times or above/year
5.	Own district town	0 = Not even once a year 1 = 1 time/year 2 = 2-3 times/year 3 = 4 times or above/year
6.	Other district town	0 = Not even once a year 1 = 1 time/year 2 = 2 times/year 3 = 3 times or above/year
7.	Capital city (Dhaka)	0 = Not even once a year 1 = 1 time/year 2 = 2 times/year 3 = 3 times or above/year

The scores obtained for all the 7 items were added together to get the cosmopolitanness score of an individual. The cosmopolitanness score of the farmers ranged from 0 to 21 where 0 indicating no cosmopolitanness and 21 indicating very high cosmopolitanness. It appears in item number 7 in the interview schedule as presented in Appendix-A.

3.6.1.8 Innovativeness

An innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in the social system (Rogers, 1995). The term innovativeness refers to the degree to which an individual is relatively earlier in adopting new ideas than the other members of a social system (Rogers, 1995). Innovativeness of the respondents was measured on the basis of their adoption of 11 agricultural new technologies related to agriculture and related issues. Score was assigned on the basis of earliness in the use of a practice by a respondent. Five point scale was used for computing the innovativeness score which were as follows:

Score 4	= for adoption of technologies within one year after their first hearing by the respondent
Score 3	= for adoption of technologies within two years after first hearing by the respondent
Score 2	= for adoption of technologies within three years after first hearing by the respondent
Score 1	= for adoption of technologies within four or more years after first hearing by the respondent
Score 0	= for non adoption of technologies

Thus, the innovativeness score of a respondent was obtained by adding the score for all eleven items. The range of innovativeness score could vary from 0 to 44, where 0 indicates no innovativeness and 44 indicates very high innovativeness. The item could be seen in item number 8 in the interview schedule as presented in Appendix-A.

3.6.1.9 Extension contact

It was defined as one's extent of exposure to 12 selected information sources (extension media) related to agricultural teaching programs and methodology. A respondent was asked to choose one answer among four options of contact for each medium, namely: frequently, occasionally, rarely and not at all. These four options for each medium were defined specially to each medium considering the situation, rationality and result of pre-test. Weight was assigned for all extension media in the following manner:

Extent of contact	Weighting system
Frequently	3
Occasionally	2
Rarely	1
Not at all	0

The extension contact score of a respondent was, therefore, determined by adding the total responses against 12 selected extension media. Thus, the extension contact score could range from 0 to 36, where 0 indicating no extension contact and 36 indicating highest contact. It appears in the item number 9 of the interview schedule presented in Appendix-A.

3.6.1.10 Tobacco Cultivation Experience

Experience of a respondent refers to the period of time they cultivate tobacco. The experience was measured in terms of years on the basis of verbal response of the farmers. A score of one (1) was assigned for each year of one's experience. It appears in item number 10 in the interview schedule as presented in Appendix-A.

3.6.2 Measurement of dependent variable

Opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation was the dependent variable of the study. The farmers were asked to give their opinion on 25 extension messages (agricultural enterprises) regarding their suitability in respect of timeliness of information and scope of application of information by the farmers in their fields.

The enterprises were selected on the basis of scope and availability of agricultural resource present in the locality to replace tobacco cultivation. One hundred one tobacco farmers were interviewed regarding their opinion on suitability of alternative agricultural enterprises. The farmers provided feedback to replace tobacco cultivation through seasonal available agricultural enterprises e.g. cultivation of maize, mustard and poultry business etc. Only few farmers opined to replace agricultural enterprise directly while majority of the farmers mentioned for probable activities they can be involved in future. The farmers were asked to give their opinion on the alternative agricultural enterprise. A 4 point rating scale was used to measure the suitability of enterprise.

An appropriate score was assigned in terms of extent of suitability of alternative agricultural enterprise to replace tobacco cultivation as follows:

Extent of suitability	Weight assigned
Highly suitable	3
Moderately suitable	2
Less suitable	1
Not suitable	0

By adding the assigned score of 25 enterprises of a respondent together, the suitability of enterprises of a respondent was obtained. Thus, the suitability of alternative agricultural enterprise score of a respondent could range from 0 to 75, where 0 indicating not suitable and 75 indicating highly suitable agricultural enterprises to replace tobacco cultivation.

3.7 Compilation of Data

After completion of field survey all the interview schedules were compiled, tabulated and analyzed according to the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units. The responses to the questions in the interview schedule were transferred to a master sheet to conduct tabulation. Tabulation and cross tabulation were done on the basis of categories developed by the investigator himself.

3.8 Data Processing and Analysis

The analysis was performed using SPSS (Statistical Package for Social Science) computer package. Descriptive analysis such as range, frequency count, number and percentage, mean, standard deviation and rank order were used, Pearson's Product Moment Co-efficient Correlation (r) was used in order to explore the relationship between the concerned variables. Throughout the study, five percent (0.05) level of probability was used as a basis of rejecting a null hypothesis. In order to determine difference between the respondents from two study locales regarding dependent and independent variables, student t-test for the difference of means was also used.

CHAPTER 4

FINDINGS AND DISCUSSION

In this chapter the findings of the study and interpretation of the results have been presented in three sections according to the objectives of the study. The first section deals with the selected individual characteristics of the farmers. The second section deals with the opinion of the tobacco farmers towards alternative agricultural enterprise to replace tobacco cultivation and the last section deals with the relationship between dependent and independent variables.

4.1 Selected Characteristics of the Farmers

Ten characteristics of the farmers were selected to find out their relationships with the opinion of the tobacco farmers towards alternative agricultural enterprise to replace tobacco cultivation. The selected characteristics included age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience. These characteristics of the farmers are described in this section. A brief summary of the scoring methods with basic statistics have been presented in Table 4.1. prior to each sub-section.

Table 4.1 Salient features of selected characteristics of the farmers

Characteristics	Measuring unit	Range		Categories	Farmers		Mean	Standard deviation
		Possible	Observed		Number (N=109)	Percent (%)		
1. Age	Years	Unknown	25-71	Young (up to 35)	28	27.5	42.59	9.57
				Middle aged (36-50)	55	54.7		
				Old (51 and above)	18	17.8		
2. Education	Year of schooling	Unknown	0-17	Illiterate (0)	20	19.8	6.04	5.63
				Only Can sign (0.5)	23	22.8		
				Primary level (1-5)	7	6.9		
				Secondary level (6-10)	32	31.7		
				Higher secondary level (11 and above)	19	18.8		
3. Farm size	Hectare	Unknown	0.17-3.67	Marginal (0.021-0.2)	2	2	0.75	0.51
				Small (0.201-1.0)	77	76.2		
				Medium (1.001 - 3.0)	21	20.8		
				Large (above 3.0 ha)	1	1		
4. Annual income	(000')	Unknown	70-835	Low (50.01-150 th.)	8	7.9	262.32	104.65
				Medium (150.01-250th.)	45	44.6		
				High (250.01-350 th.)	32	31.7		
				Very high (350.01 th. and above)	16	15.8		
5. Agricultural knowledge	Scores	0-40	11-40	Low (Up to 20)	27	26.7	24.37	6.47
				Medium (21-30)	55	54.5		
				High (31 and above)	19	18.8		
6. Organizational participation	Scores	0-30	0-15	No participation (0)	8	7.9	4.70	3.22
				Low participation (1-10)	86	85.1		
				Medium participation (11-20)	7	6.9		
7. Cosmopolitaness	Scores	0-21	3-21	Low (up to 8)	26	25.7	11.43	4.44
				Medium (9-15)	55	54.5		
				High (16 and above)	20	19.8		
8. Innovativeness	Scores	0-44	6-32	Low (up to 15)	29	28.7	19.37	6.57
				Medium (16-30)	68	67.3		
				High (31 and above)	4	4		
9. Extension contact	Scores	0-36	1-34	Low (1-10)	39	38.6	13.66	6.82
				Medium (11-20)	47	46.5		
				High (21 and above)	15	14.9		
10. Tobacco cultivation experience	Scores	Unkno wn	2-21	Low(1-5)	23	22.8	9.35	4.74
				Medium(5.01-10)	44	65.3		
				High(11 and above)	34	11.9		

4.1.1 Age

Age of the farmers ranged from 25-71 years. The average was 42.59 and standard deviation 9.57. The respondents were classified into three categories. The categories and distribution of the farmers have been shown in Table 4.1.

Analysis of data contained in Table 4.1 reveals that the highest proportion, 54.7 percent of the respondents were middle aged while 27.5 percent of the respondents belonged to the young aged categories and 17.8 percent were in the old aged category. These findings indicate that majority of the farmers were middle aged. Middle aged people are generally energetic and matured to take any decision easily.

4.1.2 Education

The education score of the respondents ranged from 0-17 with an average of 6.04 and standard deviation of 5.63. Based on their education scores, the farmers were categorized into 5 groups as shown in Table 4.1.

Data presented in Table 4.1 indicated that the highest proportion 31.7 percent of the farmers had secondary level education, compared to 22.8 percent who could sign only, 19.8 percent having no education, 18.8 percent having higher secondary level education and 6.9 percent having primary level education. So the education percentage of the locality was 80.2%. The present literacy rate of the country is 57.9 percent (BBS, 2013). The findings indicate that in the study area, the literacy rate was higher than national level average.

4.1.3 Farm size

Farm size score of the respondents ranged from 0.17 to 3.67 hectares with an average of the 0.75 hectares and standard deviation of 0.51. Based on their farm size the farmers were classified into four categories and were shown in Table 4.1.

The data in the table reveals that majority 76.2 percent of the respondents had small farm size, 20.8 percent had medium farm size, 2 percent had marginal farm size and 1 percent had large farm size. The majority (97 percent) of the farmers had small to medium farmer sizes ranging from 0.201 to 3.0 ha. Thus, most of the farmers were in possession of small to medium land holdings.

4.1.4 Annual income

The annual income of the respondents ranged from Tk.70 thousand to Tk.835 thousand with an average of tk **262.32** thousand and standard deviation of **104.65**. On the basis of their annual family income score, the farmers were classified into four categories which shown in Table 4.1.

The highest proportion, 44.6 percent of the respondents had medium income while 31.7 percent high, 15.8 percent had very high and 7.9 percent low annual income. Thus 76.3 percent of the tobacco farmers had medium to high annual income.

4.1.5 Agricultural knowledge

Agricultural knowledge scores of the farmers ranged from 11 to 40 with an average of 24.37 and standard deviation of 6.47. The respondents were classified into three categories. On the basis of agricultural knowledge score which is shown in Table 4.1.

Data in the Table indicated that about 54.5 percent had medium, 26.7 percent had low and 18.8 percent had high agricultural knowledge. From the data it was found that level of agricultural knowledge of the respondents were mostly medium to high in the study area.

4.1.6 Organizational participation

Organizational participation of a respondent was calculated by membership position in different organizations for a particular period of time. The computed score of organizational participation of the respondents varied from 0 to 15, against a possible range of 0 to 30 with an average of 4.70 and standard deviation of 3.22. On the basis of individual organizational participation score, the respondents were classified into three categories and shown in Table 4.1.

The highest proportion 85.1 percent of the respondents had low organizational participation, 7.9 percent having no participation and 6.9 percent respondents had medium participation. Thus, majority percent of the farmers had low organizational participation indicating that they were either not motivated to become member of the local organization or they lacked scope & facilities in these regards.

4.1.7 Cosmopolitaness

The cosmopolitaness score of the respondents ranged from 3 to 21. The average was 11.43 with a standard deviation of 4.44. On the basis of their cosmopolitaness score, the respondents were grouped into three categories as has been shown in Table 4.1.

The highest proportion, 54.5 percent of the respondents had medium cosmopolitaness as compared to 25.7 percent having low cosmopolitaness and 19.8 percent had high cosmopolitaness. Data also revealed that majority (80.2 percent) of the farmers were under medium to low cosmopolitaness categories. Hussen (2001) and Islam (2002) also observed the similar findings in their study.

4.1.8 Innovativeness

Innovativeness score of the respondents ranged from 6 to 32 with an average of 19.37 and standard deviation of 6.57. The respondents were classified into three categories on the basis of their innovativeness score. The categories and distribution of the respondents are shown in Table 4.1.

Analysis of data reveals that majority 67.3 percent of the respondents had medium innovativeness, 28.7 percent had low and 4 percent had low innovativeness. This indicates that there was appreciable innovativeness among the farmers.

4.1.9 Extension contact

Extension contact of the respondents ranged from 1-34 with an average of 13.66 and standard deviation of 6.82. On the basis of their extension contact the respondents were classified into three categories which are presented in Table 4.1.

The highest proportion 46.5 percent of the respondents had medium extension contact as compared to 38.6 percent having low extension contact and 14.9 percent had high extension contact. The findings of the study indicate that most of the respondents had low and medium contact with various information sources for getting necessary agricultural information. Hussen (2001) and Islam (2002) observed almost similar findings in respect of getting necessary agricultural information by the farmers.

4.1.10 Tobacco cultivation experience

Experience of the farmers ranged from 2-21 years. The average was 9.35 years with a standard deviation of 4.74. The respondents were classified into three categories. The categories and distribution of the farmers have been shown in Table 4.1.

Analysis of data contained in Table 4.1 reveals that the highest proportion, 65.3 percent of the respondents had medium experience, 22.8 percent of the respondents belonged to the low experience categories while 11.9 percent were in high experience category. These findings indicate that majority of the farmers were medium to high experienced. They were experienced enough to take any formal judgment regarding alternative agricultural enterprises.

4.2 Opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation

Opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation was the main focus of the study. The computed opinion score of the respondents ranged from 24 to 75 against the possible range of 0 to 75. The mean and standard deviation were 44.05 and 12.14 respectively. Considering the suitability score of the respondents, they were classified into three categories and are presented in Table 4.2.

Table 4.2 Distribution of the tobacco farmers according to their opinion towards alternative agricultural enterprise to replace tobacco cultivation

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Less suitable (up to 25)	19	18.8	44.05	12.14
Moderately suitable (26-50)	51	50.5		
Highly suitable (51 and above)	31	30.7		

Table 4.2 shows that slightly over half 50.5 percent of the farmers belonged to moderately suitable category compared to 30.7 percent of “highly suitable” category and the rest 18.8 percent “less suitable” category. Thus, about 81.2 percent of the farmers opined that alternative enterprises would be highly suitable to moderately suitable to replace tobacco cultivation.

Tobacco farmers opinion index (POI) :

The FOI regarding the alternative agricultural enterprise to replace tobacco cultivation on individual aspects of different agricultural enterprises are shown in Table 4.3. The tobacco farmers opinion index (FOI) was calculated by multiplying the frequency counts of each of the cell of a scale of agreement with its corresponding weight such as 3 for highly suitable, 2 for moderately suitable, 1 for less suitable and 0 for not suitable at all. By adding all the values of each cell together, the score of FOI was calculated. The FOI could range from 0 to 303 and observed range was 58 to 265, 0 indicating not suitable at all while 303 indicating highly suitable. Among 25 agricultural enterprises, winter vegetable cultivation (265) and social forest (58) were found to be the highest and lowest in rank order respectively.

Table 4.3 Tobacco farmer's opinion index (FOI) regarding the alternative agricultural enterprises to replace tobacco cultivation

Agricultural enterprises	Extent of suitability				FOI	Rank order
	Highly suitable	Moderately suitable	Less suitable	Not suitable		
Winter vegetable cultivation	66	33	1	1	265	1
Cultivation of modern wheat variety	57	38	6	0	253	2
Inter cropping(wheat-mustard, maize-groundnut, sugarcane-potato etc)	66	17	11	7	243	3
Poultry business	59	20	14	8	231	4
Spices crop cultivation	59	15	20	7	227	5
Cultivation of vegetables and fruits in the homestead area as well as orchard	57	21	13	10	226	6
Rearing goat, cows and duck-cum fish cultivation in the pond	60	14	17	10	225	7
Use of organic manure for increasing soil productivity and for more production of crop	60	13	11	17	217	8
Cultivation of potato	57	14	18	12	217	8
Fish cum boro rice cultivation in field	48	24	20	9	212	9
Cultivation of mustard	42	24	28	7	202	10
Cultivation of flower	38	28	17	18	187	11
Transplanting of rice in rows and maintaining of optimum spacing to increase yield	44	21	12	24	186	12
Establishment of nursery for the production of more seedlings	44	18	11	28	179	13
Cultivation of pulse crops	30	32	24	15	178	14
Maintaining crop rotation with legume crops	35	25	21	20	176	15
Fiber crops jute, cotton etc.	34	15	34	18	166	16
Cultivation of maize	23	22	44	12	157	17
Use of ICM	35	14	7	45	140	18
Cultivation of peas	20	18	41	22	137	29
Green manuring crop	14	19	30	38	110	20
Cultivation of mung bean	9	18	37	37	100	21
Cultivation of soybean	9	18	34	40	97	22
Agro forest	4	9	30	58	60	23
Social forest	4	8	30	59	58	24

4.3 Relationship between Selected Characteristics of the Tobacco Farmers and Their Opinion towards Alternative Agricultural Enterprise to Replace Tobacco Cultivation

The purpose of this section is to examine the relationships among the 10 selected characteristics of the tobacco farmers and their opinion regarding the alternative agricultural enterprise to replace tobacco cultivation. The selected characteristics were: age, education, farm size, annual income, agricultural knowledge, organizational participation, cosmopolitaness, innovativeness, extension contact and tobacco cultivation experience. Each of the characteristics of the farmers constituted an independent variable while tobacco farmers opinion towards alternative agricultural enterprise to replace tobacco cultivation was the dependent variable of the study. To explore relationship Pearson's Product Moment Correlation Co-efficient (r) was computed.

The relationships between the variables have been described in separate sub-section of this section (each dealing with one independent and one dependent variable). Significant relationship as determined by co-efficient of correlation test ' r ' has been examined. The null hypothesis being formulated for this study have already been described in Chapter one. A null hypothesis was rejected when the observed ' r ' value was greater than the tabulated value ' r ' at 0.05 percent level of probability with 99 degrees of freedom. Out of 10 correlations, 7 were statistically significant. A summary of the correlation result has been presented in Table 4.4.

Table 4.4 Correlation between the dependent and the independent variables (N=101)

Dependent variable	Independent variables	Calculated 'r' value
Opinion of the tobacco farmers towards alternative agricultural enterprise to replace tobacco cultivation	Age	-0.335**
	Education	0.825**
	Farm size	-.055 ^{NS}
	Annual income	0.105 ^{NS}
	Agricultural knowledge	0.585**
	Organizational participation	0.269**
	Cosmopoliteness	0.535**
	Innovativeness	0.024 ^{NS}
	Extension contact	0.543**
Tobacco cultivation experience	-0.440**	

* = Significant at P<0.05

Critical value (0.05) = 0.195 with 99df.

** = Significant at P<0.01

Critical value (0.01) = 0.255 with 99df.

NS = Not significant

4.3.1 Relationship between farmers age and opinion

The computed value of correlation coefficient between the concerned variables was found to be -0.335 as shown in Table 4.4. Following observations were made regarding the relationship between these two variables under consideration.

a) The relationship showed a negative trend.

b) The computed value of 'r' (-0.335) was found to be greater than the tabulated value (r = 0.195) with 99 degrees of freedom at 0.05 level of probability.

Based on the above findings the null hypothesis was rejected and hence, it was concluded that the age of the respondents had significant negative relationship with their opinion regarding the alternative agricultural enterprise to replace tobacco cultivation. This indicates that with the increase in age of the farmers, their opinion towards alternative agricultural enterprise to replace tobacco cultivation was decreased, Similar relationships were also found by Islam (1995), Bhuiyan (1998).

4.3.2 Education and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.825 as shown in Table 4.4. Following observations are made regarding the relationship between these two variables under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.825) was larger than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically significant.

The null hypothesis was therefore, rejected on the basis of this finding. Thus, it was concluded that the education of the farmers had significant relationship with the opinion of the farmers towards alternative agricultural enterprise to replace tobacco cultivation.

Education helps individuals gain knowledge and skills in different subject matters and develop positive attitudes, which ultimately increase their power of decision making. These enable the individuals to become rational, conscious and in getting useful information to solve their daily working problems. They also know about harmful effect

of tobacco in respect of physical and environmental aspect. Many of them were aware that tobacco destroys soil physical properties as well as it depletes soil nutrition. Educated farmer were rather motivated to accept other enterprise to replace tobacco cultivation.

Education also helps an individual to develop sound mental makeup that gives him a judging capability with rationality. Moreover, education enhances an individual to adopt other enterprise to replace this harmful crop cultivation. Having all these advantages formal education was found to play a vital role to perceive alternative agricultural enterprise to replace tobacco cultivation.

4.3.3 Farm size and opinion

The computed value of correlation between the concerned variables was found to be -0.055 as shown in Table 4.4., Following observations were made regarding the relationship between these two variables under consideration.

- a) The relationship showed a tendency in the negative direction between the concerned variables .
- b) The computed value of 'r' (-.055) was smaller than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically non significant.

Based on above findings, the null hypothesis could not be rejected and, therefore, it was concluded that the farm size of the farmers had no significant relationship with opinion of the tobacco farmers towards alternative agricultural enterprise to replace tobacco cultivation.

A farmer having large or small farm size always will try to adopt the profitable crop in his field, Tobacco is a much profitable crop compared to other crops. Having economic gain is not different from each other. Probably there was no significant relationship between the concerned variables, due to this common profit motive.

4.3.4 Annual income and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.105 as shown in Table 4.4. Following observations are made regarding the relationship between these two variables under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.105) was smaller than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically non significant.

This finding indicates that the variables were not dependent on each other. Based on above findings the null hypothesis could not be rejected and, therefore, it was concluded that annual income of the farmers had no significant relationship with the opinion of the farmers towards alternative agricultural enterprise to replace tobacco cultivation.

Some studies indicate that income of a farmer is a vital factor for farming enterprise. But in this case, individual in the society might be mindful about the harmful effect of tobacco, there was no relationship between the concerned variables.

4.3.5 Agricultural knowledge and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.585 as shown in Table 4.4. Following observations were made regarding the relationship between these two variable under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.585) was larger than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically significant.

Based on the above findings the null hypothesis was rejected and, therefore, it was concluded that with the increase of agricultural knowledge of the farmers, their opinion towards alternative agricultural enterprise to replace tobacco cultivation also increased.

4.3.6 Organizational participation and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.269 as shown in Table 4.4. Following observations were made regarding the relationship between these two variable under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables.
- b) The computed value of 'r' (0.269) was larger than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically significant.

Based on above findings the null hypothesis was rejected and, therefore, it was concluded that the organizational participation of the farmers had significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

In fact, the role of organization in modifying human behaviour is unquestionable. Due to organizational involvement the farmers get chance of understanding by sharing of ideas and views with other people. Thus, the organizational participation may influence people towards participation in development programme undertaken by various GOs and NGOs.

Based on the findings, it was concluded that with the increase of organizational participation of the farmers their opinion towards alternative agricultural enterprise to replace tobacco cultivation also increased.

4.3.7 Cosmopolitaness and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.535 as shown in Table 4.4. Following observations were made regarding the relationship between these two variable under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.535) was larger than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically significant.

Based on above findings the null hypothesis was rejected and, therefore, it was concluded that the cosmopolitaness of the farmers had significant relationship with opinion towards alternative agricultural enterprise to replace tobacco cultivation. Zakaria (2000), in his research found similar relationship between cosmopolitaness and repayment of credit.

It means that those who were more cosmopolite, they perceived earlier the alternative agricultural enterprise than others who were not cosmopolite. The cosmopoliteness was helpful in the formation of favorable opinion towards alternative agricultural enterprise to replace tobacco cultivation.

4.3.8 Innovativeness and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.024 as shown in Table 4.4. Following observations were made regarding the relationship between these two variable under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.024) was smaller than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically non significant.

Based on above findings the null hypothesis was accepted and, therefore, it was concluded that the innovativeness of the farmers had no significant relationship with opinion towards alternative agricultural enterprise to replace tobacco cultivation. The logical evidences supporting agricultural enterprises was more or less equal among all categories of farmers, and as such innovativeness did not play any significant role.

4.3.9 Extension contact and opinion

The computed value of correlation coefficient between the concerned variables was found to be 0.543 as shown in Table 4.4. Following observations were made regarding the relationship between these two variables under consideration.

- a) The relationship showed a tendency in the positive direction between the concerned variables .
- b) The computed value of 'r' (0.543) was larger than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability. Hence the relationship was statistically significant.

Based on the above findings the null hypothesis was rejected and, therefore, it was concluded that the extension contact of the farmers had significant relationship with opinion of the tobacco farmers on alternative agricultural enterprise to replace tobacco cultivation.

Media exposure through one's contact with multifarious bodies of knowledge and information helps to develop his perception. The farmers having more exposure with communication sources of information have better knowledge about different aspects of crop cultivation, homestead forestry and their agricultural activities. It means that those who communicate frequently with other, they perceived alternative agricultural enterprise earlier than those who are not exposed to that extent. This might be helpful in the formation of favorable opinion of the tobacco farmers towards alternative agricultural enterprise to replace tobacco cultivation.

4.3.10 Tobacco cultivation experience and opinion

The computed value of correlation coefficient between the concerned variables was found to be -0.440 as shown in Table 4.4. Following observations were made regarding the relationship between these two variables under consideration.

- a) The relationship showed a negative trend.
- b) The computed value of 'r' (-0.340) was found to be greater than the tabulated value ($r = 0.195$) with 99 degrees of freedom at 0.05 level of probability.

Based on the above findings the null hypothesis was rejected and hence, it was concluded that the experience of the respondents had significant negative relationship with their opinion towards alternative agricultural enterprise to replace tobacco cultivation. The recent communication exposure regarding harmful effects of tobacco was considered right by most of the younger experienced tobacco farmers, and as such they had more favourable opinion towards alternative agricultural enterprises by replacing tobacco cultivation.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the findings

Data were collected from 101 randomly selected respondents of four selected villages of Tentulbaria, Motmura, Bamundi and Kazipur union under Gangni upazila of Meherpur district. Data were collected by using an interview schedule from the farmers during 14 September to 30 September, 2014. Co-efficient of correlation test was used to explore relationship between the concerned variables. The major findings of the study are summarized below:

5.1.1 Characteristics of the farmers

Age: Age of the farmers ranged from 25 to 71 years, with an average of 42.59. Among 101 respondents 54.7 percent were middle aged, 27.5 percent were young and 17.8 percent were old.

Education: Education scores of the respondents ranged from 0 to 17 with an average of 6.04. The highest proportion 31.7 percent of the farmers had secondary level education, compared to 22.8 percent who could sign only and 19.8 percent having no education 18.8 percent having higher secondary level education and 6.9 percent having primary level education.

Farm size: Farm size score of the respondents ranged from 0.17 to 3.67 hectares with an average of 0.75 hectares. Among the respondents, 76.2 percent had small farm size and 20.8 percent had medium farm size, 2 percent had marginal farm size and 1 percent farmers had large farm size.

Annual income: The annual income of the respondents ranged from Tk. 70 thousand to Tk. 835 thousand with an average of Tk 262.32 thousand. Among the respondents, 44.6 percent had medium income, while 31.7 percent had high, 15.8 percent had very high and 7.9 percent had low income.

Agricultural knowledge: Agricultural knowledge scores of the farmers ranged from 11 to 40 with an average of 24.37. Among the respondents, 54.5 percent had medium agricultural knowledge, 26.7 percent had low and 18.8 percent had high agricultural knowledge.

Organizational participation : Organizational participation score of the respondent ranged from 0 to 15 with an average of 4.70. Among the respondents, 85.1 percent had low organizational participation, 7.9 percent had no participation, 6.9 percent had medium organizational participation.

Cosmopolitaness : The cosmopolitaness score of the respondents ranged from 3 to 21. The average was 11.43. The highest proportion, 54.5 percent of the respondents had medium cosmopolitaness as compared to 25.7 percent having low cosmopolitaness and 19.8 percent had high cosmopolitaness.

Innovativeness : Innovativeness score of the respondents ranged from 6 to 32 with an average of 19.37. Among the respondents, 67.3 percent had medium innovativeness, 28.7 percent had low and 4 percent had high innovativeness.

Extension contact : Extension contact of the respondent ranged from 1 to 34 with an average of 13.66. Among the respondents, 46.5 percent had medium extension contact as compared to 38.6 percent had low extension contact and 14.9 percent had high extension contact.

Tobacco cultivation experience

Experience of the farmers ranged from 2 to 21 years, with an average of 9.35. Among 101 respondents, 65.5 percent had medium experience, 22.8 percent had low experience and 11.9 percent had high experience.

The output of dependent variable

The output was slightly over half (50.5 percent) of the farmers belonged to moderately suitable category compared to 30.7 percent of “highly suitable” category and the rest 18.8 percent “less suitable” category. Thus, about 81.2 percent of the farmers opined that alternative enterprises would be highly suitable to moderately suitable to replace tobacco cultivation.

5.1.2 Findings of hypothesis testing

The null hypothesis was tested to examine the relationship of ten selected characteristics of the tobacco farmers with their opinion towards alternative agricultural enterprises to replace tobacco cultivation. The results of hypothesis testing are briefly presented below:

Age and opinion: Age of the tobacco farmers had negative significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Education and opinion: Education of the tobacco farmers had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Farm size and opinion: Farm size of the tobacco farmers had no significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation .

Annual income and opinion: Annual income of the tobacco farmers had no significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Agricultural knowledge and opinion: Agricultural knowledge of the tobacco farmers had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Organizational participation and opinion: Organizational participation of the tobacco farmers had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Cosmopolitaness and opinion: Cosmopolitaness of the tobacco farmers had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Innovativeness and opinion: Innovativeness of the tobacco farmers had no significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Extension contact and opinion: Extension contact of the tobacco farmers had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

Tobacco cultivation experience and opinion:

Experience of the tobacco farmers had negative significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.

5.2 Conclusions

Based on the findings of the study, the following conclusions have been drawn:

1. The findings indicate that majority of the population (81.2%) of the farmers opined (highly to moderately suitable) their positive feelings towards alternative agricultural enterprises to replace tobacco cultivation. Tobacco is a deep rooted C_3 plant, which destroys the soil physical properties, uptake more nutrient from the soil and depletes soil organic matter; it also causes deathly disease as well as destroys the environment. Higher proportions of the tobacco farmers in this study area were aware about it, and accordingly they gave positive opinion to replace this crop by cultivating other alternative crops. This indicated that the respondents were positively oriented to opinion change towards alternative enterprises.
2. Education of the tobacco farmers had positive and significant relationship with their opinion on alternative agricultural enterprises to replace tobacco cultivation. Therefore, it was concluded that higher educational level of respondents could produce more opinion change. As the literacy rate was higher in the locality had influenced them on the formation of favorable opinion about the alternative agricultural enterprises to replace tobacco cultivation.
3. Age of the tobacco farmers indicated that over half of them (54.7%) were middle aged. It was concluded that the age of the respondents had significant negative relationship with their opinion regarding the alternative agricultural enterprise to replace tobacco cultivation. This indicated that younger aged of the respondent had more opinion change towards alternative agricultural enterprises.

4. Agricultural knowledge of the farmers was found to have statistically highly significant relationship with alternative agricultural enterprises to replace tobacco cultivation. This lead to conclude that the farmers having more knowledge on agricultural activities might use alternative enterprises in larger number.
5. Cosmopolitaness of the respondents had a positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation. Thus it was concluded that those who were more cosmopolite, they received alternative enterprise earlier than others who were less or not cosmopolite in the study area.
6. Organizational participation of the respondents had a positive significant relationship with the opinion towards alternative agricultural enterprises to replace tobacco cultivation. Thus, it was concluded that the concerned variables were interrelated. This means that the more the organizational participation of the farmers, the more favorable was their opinion towards alternative agricultural enterprises to replace tobacco cultivation.
7. Extension contact of the respondents had positive and highly significant relationship with their opinion of the tobacco farmers towards alternative agricultural enterprises to replace tobacco cultivation. It helps tobacco farmers to become more aware about harmful effect of tobacco cultivation as regards physical and environmental aspect and thus they were more positive to replace tobacco cultivation by using other source of enterprises.
8. Tobacco cultivation experience of the respondents had significant negative relationship with their opinion regarding the alternative agricultural enterprise to replace tobacco cultivation. This indicated that medium to high experienced of the respondents were negatively oriented to opinion change towards alternative agricultural enterprises.

5.3 Recommendations

5.3.1 Recommendations for policy implication

Based on the findings and conclusions of the study, the following recommendations were made for policy implication:

1. The characteristics of the farmers such as age, education, agricultural knowledge, organizational participation, cosmopolitaness, extension contact and tobacco cultivation experience were related with the tobacco farmer's opinion towards alternative agricultural enterprises to replace tobacco cultivation. In view of the above facts it may be recommended that the extension and development agencies should strengthen extension activities considering these characteristics and situational factors in view in replacing alternative agricultural enterprises.
2. As a large number of farmers had poor opportunity for education, arrangement should be made by the concerned authority to provide more non-formal practical education and training to the farmers. This will help to improve their knowledge, skill general abilities and outlook, so as to enable them judge the alternative enterprises. This will also increase the use of alternative enterprises to replace tobacco cultivation.
3. In order to bring more positive impact to change farmer's views policy development is needed for improvement of various alternative enterprises. Govt. law can be enforcing to restrict tobacco cultivation. However, winter vegetable, wheat, intercropping, poultry and other business can be used to replace tobacco cultivation. To discourage tobacco cultivation, the harmful effect of tobacco should be highlighted through different media, because of all appeals, fear work fastest.

4. To replace tobacco cultivation selective exposure should be increased. The alternative crops such as winter vegetables, wheat, boro rice, intercropping, poultry business, potato, mustard, maize, etc crop should be given more coverage to replace tobacco cultivation and it should be administered on regular basis instead of occasional basis. The demand driven alternative enterprise needs to be given priority so that the inclination of tobacco cultivation among the farmers could decrease.
5. The level of education of the respondents had positive significant relationships with their opinion towards alternative agricultural enterprises to replace tobacco cultivation. It is therefore, recommended that farmers can get more knowledge and advantage from different alternative agricultural enterprises and increases their positive feelings to replace tobacco cultivation. It is therefore, recommended that arrangement should be made by the concerned authorities to undertake more educational activities for increasing the education level of the farmers
6. Extension contact is important for getting farm information from various sources. Extension contact was positively and significantly related with tobacco farmer's opinion towards alternative agricultural enterprises to replace tobacco cultivation. Hence, it is recommended that the concerned organizations should increase the use of alternative enterprise by the farmer to replace tobacco cultivation. Those information which the farmers consider important should be given more emphasis.
7. Organizational participation of the respondents had positive significant relationship with their opinion towards alternative agricultural enterprises to replace tobacco cultivation. The respondents, who participate in different organization, gather more knowledge and information Therefore, it was recommended that DAE should take necessary steps to increase the scope of the respondents to participate in different organization.

5.1.2 Recommendations for further study

The following suggestions were put forward for further research studies:

1. Only 25 enterprises were included in this study. Further study should consider more activities of tobacco farmer's opinion towards alternative agricultural enterprises to replace tobacco cultivation.
2. The alternative agricultural enterprises to replace tobacco cultivation were conducted in four selected villages of Gangni upazila in Meherpur district. Findings of the study need verification by similar research in other parts of Bangladesh.
3. Relationship of ten characteristics of the tobacco farmers with the alternative agricultural enterprises to replace tobacco cultivation was investigated in this study. Further research should be conducted to explore relationship of other characteristics of the tobacco farmers with their opinion towards alternative agricultural enterprises to replace tobacco cultivation.
4. In the context of receiver variables, some future studies can be conducted on men and women, rural, urban and sub-urban areas to determine variability of alternative agricultural enterprises to replace tobacco and its use.

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Appendix A

ENGLISH VERSION OF THE INTERVIEW SCHEDULE
DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
SHER-E- BANGLA AGRICULTURAL UNIVERSITY
SHER-E- BANGLA NAGAR, DHAKA-1207.

INTERVIEW SCHEDULE FOR A RESEARCH STUDY ENTITLED
**OPINION OF TOBACCO FARMERS TOWARDS ALTERNATIVE AGRICULTURAL
ENTERPRISES TO REPLACE TOBACCO CULTIVATION IN MEHERPUR
DISTRICT**

Serial No:

Respondent Name:.....

Village:

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

Please answer the following questions:

1. Age

What is your present age ? years

2. Education

Please mention your educational status

a) Can't read and write :

b) Can not read and write but can sign only :

c) I have passed class :

3. Farm size

Please mention your farm size from the following:

Sl. No.	Types of land	Local unit	Hectare
1	Home and Homestead area		
2	Own land under own cultivation		
3	Own land given to others on lease system		
4	Land taken as lease system from others		
5	Own land given to others on barga		
6	Cultivated area taken from other on barga system		
	Total		

4. Annual income

Please mention the annual income of your family for last year

A) Agricultural source

Sl. No.	Source	Total annual income (Taka)
1	Tobacco	
2	Cereal crops	
3	Pulse crops	
4	Oil crops	
5	Spices crops	
6	Fruits	
7	Vegetables	
	Total (A)	

B) Agricultural sources (Excluding crops)

Sl. No.	Source of income	Total annual income (Taka)
1	Live stock	
2	Poultry	
3	Fish	
	Total (B)	

C) Non-Agricultural sources

Sl. No.	Source of income	Total annual income (Taka)
1	Service	
2	Business	
3	Day labour	
4	Others (if any)	
	Total (C)	

D) Annual income from own land given to others on borga and lease system

Total Income = (A + B + C + D) = ----- Taka

5. Agricultural knowledge

Please answer the following questions

Sl. No.	Questions	Total marks	Marks obtained
1	Name the chemical remain in tobacco	2	
2	Name two modern varieties of paddy	2	
3	Name two modern varieties of potato	2	
4	Name two modern varieties of wheat	2	
5	Mention the name of two weeds of paddy	2	
6	Mention the health hazard of using tobacco product	2	
7	Mention the name of two green manure crops	2	
8	Name two varieties of tobacco	2	
9	Name two predator species of fish	2	
10	Mention the two methods for controlling rats	2	
11	Mention the names of two cultivated flowers	2	
12	Mention the names of two fertilizer to your local Bazar	2	
13	Mention problems of soil by tobacco cultivation	2	
14	Name two winter vegetables	2	
15	Name two summer vegetables	2	
16	Mention the names of two fruits available over year	2	
17	Name two organic fertilizers	2	
18	Name two fruits of vitamin-C	2	
19	Mention the names of two insecticide	2	
20	Mention two characteristics of good seed	2	
	Total	40	

6. Organizational participation

Please indicate the nature of your participation in the following organizations

Sl. No.	Name of the organization	No participation	Participation		President/ Secretary
			General member	Executive committee member	
1	Farmers co-operative somittee				
2	Union parisad				
3	Business somittee				
4	Youth club				
5	School committee				
6	Madrassa committee				
7	Bazar committee				
8	Village shalis committee				
9	Village defenses committee				
10	Mosque committee				

7. Cosmopolitaness

Please mention your frequency of visit to the following places

Sl. No.	Place of visit	Frequency of visit			
		Frequently	Occasionally	Rarely	Not at all
1	Visit to other villages	4 times or above/month	2-3 times/month	1 time/month	0 time/month
2	Visit to other union	5 times or above/month	3-5 times/month	1-2 times/month	0 time/month
3	Own Upazila Sadar	3 times or above/month	2 times/month	1 time/month	0 time/month
4	Other Upazila Sadar	3 times or above/ year	2 times/year	1 time/year	0 time/year
5	Own district town	4 times or above/ year	2-3 times/year	1 time/year	0 time/year
6	Other district town	3 times or above/ year	2 times/year	1 time/year	0 time/year
7	Capital city (Dhaka)	3 times or above/ year	2 times/year	1 time/year	0 time/year

8. Innovativeness

Please indicate the extent of your use of the following agricultural technologies from your first hearing

Name of technology	Never used	Duration			
		1 year	2 years	3 years	4 years of above
1.Tobacco cultivation					
2.Hybrid rice cultivation					
3.Use of green manure crops					
4.Use of granule urea					
5.Use of power tiller					
6. Use of weedicide					
7.Use of sulpher fertilizer					
8.ICM					
9.Poultry rearing					
10.Compost					
11.Artificial breeding of cattle					

9. Extension contact

Please indicate the contact media your used to received the information of different extension contact media

Sl. No.	Persons/subjects of information	Extent of commination			
		Frequently	Occasionally	Rarely	Not at all
1.	Local Leader	6 times or above/3 month	4-5 times/ 3 month	1-3 times/ 3 month	0 time/ 3 month
2.	Fertilizer and Insecticide Dealer	4 times or above/3 month	2-3 times/ 3 month	1 time/ 3 month	0 time/ 3 month
3.	SAAO	8 times or above/3 month	4-7 times/ 3 month	1-3 times/ 3 month	0 time/ 3 month
4.	Agriculture Extension Officer	4 times or above/6 month	2-3 times/ 6 month	1 time/ 6 month	0 time/ 6 month
5.	Upazila Agricultural Officer	4 times or above/year	2-3 times/ year	1 time/ year	0 time/ year
6.	NGO workers	4 times or above/6 month	3 times/ 6 month	1 time/ 6 month	0 time/ 6 month
7.	Upazila Livestock Officer	4 times or above/year	2 times/ year	1 time/ 6 month	0 time/ 6 month
8.	Participation in Agricultural Training Programme	4 times or above life	4-5 times life	1 time life	0 time life
9.	Listening Agricultural Programmes in Radio	16 times or above/month	5-15 times/ month	1-5 times/ month	0 time/ month
10.	Watching Agricultural Programmes in Television	4 times or above/month	2-3 times/ month	1 time/ month	0 time/ month
11.	Agricultural Fair	4 times or above/life	2-3 times/ life	1 time/ life	0 time/ life
12.	Reading Agricultural News In Krishi kotha, Bulletin, Booklet, Leaflet.	7 times or above/year	4-6 times/ year	1-3 times/ year	0 time/ year

10. Tobacco cultivation experience

How long are you engaged in tobacco farming?years

11. Please mention your opinion regarding alternative agricultural enterprises to replace tobacco cultivation

Sl. No.	Agricultural enterprises	Extent of suitability			
		Highly suitable	Moderately suitable	Less suitable	Not suitable
1.	Cultivation of flowers				
2.	Winter vegetables cultivation				
3.	Cultivation of modern wheat variety				
4.	Transplanting of boro rice in rows and maintaining of optimum spacing to increase yield				
5.	Maintaining crop rotation with legume crops				
6.	Inter cropping (wheat-mustard, maize-groundnut, sugarcane-potato etc)				
7.	Cultivation of vegetables and fruits in the homestead area as well as orchard				
8.	Green manuring crop				
9.	Cultivation of maize				
10.	Cultivation of mustard				
11.	Cultivation of peas				
12.	Use of organic manure to increase soil productivity for more production of crop				
13.	Use of ICM				
14.	Cultivation of mugbean				
15.	Cultivation of soybean				
16.	Cultivation of potato				
17.	Fish cum boro rice cultivation in field				
18.	Fiber crops like jute, cotton cultivation				
19.	Poultry business				
20.	Spices crop cultivation				
21.	Cultivation of pulse crop				
22.	Rearing goat, cows and duck-cum fish cultivation in the pond				
23.	Social forest				
24.	Agro forest				
25.	Establishment of nursery for the production of more seedlings				

Thank you for your co-operation

Signature of the interviewer
Date:

Appendix B
Correlation matrix of the independent and the dependent variables (N=101)

Variables	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y ₁₁
X ₁	1.000										
X ₂	-0.336**	1.000									
X ₃	0.277**	-0.081	1.000								
X ₄	0.297**	0.084	0.896**	1.000							
X ₅	-0.138	0.670**	0.082	0.268**	1.000						
X ₆	0.283**	0.256**	0.217*	0.305**	0.474**	1.000					
X ₇	-0.237*	0.600**	0.007	0.211*	0.551**	0.170	1.000				
X ₈	0.166	0.003	0.313**	0.314**	0.117	0.131	0.103	1.000			
X ₉	-0.095	0.555**	0.186	0.345**	0.599**	0.422**	0.547**	0.127	1.000		
X ₁₀	0.745**	-0.476**	0.361**	0.360**	-0.209*	0.129	-0.230*	0.379**	-0.127	1.000	
Y ₁₁	-0.335**	0.825**	-0.055	0.105	0.585**	0.269**	0.535**	0.024	0.543**	-0.440**	1.000

Note: *Correlation is significant at 0.05 level of probability
**Correlation is significant at 0.01 level of probability

Legend :

Independent variables:

- X₁ = Age
- X₂ = Education
- X₃ = Farm size
- X₄ = Annual income
- X₅ = Agricultural knowledge
- X₆ = Organizational participation
- X₇ = Cosmopolitaness
- X₈ = Innovativeness
- X₉ = Extension contact
- X₁₀ = Tobacco cultivation experience

Dependent variable:

Y₁₁ = Opinion of farmer towards alternative agricultural enterprises to replace tobacco cultivation.

Table value at 0.05 level =0.195 and at 0.01 level =0.255 with 99 df.