

**FARMERS' SATISFACTION ON AGRICULTURAL DEVELOPMENT
IN SELECTED AREAS OF BANGLADESH**

FARRUKH AHAMED

A DISSERTATION FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN AGRICULTURAL EXTENSION AND INFORMATION SYSTEM



**Department of Agricultural Extension and Information System
Sher-e- Bangla Agricultural University, Dhaka**

DECEMBER, 2017

**FARMERS' SATISFACTION ON AGRICULTURAL DEVELOPMENT IN
SELECTED AREAS OF BANGLADESH**

By

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Reg. No. 00272

A Dissertation

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SEMESTER: JULY-DECEMBER, 2017

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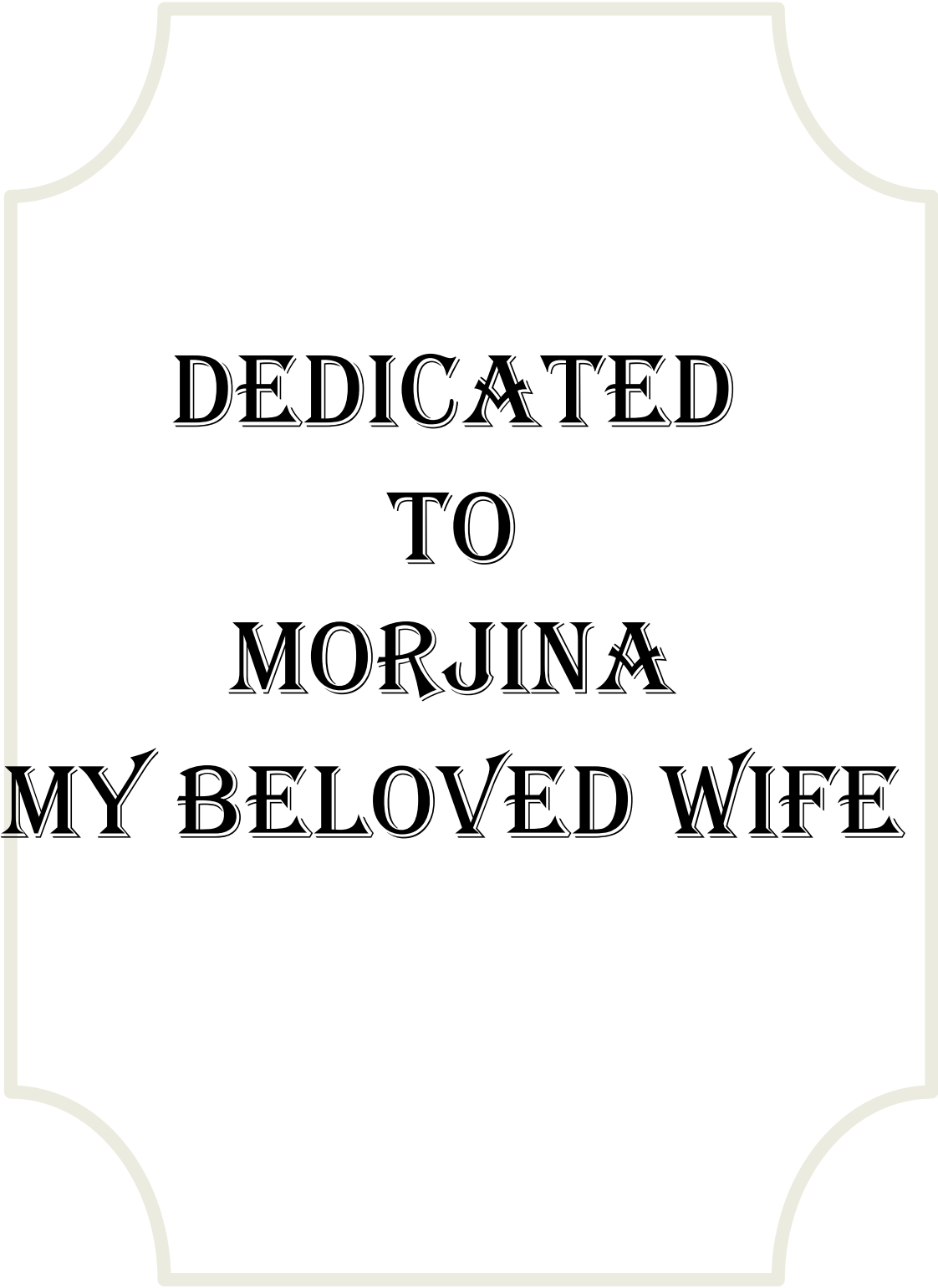
CERTIFICATE

This is to certify that the thesis entitled “**FARMERS’ SATISFACTION ON AGRICULTURAL DEVELOPMENT IN SELECTED AREAS OF BANGLADESH**” submitted to the department of Agricultural Extension and Information System, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY in Agricultural Extension and Information System, embodies the result of a piece of bona fide research work carried out by **Farrukh Ahamed, Registration No. 00272** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated:
Dhaka, Bangladesh

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Prof. Dr. Md. Sekender Ali
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DEDICATED
TO
MORJINA
MY BELOVED WIFE

DECLARATION

It is hereby declared that except otherwise stated, this Dissertation is entirely the own work of the present researcher under the guidance and supervision of the Advisory Committee and has not been submitted in any form to any other University for any degree.

The Researcher

December, 2017

BIOGRAPHICAL SKETCH

The author was born on 12 December 1975 at Village - Chitholia, Upazilla - Shreebordi, District - Sherpur, Bangladesh. He came from a reputed and enlightened Muslim family. He passed the S. S. C. examination from Joginimura High School, Sherpur Sadar, Sherpur in 1992 and H. S. C. examination from Sherpur Government college, Sherpur in 1994 and obtained first division in both. He obtained B. Sc. Ag. (Hons) degree in 2003 and M. S. Agricultural Extension in 2006 from the Sher-e-Bangla Agricultural University, Dhaka, Bangladesh.

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The author is married to Mrs. Morjina Khatun and blessed with two sons- Faiyaz Ahamed and Farhan Ahamed and one daughter- Fariha Ahamed.

The Researcher

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ABBREVIATIONS USED

BBS	Bangladesh Bureau of Statistics
GED	General Economic Division
HIES	Household Income and Expenditure Survey
GDP	Gross Domestic Product
BER	Bangladesh Economic Review
NGO	Non-Government Organizations
GO	Government Organizations
SAAO	Sub-Assistant Agriculture Officer
CSI	Customer Satisfaction Index
ACSI	American Customer Satisfaction Index
DAE	Department of Agriculture Extension
PFI	Problem Faced Index
AAS	Average Appropriateness Score
ASJ	Appropriateness Score given by the Judges
SI	Satisfaction Index
DLS	Department of Livestock Services
DoF	Department of Fisheries
FPMU	Food Planning and Monitoring Unit

FARMERS' SATISFACTION ON AGRICULTURAL DEVELOPMENT IN SELECTED AREAS OF BANGLADESH

FARRUKH AHAMED

ABSTRACT

The purposes of the study were to determine the extent of satisfaction on agricultural development in Bangladesh as perceived by the farmers and to find out the contribution of the selected characteristics of the farmers to their satisfaction on agricultural development in selected areas of Bangladesh. The study was conducted in two villages of Kakilakura and Hatibandha union under Sreebordi and Jhinaighathi upazila of Sherpur district. A total of 194 farmers were selected randomly from a population of 392 farmers. Data were collected from the 194 farmers during July to August, 2018 by using an interview schedule. Fourteen selected characteristics of the farmers were considered as the independent variables. Farmers' satisfaction on agricultural development was the dependent variable. Overwhelming majority (86.6 percent) of the farmers had medium to high satisfaction on agricultural development in Bangladesh. Step-wise multiple regression analysis indicated that cosmopolitanism, agricultural experience, individual local contact and decision making ability of the farmers had significant positive contribution to their satisfaction on agricultural development. Problems faced by the farmers in agriculture had significant negative contribution to their satisfaction on agricultural development in Bangladesh. The standardized partial „b“ co-efficient of the significant 5 independent variables formed the equation contributing to 48.9 percent of the total variation. Results of path analysis revealed that decision making ability had the highest (0.275) total indirect effects followed by cosmopolitanism, individual local contact and agricultural experience. Problems faced by the farmers in agriculture had negative total indirect effect on agricultural development in Bangladesh. Farmers were satisfied in different dimensions of satisfaction. They were also faced different problems in different level which are needed to mitigate by both public and private initiatives to increase the level of Farmers' satisfaction on agricultural development in selected areas of Bangladesh.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Although Bangladesh is on course for Middle Income Country status by 2021, agriculture remains the largest employer in the country by far; and 47.5% of the population is directly employed in agriculture and around 70% depends on agriculture in one form or another for their livelihood (BBS, 2016).

Agriculture is the source of food for people through crops, livestock, fisheries; the source of raw materials for industry, of timber for construction; and a generator of foreign exchange for the country through the export of agricultural commodities, whether raw or processed (GED, 2015). It is the motor of the development of the agro-industrial sector including food processing, input production and marketing, and related services. As main source of economic linkages in rural areas, it plays a fundamental role in reducing poverty, which remains a predominantly rural phenomenon. The role of agriculture is also fundamental in promoting nutritious diets, especially in the countryside where production and consumption patterns are closely linked (FPMU, 2015).

According to the HIES (2010) 35.2% and 21.1% of the population in rural areas lives below upper and lower poverty line respectively. It also plays a fundamental role in the sustainable valorisation and preservation of natural resources and in preserving and promoting the resilience to natural calamities and climate change of rural communities and agro ecological systems.

However, as Bangladesh develops, and other sectors grow (such as readymade garments), the share of agriculture in Gross Domestic Product (GDP) has naturally declined. During the fiscal year 2012-13, the broad agriculture sector contributed 16.77% to the total GDP. The contributions of crop, fishery, livestock and forestry subsectors in GDP were 9.49%, 3.68%, 1.84% and 1.76% respectively. The provisional estimates show that contribution of the

broad agriculture sector to GDP in 2013-14 would be 16.33% (BER, 2014). Nearly three fifth of the agricultural GDP comes from the crop sub-sector; the other contributors in order of magnitude are fishery, livestock and forestry.

From the above discussion, it can be said that agriculture (crop, fishery, livestock and forestry) plays a very important role for the development and sustainability of Bangladesh. In this case, farmers' role is the top most indicators. Therefore, measuring farmers' awareness on different aspects of agricultural development will be a very important tool for devoting farmers more in agriculture. Therefore, in the above discussion the researcher felt necessity to conduct a study on 'Farmers' satisfaction on agricultural development in selected areas of Bangladesh'.

1.2 Statement of the Problem

The purpose of the study had an understanding of the satisfaction of farmers on agricultural development in Bangladesh. The study was conducted at Sreebordi and Jhinaigati upazila under Sherpur district. Moreover, since various characteristics of an individual are likely to have an influence on the satisfaction of farmers on agricultural development in Bangladesh, it would be necessary to ascertain the associations and contributions of such factors with respect to the satisfaction. Therefore, examining the associations and contributions of a set of personal, socio-economic and socio-psychological characteristics of the satisfaction on agricultural development in Bangladesh would be considered pertinent to the study. In view of the above background and facts, the present study was undertaken with the title "Farmers' satisfaction on agricultural development in selected areas of Bangladesh".

The purpose of this study was to have answers to the following research questions:

- What was the level of satisfactions of the farmers on agricultural development in Bangladesh?

- What were the factors influence satisfactions of the farmers on agricultural development in Bangladesh?
- What were the contributions of the selected characteristics of the farmers to their satisfaction on agricultural development in Bangladesh?
- What were the severities of problems faced by the farmers in Bangladesh?
- What were the probable solutions of the problems faced by the farmers in Bangladesh?

1.3 Specific Objectives of the Study

The following specific objectives were set forth in order to proper direction to the study:

- To determine the extent of satisfaction on agricultural development in Bangladesh as perceived by the farmers
- To describe the selected characteristics of the farmers
- To find out the contribution of selected characteristics of the farmers to their satisfaction on agricultural development in Bangladesh
- To examine the severity of problems faced by the farmers in Bangladesh
- To suggest probable solutions of the problems faced by the farmers

1.4 Justification of the Study

Agricultural development in Bangladesh is getting popularity among the farmers of Bangladesh by the introduction of a large number of agricultural innovations including crop, livestock and fisheries sectors; government policy and support; agricultural extension and advisory services by the extension service providers; etc. Agricultural innovations with growing market demand create a tremendous potentiality of agriculture. The government is also supporting this growth. Needless to say that research is necessary to determine

pattern of diffusion of agriculture in order to formulate long-term strategy on satisfaction on agricultural development in Bangladesh. Farmers are the key players for agricultural development. Therefore, agricultural development depends on farmers' satisfaction. There was no research in the field of satisfaction on agricultural development in Bangladesh, so the researcher deemed it a timely necessity to undertake the present study.

1.5 Assumptions of the Study

An assumption is the supposition that an apparent fact or principle is true in the light of the available evidence (Goode, 1945). The researcher has the following assumption in mind while undertaking this study:

- The responses furnished by the respondents were reliable. They expressed the truth about their opinion and interest.
- The researcher who acted as interviewer was adjusted to social and environmental conditions of the study area. Hence, the data collected by him from the respondents were free from bias.
- The respondents included in the sample for this study were competent enough to furnish proper responses to the queries included in the interview schedule.
- Views and options furnished by the farmers regarding agricultural development in Bangladesh were free from the views and options of others.
- Farmers included in the sample were selected from the population of the study as the representative part of the population.
- The data for the study were valid and reliable.

1.6 Scope of the Study

The main focus of the study was to determine farmers' satisfaction on agricultural development in selected areas of Bangladesh. The findings of the study will be specifically applicable to Sreebordi and Jhinaigati upazila under Sherpur district. However, the findings will also have implications for other

areas of the country having relevance to the socio-cultural context of the study area.

The investigator believes that the findings of the study will reveal the phenomenon related to satisfaction. These will be of special interest to the policy makers and planners in formulating and redesigning the extension programmers especially for the agricultural development in Bangladesh. The findings are expected to be helpful to the field workers of different nation building departments and organizations to develop appropriate extension strategies for effective agricultural extension and advisory services to the rural peoples of Bangladesh.

1.7 Limitations of the Study

Considering the time, money and other necessary resources available to the researcher and to make the study manageable and meaningful, it became necessary to impose certain limitations as noted below:

- Populations for the present study were kept confined within the heads of the farmers farm families as because they were the major decision makers in the satisfaction on agricultural development in Bangladesh.
- Characteristics of farmers are many and varied but only 14 were selected for investigation in this study as stated in the objectives. This was done to complete the study within limited resources.
- The study was confined mainly to farmers' satisfaction on agricultural development in Bangladesh.
- Facts and figures were collected by the investigator applied to the present situation in the selected areas.
- Data for the study were collected from only the farmers from Sreebordi and Jhinaigati upazila under Sherpur district of Bangladesh.

1.8 Definition of Important Terms

Age

Age of the respondent was defined as the period of time in actual years from his birth to the time of interview.

Education

Education referred to the development of desirable Knowledge, skill and attitude in the individual through reading, writing and other related activities. It was measured in terms of actual grades, years of schooling or class passed by a respondent from a formal institute.

Farm size

It referred to the total area on which a farmer's family carries on farming operation. The area is estimated in terms of full benefit to the farmer's family.

Annual family income

Annual family income is the consumption and savings opportunity gained by all the members of the family within a specified timeframe, which is generally expressed in monetary terms. However, annual family income of a family is the sum of all the wages, salaries, profits, interest payments, rents, and other forms of earnings received by all the members of the family in last year.

Cosmopolitaness

Cosmopolitaness referred to the degree to which an individual was oriented external to his own social system.

Individual local contact

An individual's local contact means the extent of contact of the individual with other local persons for private, professional or personal information. In the present study, three local communication media like neighbour farmers/friends/relatives, farmer leaders and seed/fertilizers/input dealers were

considered for measuring individual local contact.

NGO contact

NGO contact of an individual refers to the extent of contact for professional purposes with the personnel of Non-Government Organizations (NGO). In the present study three types of NGO workers like village/union level NGO workers, upazilla level NGO workers and district level NGO workers were considered for measuring NGO contact of an individual.

GO contact

GO contact of an individual refers to the extent of contact for professional purposes with the personnel of Government Organizations (GO). In the present study three types of GO personnel like Sub-Assistant Agricultural Officer (SAAO), upazila level Agriculture Officers and district level Agricultural Officers were considered for measuring GO contact of an individual.

Group media contact

Group media contact of a respondent refers to the extent of contact with different selected group communication media. For professional purposes in the present study, group discussion, field day, result demonstration and participation in agricultural training courses were considered as the group communication media for measuring group media contact.

Mass media contact

Mass media contact refers to the extent of contact with different mass communication media. In receiving information related to farming six selected mass media like daily paper, radio, television, poster, leaflet and agricultural fair were considered in the present study for measuring mass media contact.

Decision making ability

Decision making ability of a respondent referred to the extent of ability to make decision with 3 different aspects, viz., full decision by self, decision with

family members and decision making by discussion with others outside the family. In the present study 18 selected items of decisions were considered for decision making.

Organizational participation

Organizational participation referred to the degree to which an individual was involved with selected organizations as different types of membership like ordinary member, executive member and executive officer.

Agricultural experience

Agricultural experience of a respondent refers to the duration of his/her active involvement in agricultural activities. It was measured in terms of actual years of experience in agriculture.

Problem faced in agriculture

It refers to different problems faced by the farmers in conducting agricultural activities.

Agricultural development

It refers to the observation of an individual towards improvement of various aspects of agricultural activities. The satisfaction of the farmers about agricultural development is mostly focused on achievement of production potentials of crop production, livestock production, fisheries production as development of farming. The crop production also indicates field crops, fruits and vegetables etc.

Satisfaction on agricultural development

Satisfaction level of feeling happiness regarding improvement of agricultural performances in terms of production, consumptions, preservation, processing, marketing value chain, supply chain etc. of crops, fruits vegetables, livestock, fisheries etc. of the country.

CHAPTER II

REVIEW OF LITERATURE

The Chapter deals with the past literature relevant to the objectives of this study. The researcher made an elaborate search of available literatures for this purpose. The researcher attempted to study the relationship of each of the variables. This Chapter is divided into three sections. The first section deals with the review of studies related to the extent of satisfaction of different aspects; the second section deals with the research gap of the study and the third section deals with the conceptual framework of the study.

2.1 Extent of the farmers' satisfaction of different aspects

Attempts had been taken by the Researcher to review the previous studies to determine the factors which influence satisfaction and dissatisfaction of individuals about development interventions, public policies etc. The literatures on satisfaction of individuals are dominated by consumer satisfaction in the domain of consumer studies. However, there are satisfaction studies applied to farmers' mostly in develop countries where literature is available. In the context of developing countries, literature on the determinants of farmers' satisfaction or dissatisfaction is hard to find, which highlights the importance of this current study.

Studied on the determinants of farmers' satisfaction with farming and life in general and found that farmers' global satisfaction with life was related to their satisfaction with farming. Net farm income was found to determine farm satisfaction while education was associated with dissatisfaction with farming and life in general. The authors noted that perceived rewards of farming are important determinants of satisfaction with farming and life in general.

Performance evaluation mostly focuses on the efficiency of investment and farmers' satisfaction. Summing up previous studies, the construction of rural infrastructure in China has been continuously improved with government's continuous investment, which has promoted the development of rural economy and farmers' economic status and living environment. However, the investment efficiency of rural infrastructure still has to be increased, and farmers' satisfaction on infrastructure construction is unsatisfactory. There is still great need for improvement in the performance of rural infrastructure construction. Many scholars have studied the investment in rural infrastructure by panel data. Xu (2010) and Wang (2014) analyzed the changes in investment efficiency of rural infrastructure and the trends in its changes in 29 provinces and cities in China.

They studied stock of rural roads, running water facilities, and power facilities from 1990 to 2007 and calculated the contribution of infrastructure investment to farmers' income, expenditure, and the improvement of rural economy Li *et al.* and Xu (2011) established a fiscal performance evaluation system from economic, social, and ecological effects. The fiscal efficiency of 26 provinces (region) in China was analyzed on the basis of the evaluation system in their research. The investment efficiency of the projects has also been studied.

Ansar *et al.* (2014) analyzed project performance from the perspective of cost performance, schedule performance, and performance by collecting data from 95 railway and highway projects from 1984 to 2008. They found that, contrary to previous studies, the performance of Chinese infrastructure construction is unsatisfactory. They pointed out the necessity of changing the development pattern of China's infrastructure. Besides, scholars have also analyzed the performance of infrastructure investment through surveys. For example, Peng *et al.* (2016) and Zhang and Wang (2012) studied the investigation of infrastructure investment performance from the perspective of farmers' satisfaction. They investigated the influencing factors of farmers' satisfaction and draw lessons from domestic and international experience to put forward

suggestions to improve the performance of rural infrastructure investment.

Studies related to farmers' satisfaction have focused mainly on the customer satisfaction model and empirical research. For the research based on customer satisfaction Li and Zeng (2008) performed an empirical analysis using CSI-Probit Regression Model on the satisfaction of rural public goods and its influencing factors. They found obvious common characteristics in the same type of city (state), and influencing factors of CSI consist of farmers receiving education, medical accessibility, the income level of farmers, and effective irrigation rate. Li and Xu (2008) and W. Li and K. Xu (2011) built a performance evaluation model and evaluation index system of rural public infrastructure based on the American Customer Satisfaction Index (ACSI).

Studies on farmers' satisfaction and influencing factors show that farmers are dissatisfied with the construction of rural infrastructure by the end of 2010 in most areas of China, and farmers are mainly concerned about roads, drinking water, basic education, water conservancy, and medical facilities. On the other hand, it is worth noting that farmers began to pay attention to living infrastructure such as waste disposal facilities and sewage treatment facilities. Kong and Tu (2006), Yi *et al.* (2008), Zhang and Wan (2009), Wang (2010), and Gan and Zhu (2011) studied farmers' satisfaction, farmers' demand, and investment willingness and current situation of rural infrastructure construction through empirical investigation.

Fan and Luo (2009) used the structural equation model to analyze 670 questionnaires and found that farmers' satisfaction is positively correlated with income, village type, price of infrastructure, family structure, and sense of superiority compared with neighboring villages. They also argued that the rural infrastructure construction suffers not only from "scarcity" but also from "inequality." Tang *et al.* (2010) and Wang and Zhu (2013) launched studies of farmers' satisfaction and its influencing factors based on a survey of 32 villages and towns in Shaanxi Province. The results showed that farmers'

satisfaction is significantly affected by rural roads, rural infrastructure, rural healthcare, irrigation facilities, drinking water facilities, and government credit. Moreover, Tang *et al.* (2010) pointed out that farmers' demand for rural public services has a certain level and stage, while farmers' satisfaction has a certain order according to their demand Han *et al.* (2015) built a custom satisfaction - based quality evaluation index and evaluation system. Existing research on farmers' attitude only stayed at 2010, and there is no further related research after 2010.

Problems and policy recommendations in the study showed that the main problems in the construction of rural infrastructure consisting of the "top-down" decision-making mechanism cannot meet the real needs of farmers and have incomplete maintenance, imperfect laws and regulations, unclear division of responsibilities, imperfect supervision mechanism, lack of farmers' participation, lack of capital, and lack of investors. To solve these problems, researchers suggest establishing a decision-making mechanism to combine "bottom-up" and "top-down" and sound decision-making information communication mechanism, improving the decision-making, and supervising the mechanism of rural infrastructure and responsibility mechanism and improving the laws and regulations, rural infrastructure investment, and financing system innovation and introducing PPP into rural infrastructure.

Integrating existing research, considerable research has been performed in relation to farmers' satisfaction and influencing indicators in rural infrastructure. However, no further analysis related to significant indicators exists, such as the reason of their significant impact, influence pattern, measures to improve their performance to help with the improvement of rural infrastructure, and ways to avoid negative effects caused by them. Besides, most existing studies separately focus on farmers' satisfaction, a certain kind of infrastructure, and the farmers' satisfaction under horizontal comparison or vertical comparison. No comprehensive consideration of all rural infrastructure satisfaction, horizontal comparison, and vertical comparison of farmers'

satisfaction and farmers' perception of infrastructure charges and other factors exist.

On the other hand, there remains a gap ever since 2010, so that we have no understanding of the current situation and farmers' actual demands of rural facilities. Thus, to investigate the current status of rural infrastructure in Sichuan, this paper takes these aforementioned factors into account and plans to achieve further analysis for significant indicators. In this paper, factor analysis and legit regression model were used to analyze farmers' satisfaction and its influencing indicators to know the current situation of rural facilities in Sichuan and prepare for further analysis.

Extension Educators should choose different methods of information delivery to maximize program efficiency, effectiveness Jones et al. (2007) and client satisfaction Jones et al. (2010).

In addition according to Faramarzi and Langerodi (2013) use of communication channels has positive and significant relationship with farmers' attitude towards extension service. In line with the reasoning, we propose frequent use of different communication methods influences farmers' satisfaction positively. Credit access helps farmers through the alleviation of capital constraints and thus enables farmers to make timely purchases of inputs that they cannot afford from their own resources.

Economic factors influence farmers' satisfaction (Damisa *et al.*, 2008). Hence, we propose use of credit might have positive relationship with farmers' satisfaction. In addition access to training can also an important factor to build farmers' knowhow as well as skill and in turn it might have positive influence for farmers' satisfaction.

Research has shown that older employees are more satisfied and more committed to their work have found this to be true of farmers as well

(Coughenour and Tweeten, 1986)

Education is an important variable which has been found to influence satisfaction. It was observed that education increases the individual's capacity to achieve goals but also expands the individual's awareness of alternatives and the rewards expected from his or her activities. This means that, the gap between expectation and accomplishment tends to increase with education, a situation which has been found to depress an individual's global and job-related sense of wellbeing. However, other researchers have found positive relationship between life satisfaction and education. Hypothesized satisfaction with farming to be positively related to education Molnar Joseph (1985).

Guo and Jiang (2011) analyzed the factors influencing farmers' satisfaction with a voucher system China. They showed that gross income, size of arable land and the varieties purchased by farmers were important determinants of satisfaction with the voucher system. Gender, age and education were found to be insignificant determinants of satisfaction in the study.

Li (2014) studied the determinants of the satisfaction rate of the "New Rural Farming Cooperative Medical System" in China. Using an ordered probity model, the author found the determinants of satisfaction to include income, health level, medical service accessibility, and reimbursement experience and hospitalization propensity. Age, gender, and distance to the medical center were some of the other variables included in the model.

Damisa *et al.* (2008) studied the determinants of farmers' satisfaction with their irrigation system in Nigeria using a logit model. They found that fertilizer availability on time, farmers' output, plot size, timely water release and location of the farm plots influenced farmers' satisfaction with irrigation.

Umar *et al.* (2015) investigated the factors influencing level of satisfaction with a growth enhancement support scheme among farm families in Kaduna State, Nigeria using a multinomial logit regression model. They observed that the

level of satisfaction with the scheme increased among families with higher farming experience and education but decreased with age and extension visit.

Coughenour and Swanson (1992) studied that all the studies did not examine satisfaction on price, which is very important to producers. As indicated by the perceived rewards of farming are important determinants of satisfaction with farming and life in general. Thus, the study was significant and relevant in filling the knowledge gap in terms of the determinants of farmers' satisfaction with pricing in the Ghanaian cocoa sector.

2.2 Research Gap of the Study

There are lots of researches on farmers' satisfaction on various issues. Few researches conducted on farmers' satisfaction by using farmers' satisfaction model and evaluation index for establishing of rural public infrastructure. Others research occurred on Farmers satisfaction on rural public goods supply and its influencing factors. To the best of the knowledge of the present Researcher, very little attempts were made to determine farmers' satisfaction on agricultural development in Bangladesh.

2.3 Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. The hypothesis of a research while constructed properly contains at least two important elements i.e. “a dependent variable” and ‘an independent variable’. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationships to an observed phenomenon. In view of the prime theme of the study, the researcher constructed a conceptual framework which is self-explanatory and is presented in Figure 2.1.

It is assumed that selected characteristics of the farmers’ (Independent variables) might have influence on their satisfaction on agricultural development in Bangladesh (Dependent variable).

Government initiatives may increase the capacity of Agricultural Extension Service Providers (GOs, NGOs and Private Sectors). Agricultural Extension Service Providers are servicing the farmers to solve their problems; alternately farmers might be satisfied on agricultural development in Bangladesh.

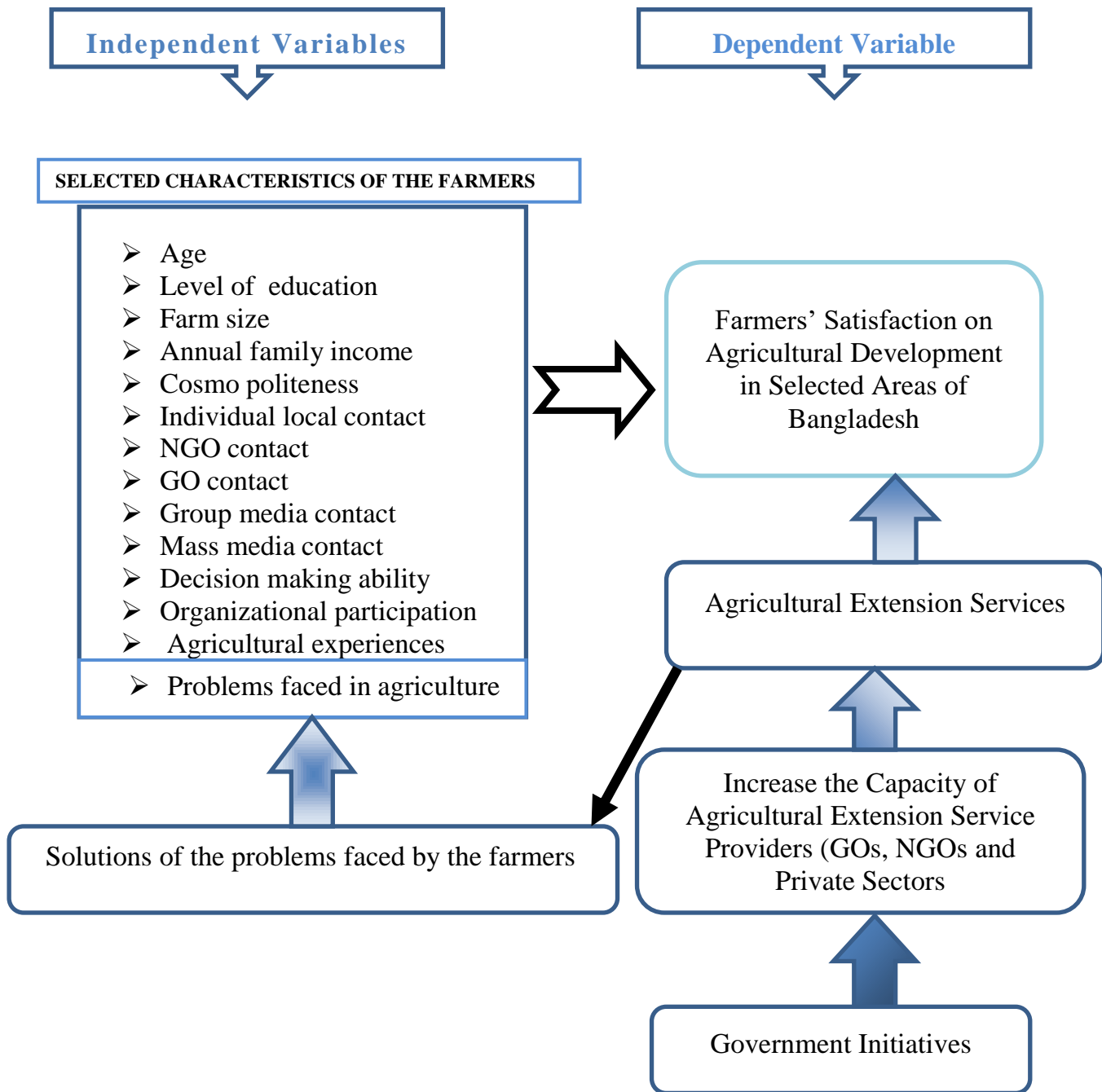


Figure 2.1: Conceptual Framework of the Study

CHAPTER III

METHODOLOGY

Methodology enables the researcher to collect valid information. It is impossible to conduct research work smoothly without proper methodology and it is very difficult to address the objectives with a scientific manner. It requires a very careful consideration on the part of the researcher to collect valid and reliable data and to analyze the same for meaningful conclusion. A sequential description of the methodologies followed in conducting this research work has been presented in this chapter.

3.1 Locale of the study

The study was conducted purposively selected two upazilas namely Sreebordi and Jhinaigati under Sherpur district of Bangladesh. Two unions from two upazilas namely Kakilakura under Sreebordi upazila and Hatibandha under Jhinaigati upazila of Sherpur district were then selected randomly. Two villages from these two unions (Chitolia under Kakilakura and Paglamor under Hatibandha) were finally selected randomly as the locale of the study. A map of Sherpur district showing Sreebordi and Jhinaigati upazila and maps of Sreebordi and Jhinaigati upazila showing the study unions are presented in Figure 3.1, 3.2 and 3.3.

3.2 Population and sampling procedure

Separate lists of the farmers of the study villages were prepared by the researcher with the help of Sub-Assistant Agriculture Officer (SAAO) of Sreebordi and Jhinaigati Upazila Agriculture Office. The lists comprised of 392 famers which was considered as the population of the study. Among 392 farmers, 194 farmers were determined as the sample size of the study by using ‘Sample Size Calculator’ developed by Creative Research System(1984).

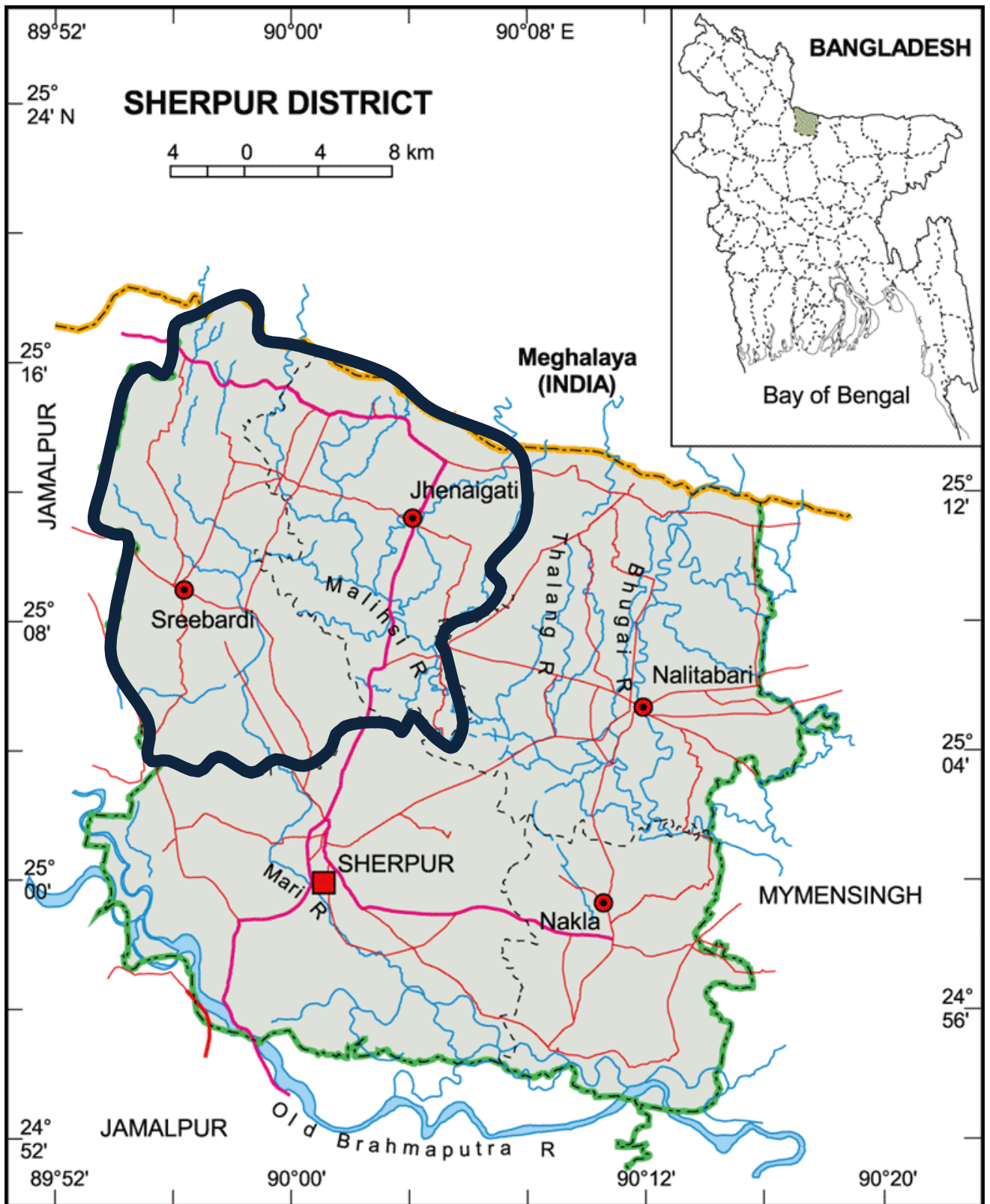


Figure: 3.1 Map of Sherpur District showing Sreebordi and Jhinaigati Upazila

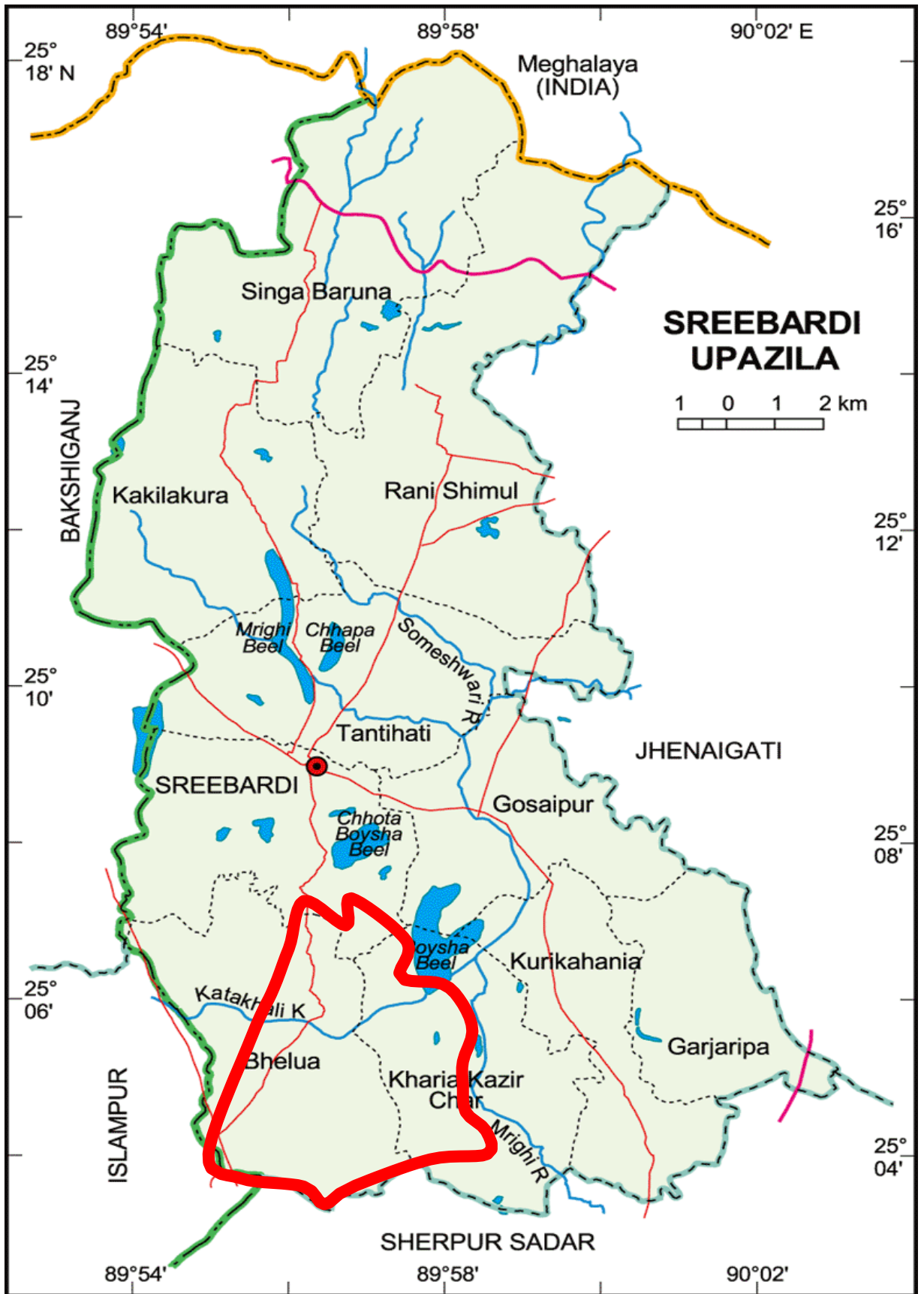


Figure: 3.2 Map of Sreebordi upazila showing Kakilakura union

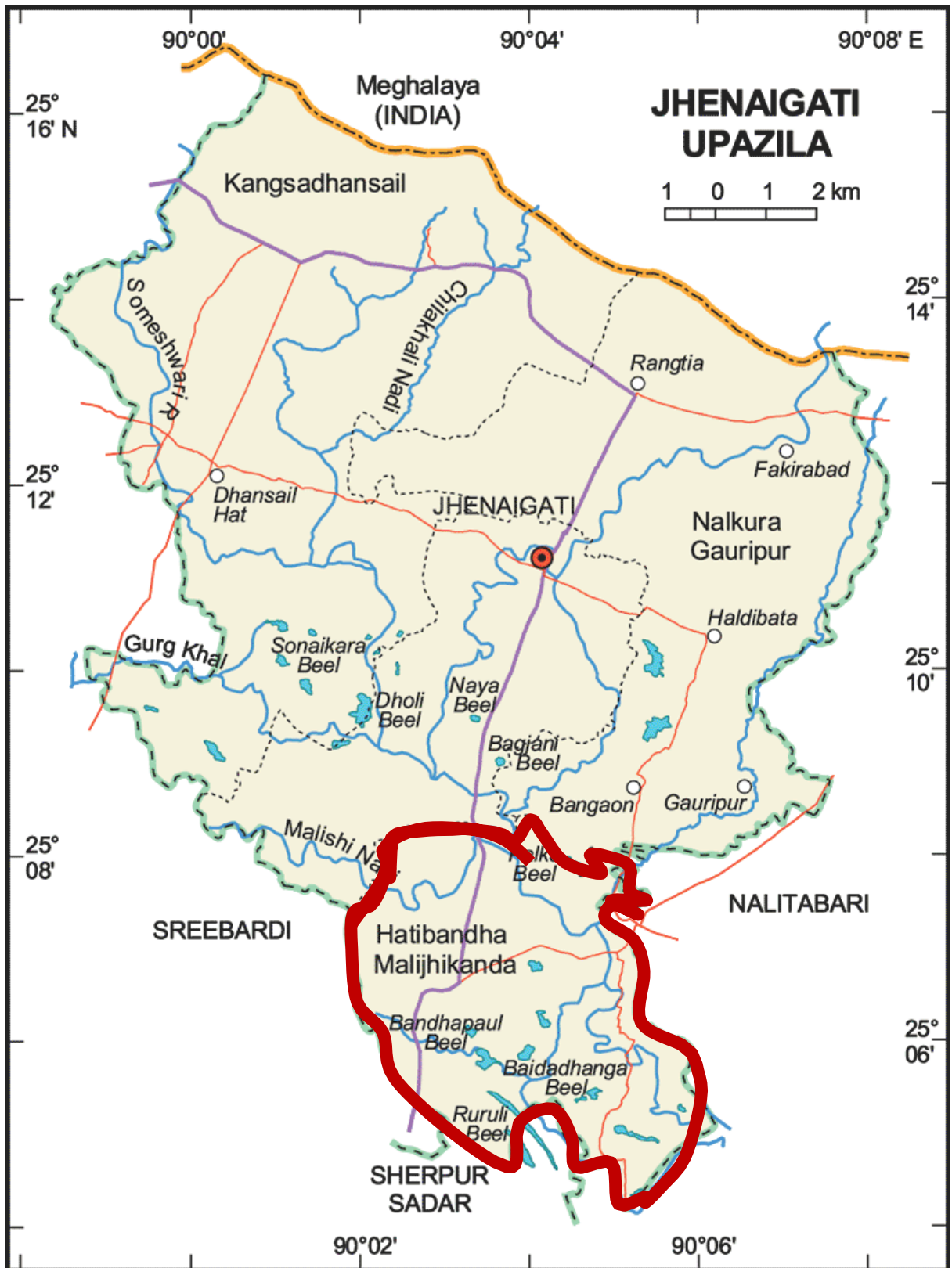


Figure: 3.3 Map of Jhenaigati Upazilz showing Hatibandha union

Sample was selected by using proportionate random sampling method from the population of the two selected villages. Twenty (20) farmers were also kept in reserve lists and farmers of those lists were interviewed when the sample farmers were unable to contact at the time of interview. Distribution of the population, sample and reserve list size is shown in Table 3.1.

Table 3.1 Distribution of the population, sample and reserve list

Upazila	Unions	Villages	Population size	Samples size	Reserve list size
Sreebordi	Kakilakura	Chitolia	218	108	11
Jhinaigati	Hatibandha	Paglarmor	174	86	09
Total			392	194	20

3.3 Development of Instrument

The face to face interviewing method was used for data collection. A structured interview schedule containing both closed and open form questions was prepared in this purpose. To finalize the interview schedule, following steps were followed:

Drafting questionnaire: After thorough consultation of relevant literatures and discussion with experts, a draft questionnaire was developed based on the objectives of the study. After preparation it was pre-tested with the intended respondents.

Judge rating: The draft questionnaire was send to 30 experts (Judges) for making their comments and suggestions on the questionnaire about relevancy of the questions in measuring the dependent variable of the study. A letter was sent to the experts from the Supervisor of the Study (Appendix-II). But out of the 30 experts, 22 experts made their opinions. Based on the opinions of the experts and objectives of the study, the questionnaire (interview schedule) was prepared.

Pre-testing: The questionnaire was pre-tested with 20 farmers from the population but excluded from the sample.

Finalizing Interview Schedule: Necessary corrections, modifications, additions and deletions were made on the pre-tested interview schedule based on pre-testing results. Then the final interview schedule was made and multiplied as much as necessary for data collection. English version of the interview schedule may be seen in Appendix-I of this dissertation.

3.4 Data Collection Procedure

Data were collected from the selected 194 sample farmers conducted by face to face interview by the researcher himself. Questions were asked systematically and explanations were made whenever necessary. The respondents were interviewed at their leisure time to get accurate information in a cool mind. The investigator faced no serious problems during the data collection period from the respondent farmers. To establish rapport with the respondents, the researcher endeavoured to provide trust interest and minimized status difference. Data were collected from the respondent farmers during the period from 15 May to 14 August, 2018.

3.5 Variables of the study

A variable is any characteristics, which can assume varying or different values in successive individual cases (Ezekiel and Fox, 1959). An organized piece of research usually contains at least two important variables viz., dependent and independent variables. The variables of the study are mentioned in the following sub-sections:

3.5.1 Independent variables

Independent variables are the variables that the researcher changes to test their dependent variables. Alternatively, the variables those can take different values and can cause corresponding changes in other variables. In this research, the

researcher selected 14 characteristics of the respondent farmers as the independent variables. The independent variables for this study were age, education, farm size, annual family income, cosmopolitaness, individual local contact, NGO contact, GO contact, group media contact, mass media contact, decision making ability, organizational participation, agricultural experiences and problems faced in agriculture.

3.5.2 Dependent variable

Dependent variable is the variable that is being measured in an experiment. Alternatively, the variables those are affected during research are called dependent variables. In the present study, Farmers' satisfaction on agricultural development in selected areas of Bangladesh was the main focus as well as the dependent variable.

3.5.3 Measurement of Independent Variables

For conducting the study, in accordance with the objectives, it was necessary to measure the independent variables. The independent variables were age, education, farm size, annual family income, cosmopolitaness, individual local contact, NGO contact, GO contact, group media contact, mass media contact, decision making ability, organizational participation, agricultural experiences and problems faced in agriculture. Procedures for measuring these variables are described below:

3.5.3.1 Age

Age of the farmers was measured in terms of actual years from his/her birth to the time of interview, which was found on the basis of the verbal response of the respondent farmers (Rashid, 2014). A score of one (1) was assigned for each year of one's age.

3.5.3.2 Education

Education was measured as the ability of an individual respondent to read and write or the formal education received up to a certain standard. If a respondent did not attain formal education, his score was assigned as zero (0). A score of 0.5 was given to a respondent who only could sign his/her name. A score of one (1) was assigned for each year of successful schooling. If a respondent passed the S.S.C examination, his education score was given as 10.

3.5.3.3 Farm Size

Farm size of the respondent's farmer was measured by using the following formula and was expressed in hectare.

$$\text{Farm size} = \mathbf{A+B+1/2(C+D) +E}$$

Where,

A = Homestead area including pond

B = Own land under own cultivation

C = Land given to others as half share basis (borga)

D = Land taken from others as half share basis (borga)

E = Land taken from others as lease

3.5.3.4 Annual family income

Annual family income indicates total earning of a farmer and the members of his/her family both from agriculture and other socially acceptable regular means such as business, service etc. during last year. The value of all the agricultural products encompassing crops, livestock, vegetables etc. were taken into consideration. For calculation, a score of one (1) was assigned for each one thousand (1000) taka of the annual income of a family.

3.5.3.5 Cosmopolitaness

Cosmopolitaness of a respondent was measured in terms of his/her nature of visits to the seven (7) selected different places external to his/her own social system. The cosmopolitaness of a respondent was measured by computing cosmopolitaness score on the basis of his/her visits with seven selected places as follows:

Nature of cosmopolitaness	Scores assigned
Not at all visit	0
Rarely visit	1
Occasionally visit	2
Regularly visit	3

Logical frequencies were assigned for the four alternative natures of visits like not at all visit, rarely visit, occasionally visit and regular visit. Finally, cosmopolitaness score of a respondent was computed by adding all scores of the respondent against all the seven selected places of visit. Thus, cosmopolitaness score of the respondents could range from 0 to 21 where “0” indicated no cosmopolitaness and “21” indicated highest cosmopolitaness.

3.5.3.6 Individual local contact

Individual local contact of a respondent was measured in terms of his/her nature of contact with three (3) different local communication media. The individual local contact of a respondent was measured by computing individual local contact score on the basis of his/her visits with three selected individual local communication media as follows:

Nature of individual local contact	Scores assigned
Not at all contact	0
Rare contact	1
Occasional contact	2
Regular contact	3

Logical frequencies of contact were assigned for each of the alternative responses like not at all contact, rarely contact, occasionally contact and regular contact. Finally, individual local contact of a respondent was computed by all the scores obtained by him/her against all the three local communication media. Thus, the individual local contact score of the respondent could range from 0 to 9 where “0” indicated no individual local contact and “9” indicated highest individual local contact.

3.5.3.7 NGO contact

NGO contact was measured as one’s extent of contact with the different levels of NGO personnel. Each respondent was asked to indicate his/her nature of contact with each of 3 selected types of NGO personnel with four alternative responses. Logical frequencies of contacts were assigned for each alternative response. Following scoring system was followed for each of 3 types of NGO personnel and four alternative responses:

Nature of NGO contact	Scores assigned
Not at all	0
Rare contact	1
Occasional contact	2
Regular contact	3

Finally, NGO contact of a respondent was computed by adding all the scores obtained by him/her against all the three types of NGO personnel. Thus, the NGO contact scores of the respondent farmers could range from 0 to 9 where “0” indicated no NGO contact and “9” indicated highest NGO contact.

3.5.3.8 GO contact

GO contact was measured as one's extent of contact with different personnel of Government organization (GO). Each respondent was asked to indicate his/her nature of contact with each of 3 selected types of GO Officials with four alternative responses. Logical frequencies of contacts were assigned for each alternative response. Following scoring system was followed for each of 3 types of GO personnel and four alternative responses:

Nature of GO contact	Scores assigned
Not at all contact	0
Rare contact	1
Occasional contact	2
Regular contact	3

Finally, GO contact of a respondent was computed by adding all the scores obtained by him/her against all the three types of GO personnel. Thus, the GO contact scores of the respondent farmers could range from 0 to 9 where "0" indicated no GO contact and "9" indicated highest GO contact.

3.5.3.9 Group media contact

Group media contact was measured as one's extent of contact with different group communication media. Each respondent was asked to indicate his/her nature of contact with four (4) selected group communication media with four alternative responses. Logical frequencies of contacts were assigned for each alternative response. Following scoring system was followed for each of four (4) types of group communication media and four alternative responses:

Nature group media contact	Scores assigned
Not at all contact	0
Rare contact	1
Occasional contact	2
Regular contact	3

Finally, group media contact of a respondent was computed by adding all the scores obtained by him/her against all the four types of group communication media. Thus, the group media contact scores of the respondent farmers could range from 0 to 12 where “0” indicated no group media contact and “12” indicated highest group media contact.

3.5.3.10 Mass media contact

Mass media contact was measured as one’s extent of contact with different mass communication media. Each respondent was asked to indicate his/her nature of contact with six (6) selected mass media with four alternative responses. Logical frequencies of contacts were assigned for each alternative response. Following scoring system was followed for each of six (6) types of mass communication media and four alternative responses:

Nature of mass media contact	Scores assigned
Not at all contact	0
Rare contact	1
Occasional contact	2
Regular contact	3

Finally, mass media contact of a respondent was computed by adding all the scores obtained by him/her against all the six types of mass communication media. Thus, the mass media contact scores of the respondent farmers could range from 0 to 18 where “0” indicated no mass media contact and “18” indicated highest mass media contact.

3.5.3.11 Decision making ability

Decision making ability was measured as one’s extent of taking different decisions. Each respondent was asked to indicate his/her nature of decision making ability for 18 selected decision making items with three alternative

responses. Following scores were assigned for each of 18 decision making items with three alternative responses:

Nature of decision making ability	Scores assigned
Discussion with others	1
Decision with family members	2
Full decision by own self	3

Finally, decision making ability score of respondent was computed by adding all the scores obtained by him/her against all the 18 selected decision making items. Thus, the decision making ability scores of the respondent farmers could range from 18 to 54 where “18” indicated lowest decision making ability and “54” indicated highest decision making ability.

3.5.3.12 Organizational participation

Organizational participation of respondents was measured on the basis of the nature of their participation in 5 selected organizations. Following scores were assigned for nature of participation:

Nature of participation	Scores assigned
No participation	0
One year of participation as ordinary member	1
One year of participation as executive member	2
One year of participation as executive officer	3

Finally organizational participation score of a respondent was computed by adding all the scores obtained by him/her against all the selected organizations.

3.5.3.13 Agricultural experience

Agricultural experience was operationalized by counting the number of years a respondent actively involved in agricultural activities. For each year of experience, one (1) score was assigned.

3.5.3.14 Problems faced in agriculture

Problems faced in agriculture by the respondents were measured by using a four point rating scale. After thorough searching existing literatures, consultation and discussion with relevant experts and farmers. 27 problems were considered for the studies which were faced by the farmers in performing agricultural activities. The respondent farmers were asked to indicate their extent of problem against each of the problems. For each problem score of 3, 2, 1 and 0 were assigned to indicate the extent of problems as high, moderate, low and not at all problem respectively. The problem faced in agriculture score was computed for each respondent by adding his/her scores against all 27 problems. Thus, the possible range of problem faced in agriculture score of the respondent farmers could range from 0 to 81 where “0” indicated no problem at all and “81” indicated highest problem faced by the farmers in agricultural activities.

To ascertain the severity the problems, Problem Faced Index (PFI) was computed by using the following formula for each problem item:

$$PFI = F_h \times 3 + F_m \times 2 + F_l \times 1 + F_n \times 0$$

Where,

PFI = Problem Faced Index

F_h = Frequency of respondents faced high problem

F_m = Frequency of respondents faced moderate problem

F_l = Frequency of respondents faced low problem

F_n = Frequency of respondents faced no problem at all

Thus, PFI of each of the problem items could range from 0 to 582, where '0' indicated no problem at all and '582' indicated highest problem. Rank order also made based on the descending order of PFI of the problem items to compare the problems. Respondent farmers were asked to indicate three important suggestions against each of the problems to mitigate the problem. Based on highest citation number, three important solutions were identified for each problem in agriculture.

3.5.4 Measurement of Dependent Variable

Farmers' satisfaction on agricultural development in selected areas of Bangladesh was the focus variable dependent variable of the study. Measurement procedures of this variable have been done based on the following steps:

Item collection: After thorough consultation and searching of relevant literatures and discussion with experts, 30 items were collected to measure the Farmers' satisfaction on agricultural development in selected areas of Bangladesh. But some items were similar as such 23 items were selected to send those to the Judges.

Judge rating: The selected 23 items were sent to 30 experts (Judges) to rate the items for the scale of Farmers' satisfaction on agricultural development in selected areas of Bangladesh. A letter was sent to the experts from the Supervisor of the Study (Appendix-II). For determining the appropriateness and relevancy of the items of "**Farmers' satisfaction on agricultural development in selected areas of Bangladesh**" scale, the Judges were requested to rate the items with the scale of 1-9 (1 for least appropriate and 9 for most appropriate). But out of the 30 experts, 22 experts made their opinions. Based on the ratings of 22 Judges, average appropriateness of each of the item was measured with the following formula:

$$\text{AAS} = \frac{\sum \text{ASJ}}{n}$$

Where,

AAS = Average Appropriateness Score

ASJ = Appropriateness Score given by the Judges

n = Number of Judges (here, it is 22.)

After determining the AAS of each of all the items, it was found that the AAS of all items was more than 5 out of 9, i.e more than average. Based on the results of AAS, it was decided to include all the items with slight modification as suggested by some of the Judges in the scale of “Farmers' satisfaction on agricultural development in Bangladesh” for the interview schedule. The average appropriateness score of all the items may be seen in Appendix-III.

Pre-testing of satisfaction scale: Carefully constructed satisfaction scale including 23 items was pre-tested with 20 farmers from the population but excluded from the sample. The Likert scale was used to serve the purpose.

Final selection of items: After the pre-test, it was found that all the 23 items of satisfaction scale were understandable to the farmers. As such all the 23 items were included in the final scale of “Farmers' satisfaction on agricultural development in selected areas of Bangladesh” with slight modifications.

Scoring System: Respondents were asked to indicate their degree of agreement against each of the statements (items) along with a four-point scale as, highly satisfied, moderately satisfied, low satisfied and not satisfied. Scores were assigned to these four alternative responses as 3, 2, 1, and 0 respectively for each statement. However, the score of a respondent was obtained by adding his/her scores for all the 23 statements. Thus, the satisfaction score of a respondent could range from 0 to 69, where, ‘0’ indicated lowest level of

satisfaction and '69' indicated highest level of satisfaction of farmers on agricultural development in Bangladesh.

3.6 Validity and Reliability of scales

To give due attention to the validity and reliability of the scales used for collecting data is one of the important tasks of research work. A scale possesses validity when it actually measures what it claims to measure. A scale is reliable when it can consistently produces the same results repeatedly when applied to the same sample (Goode and Hatt, 1952). Enough care was taken to prepare the scales for measuring the independent variables of the interview schedule in general and the scale in particular to measure the dependent variable i.e, "Farmers satisfaction on Agricultural Development in selected areas of Bangladesh". However, validity and reliability of the scale for measuring "Farmers' satisfaction on agricultural development in selected areas of Bangladesh" was examined. Validity and reliability of this scale was tested both from pre-test data and a portion of final data. However, validity and reliability of the scale have been described below:

3.6.1 Validity of Farmers' satisfaction on agricultural development in selected areas of Bangladesh scale

The content of the scale was obtained by the judgments of relevant Judges/Experts. Initially 30 items were collected for this scale after discussion with agricultural scientists, extension specialists and review of previous studies made in this connection. Some of these items had similarity. By reducing the similarity of items, 23 items were selected and sent to 30 relevant judges/experts for their judgments. Out of 30 Judges, 22 replied. It was revealed from the ratings of the Judges that all the 23 items had more than average appropriateness score (>5 out of 9) as shown in Appendix-III of this dissertation.

Carefully constructed satisfaction scale including these 23 items was pre-tested with 20 farmers from the population but excluded from the sample. The rating

scale was used to serve the purpose. After the pre-test, it was found that all the 23 items of satisfaction scale were understandable to the farmers. As such all the 23 items were included in the final scale of “Farmers’ satisfaction on agricultural development selected areas of Bangladesh” with slight modifications. Therefore, the content validity was built in the process of constructing the scale.

Again, validity of “Farmers’ satisfaction on agricultural development selected areas of Bangladesh” scale was measured by the relationships between the scores of each individual item of the scale and the composite score of “Farmers’ satisfaction on agricultural development selected areas of Bangladesh” scale of 32 farmers (based on a portion of final data) by taking 16 from each of 2 selected upazila of the study area as used by Ali (2008). The coefficient of correlations between the scores of each of 23 individual items of the scale and the score of composite scale were found to be 0.712 **, 0.705 **, 0.735 **, 0.448 *, 0.649 **, 0.629 **, 0.686 **, 0.785 **, 0.777 **, 0.556 **, 0.441 *, 0.625 **, 0.618 **, 0.585 **, 0.517 **, 0.423 *, 0.436 *, 0.564 **, 0.754 **, 0.674 **, 0.499 **, 0.650 **, and 0.767 ** which were significant at 0.000 to 0.05 level with 30 degrees of freedom. The results may be seen in Appendix-IV. On the basis of the procedure followed, it can be assumed that the “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale had content validity. Therefore, the scale may be taken as valid instrument to measure “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh”.

3.6.2 Reliability of Farmers’ satisfaction on agricultural development in selected areas of Bangladesh scale

The reliability of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale was measured by split-half method. The scale was administered to 32 farmers (based on a portion of final data) by taking 16 from each of 2 selected upazillas of the study area as used by Ali

(2008). All the 23 items of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale were divided into 2 equal halves. The scale had two sets of items: one with odd numbers (item no.: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and 23) and the other with even numbers (item no.: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22). The coefficient of correlation between the two sets of scores was computed and the value was found to be 0.866** which was significant at 0.000 level with 30 degree of freedom. The results may be seen in Appendix-V. The reliability co-efficient, thus obtained indicated that the ‘internal consistency’ of the “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale developed for the present study was high.

3.7 Determinations of Satisfaction Index (SI)

To ascertain the comparison among the satisfaction items, Satisfaction Index (SI) was computed for each item by using the following formula:

$$SI = F_h \times 3 + F_m \times 2 + F_l \times 1 + F_n \times 0$$

Where,

SI = Satisfaction Index

F_h = Frequency of farmers had high satisfaction

F_m = Frequency of farmers had moderate satisfaction

F_l = Frequency of farmers had low satisfaction

F_n = Frequency of farmers had no satisfaction

Thus, SI of the satisfaction items could range from 0-582. Where ‘0’ indicated no satisfaction and ‘582’ indicated highest satisfaction.

3.8 Hypothesis

The following null hypothesis was undertaken for the present study. There is no significant contribution of the selected characteristics of farmers to their Farmers’ satisfaction on agricultural development in selected areas of Bangladesh. The selected characteristics are: age, education, farm size, annual family income, cosmopolitaness, individual local contact, NGO contact, GO

contact, group media contact, mass media contact, decision making ability, organizational participation, agricultural experiences and problems faced in agriculture.

3.9 Data Processing and Analysis

The collected raw data were examined thoroughly to detect errors and omissions. Having consulted with the research Supervisors, the Investigator prepared a detailed coding plan. In case of qualitative data, putting proper weight against each of the traits to transfer the data into quantitative forms followed suitable scoring techniques. Collected data for the study were compiled, recorded, tabulated and analyzed in accordance with the objectives of the study. Various statistical measures such as number and percentage distribution, range, mean, standard deviation and rank order were used in describing the variables of the study. Tables and figures were used in presenting data for clarity of understanding. The contributions of the selected individual characteristics of the respondent farmers to their satisfaction on agricultural development in Bangladesh were ascertained by using step-wise regressions analysis with the help of SPSS (version 20) software. Five percent (0.05) level of probability was used for rejecting a null hypothesis. Co-efficient of regression values signification at 0.05 level is indicated by one asterisk (*) and that at 0.01 level by two asterisks (**).

CHAPTER IV

RESULTS AND DISCUSSION

The findings of the study and their interpretation have been presented in this Chapter. This Chapter has been divided into following seven sections:

First section: Selected characteristics of the farmers

Second section: Farmers' satisfaction on agricultural development in Bangladesh

Thirds section: Item wise comparative satisfaction of the farmers in agricultural development in Bangladesh

Fourth section: Contribution of the selected characteristics of the farmers to their satisfaction on agricultural development in Bangladesh

Fifth section: Direct and indirect effects of the selected characteristics of the farmers on their satisfaction on agricultural development in Bangladesh

Sixth section: Item wise comparative severity of the problems faced by the farmers in Bangladesh

Seventh section: Suggestions for solving farmer's problems

4.1 Selected Characteristics of the Farmers

The findings on the farmers' selected characteristics have been presented and discussed in this section. The selected characteristics were: age, education, farm size, annual family income, cosmopolitaness, individual local contact, NGO contact, GO contact, group media contact, mass media contact, decision making ability, organizational participation, agricultural experiences and problems faced in agriculture. The salient features like measuring unit, possible range, observed range, mean and Standard deviation (SD) of the selected characteristics of the farmers have been present in Table 4.1. The farmer respondents were classified into different categories based on the nature of the characteristics. The distribution of the farmers based on the categorized of the characteristic has been presented in the next sub-sections.

Table 4.1: The Salient Features of the Selected Characteristics of the Farmers

Selected Characteristics	Measuring Unit	Rang		Mean	SD
		Possible	Observed		
Age	Score (Year)	-	25-80	44.78	11.99
Education	Score (Year of schooling)	-	0-16	7.18	4.63
Farm size	Hectare	-	0.20-3.78	0.77	0.62
Annual family income	Score ('000'taka)	-	60-800	263.47	129.23
Cosmopolitaness	Score	0-21	4-17	10.33	3.48
Individual local contact	Score	0-9	2-9	6.45	1.74
NGO contact	Score	0-9	0-8	4.80	1.48
GO contact	Score	0-9	1-9	5.27	1.74
Group media contact	Score	0-12	2-11	6.70	1.90
Mass media contact	Score	0-18	3-17	8.62	3.58
Decision making ability	Score	18-54	20-51	36.34	3.59
Organizational participation	Score	-	0-11	3.04	2.78
Agricultural experiences	Score (Years)	-	3-50	21.78	10.85
Problems faced in agriculture	Score	0-81	18-69	50.97	8.13

4.1.1 Age

The observed age of the farmers ranged from 25 to 80 years with a mean of 44.78 years and standard deviation of 11.99. The respondents were classified into following three categories based on their age:

Categories	Basis of categorization
Young aged	up to 35
Middle aged	>35-50
Old aged	>50

Distribution of the farmers according to their age is shown in Table 4.2.

Table 4.2 Distribution of the farmers according to their age

Categories (Year)	Respondent farmers		Mean	SD
	Number	Percent		
Young aged	40	20.6	44.78	11.99
Middle aged	99	51.0		
Old aged	55	28.4		
Total	194	100		

Table 4.2 reveals that the middle aged farmers comprised the highest proportion (51.0%) followed by old aged (28.4%) and the lowest proportion (20.6%) of the farmers comprised the young aged group. Data also indicates that the middle and old aged respondents constitute almost 79.4% of the total respondent farmers. It is assumed that the aged farmers might have comparatively more capacity to determine their satisfaction level on agricultural development of Bangladesh.

4.1.2 Education

Education scores of the respondents ranged from 0 to 16 with the mean of 7.18 and the standard deviation 4.63. Based on their educational scores, the farmers were classified into following four categories:

Categories	Basis of categorization (Year of Schooling)
Illiterate (don't read and write)	0
Primary education	1-5
Secondary education	6-10
Above secondary education	> 10

Distributions of the respondents according to their education are presented in Table 4.3.

Table 4.3 Distribution of the farmers according to their education

Categories (Score)	Respondent farmers		Mean	SD
	Number	Percent		
Illiterate	34	17.5	7.18	4.63
Primary education	55	28.4		
Secondary education	62	31.9		
Above secondary education	43	22.2		
Totals	194	100		

Table 4.3 shows that farmers under secondary education category constituted the highest proportion (31.9%) of the respondents followed by 28.4%, 22.2% and 17.5% having primary education, above secondary education, and illiterate. From the findings, it was found that the literacy rate (82.5%) of the area was higher than the average literacy rate of 72.8% (BBS, 2018). It is assumed that the educated farmers might have more capacity to determine their judgment of satisfaction on agricultural development of Bangladesh.

4.1.3 Farm size

The farm size of the farmers in the study area varied from 0.20-3.78 hectares. The average farm size was 0.77 hectare and the standard deviation was 0.62. On the basis of farm size, the respondents were classified into following four categories: as suggested by DAE (1999):

Categories	Farm size (ha)
Marginal farm size	up to 0.20
Small farm size	>0.20-1.00
Medium farm size	>1.01-3.00
Large farm size	> 3.00

Distribution of the farmers according to their farm size is presented in Table 4.4.

Table 4.4 Distribution of the farmers according to their farm size

Categories (hectare)	Respondent farmers		Mean	SD
	Number	Percent		
Marginal farm size	3	1.5	0.77	0.62
Small farm size	166	85.6		
Medium farm size	19	9.8		
Large farm size	6	3.1		
Totals	194	100		

Data in the Table 4.4 reveals that the majority (85.6%) of the respondents had small farm size, while 9.8% of them had medium farm size, 1.5% had marginal farm size and only 3.1% had large farm size. This average farm size (0.77 ha) of the study was slight lower than the national average of 0.91 hectare (BBS, 2013). It is necessary to find out the perception of all categories of farmers, specially the small and average farmers regarding agricultural development of Bangladesh.

4.1.4 Annual family income

Annual family income score of the respondents ranged from 60 to 800 with the average 263.47 and the standard deviation was 129.23. On the basis of the annual family income, the respondents were classified into following three categories:

Categories	'Basis of categorization ('000' BDT.)
Low income	up to 250
Medium income	251-500
High income	above 500

Distribution of the farmers according to their annual family income is shown in Table 4.5.

Table 4.5 Distribution of the farmers according to their annual family income

Categories (000)	Respondents		Mean	SD
	Number	Percent		
Low income	111	57.2	263.47	129.23
Medium income	74	38.2		
High income	9	4.6		
Total	194	100		

From Table 4.5, it was observed that the highest portion (57.2%) of the respondents had low annual family income while 38.2% respondents had medium and 4.6% had high annual family income. Overwhelming majority (95.4%) farmers have low to medium level annual family income. For the present study, it is necessary to determine the satisfaction level of all categories of farmers on agricultural development of the Government of Bangladesh.

4.1.5 Cosmopolitaness

The score of cosmopolitaness of the farmers ranged from 4 to 17 against the possible range of 0-21 with a mean and standard deviation 10.33 and 3.47 respectively. On the basis of cosmopolitaness score, the respondents were classified into following three categories:

Categories	Basis of categorization (score)
Low Cosmopolitaness	<Mean – SD, i.e. up <6.85
Medium Cosmopolitaness	Mean \pm SD, i.e. 6.85-13.81
High Cosmopolitaness	> Mean + SD, i.e. >13.81

Distribution of the farmers based on their cosmopolitaness score is presented in the Table 4.6.

Table 4.6 Distribution of the farmers according to their cosmopolitaness

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low	32	16.5	10.33	3.48
Medium	117	60.3		
High	45	23.2		
Total	194	100		

Data contained in the Table 4.6 shows that the above three-fifths (60.3%) of the respondents had medium cosmopolitaness while 16.5% and 23.2% of them had low and high cosmopolitaness respectively. Data again revealed that the majority of the farmers (83.5%) had medium to high cosmopolitaness. It is assumed that the farmers having more cosmopolitaness might have more capacity to determine their satisfaction level on agricultural development of the Government of Bangladesh.

4.1.6 Individual local contact

Individual local contact scores of the farmers ranged from 2 to 9 against the possible range of 0-9 with an average of 6.45 and standard deviation of 1.74. On the basis of their individual local contact, the respondents were classified into following three categories:

Categories	Basis of categorization (score)
Low individual local contact	<Mean – SD, i.e. < 4.71
Medium individual local contact	Mean \pm SD, i.e. 4.71-8.19
High individual local contact	> Mean + SD, i.e. > 8.19

The distribution of the farmers based on their individual local contact is presented in Table 4.7.

Table 4.7 Distribution of the farmers according to their individual local contact

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low individual local contact	48	24.7	6.45	1.74
Medium individual local contact	93	48.0		
High individual local contact	53	27.3		
Total	194	100		

Data contained in the Table 4.7 indicated that the highest proportion (48%) of the respondents had medium individual local contact as compared to 27.3% and 24.7% had high and low individual local contact respectively. Data again revealed that more than three-fourth (75.3%) of the farmers had medium to high individual local contact. It is assumed that the farmers having more individual local contact might have more capacity to determine their

satisfaction level on agricultural development of the Government of Bangladesh.

4.1.7 NGO contact

Non-Government Organization (NGO) contact score of the farmers ranged from 2 to 8 against the possible of 0-9 with an average 4.80 and standard deviation 1.48. It was measured as one's extent of contact with different NGOs. On the basis of their NGO contact, the respondents were classified into following three categories:

Categories	Basis of categorization (score)
Low NGO contact	<Mean – SD, i.e. < 3.32
Medium NGO contact	Mean \pm SD, i.e. 3.32-6.28
High NGO contact	> Mean + SD, i.e. > 6.28

Distribution of the sample farmers based on their NGO contact score is presented in Table 4.8.

Table 4.8 Distribution of the farmers according to their NGO contact

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low NGO contact	41	21.1	4.80	1.48
Medium NGO contact	125	64.5		
High NGO contact	28	14.4		
Total	194	100		

Data contained in the Table 4.8 indicated that the highest proportion (64.5%) of the respondents had medium NGO contact as compared to (14.4%) and (21.1%) having high and low NGO contact respectively. Data again revealed

that majority (78.9%) of the farmers had medium to high NGO contact. It is assumed that the farmers having more NGO contact might have more capacity to determine their satisfaction level on agricultural development of Bangladesh.

4.1.8 GO contact

Government Organization (GO) contact score of the farmers ranged from 1 to 9 against the possible range of 0-9 with an average 5.27 and standard deviation 1.74. On the basis of their GO contact, the respondents were classified into following three categories:

Categories	Basis of categorization (Score)
Low GO contact	$< \text{Mean} - \text{SD}$, i.e. < 3.53
Medium GO contact	$\text{Mean} \pm \text{SD}$, i.e. $3.53-7.01$
High GO contact	$> \text{Mean} + \text{SD}$, i.e. > 7.01

Distribution of the farmers according to their GO contact score is presented in Table 4.9.

Table 4.9 Distribution of the farmers according to their GO contact

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low GO contact	29	14.9	5.27	1.74
Medium GO contact	140	72.2		
High GO contact	25	12.9		
Total	194	100		

Data contained in the Table 4.9 indicated that majority (72.2%) of the respondents had medium GO contact as compared to 14.9% and 12.9% having low and high GO contact respectively. From the findings, it is also revealed

that overwhelming majority (85.1%) of the farmers had medium to high contact with government organizations. It is assumed that the farmers having more contact with Government Organizations might have more capacity to determine their satisfaction level on agricultural development of Bangladesh.

4.1.9 Group Media contact

Group media contact score of the farmers ranged from 2 to 11 against the possible range of 0-12 with an average 6.70 and standard deviation 1.90. It was measured as one's extent of contact with different group media. On the basis of their group media contact, the respondents were classified into following three categories:

Categories	Basis of categorization
Low group media contact	<Mean – SD, i.e. < 4.8
Medium group media contact	Mean \pm SD, i.e. 4.8-8.6
High group media contact	> Mean + SD, i.e. < 8.6

Distribution of the farmers according to their group media contact score is given in Table 4.10.

Table 4.10 Distribution of the farmers according to their group contact

Categories (Scores)	Respondents farmers		Mean	SD
	Number	Percent		
Low group media contact	37	19.1	6.70	1.90
Medium group media contact	123	63.4		
High group media contact	34	17.5		
Total	194	100		

Data contained in the Table 4.10 indicated that the highest proportion (63.4%) of the respondents had medium group contact as compared to (19.1%) and (17.5%) having low and high group contact respectively. Data again revealed

that majority (82.5%) of the farmers had medium to low group media contact. It is assumed that the farmers having more group media contact might have more capacity to determine their satisfaction level on agricultural development of Bangladesh.

4.1.10 Mass Media contact

Mass media contact score of the farmers ranged from 3 to 17 against the possible ranged 0-18 with an average 8.62 and standard deviation 3.58. On the basis of their mass media contact, the respondents were classified into following three categories:

Categories	Basis of categorization
Low mass media contact	<Mean – SD, i.e. up to 5.04
Medium mass media contact	Mean \pm SD, i.e. 5.05-12.2
High mass media contact	> Mean + SD, i.e, above 12.2

Distribution of the farmers according to their mass media contact score is given in Table 4.11.

Table 4.11 Distribution of the farmers according to their mass media contact

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low mass media contact	52	26.8	8.62	3.58
Medium mass media contact	108	55.7		
High mass media contact	34	17.5		
Total	194	100		

Data contained in the Table 4.11 indicated that the highest proportion (55.7%) of the respondents had medium mass media contact as compared to (26.8%) and (17.5%) having low and high mass media contact respectively. Data again revealed that majority (73.2%) of the farmers had medium to high mass media contact. It is assumed that the farmers having more mass media contact might have more capacity to determine their satisfaction level on agricultural development in Bangladesh.

4.1.11 Decision making ability

Decision making ability score of the farmers ranged from 20 to 51 against the possible ranged 18-54 with an average 36.34 and standard deviation 3.19. On the basis of their decision making ability, the respondents were classified into following three categories:

Categories	Basis of categorization
Low decision making ability	<Mean – SD, i.e. < 32.75
Medium decision making ability	Mean \pm SD, i.e. 32.75-39.93
High decision making ability	> Mean + SD, i.e. > 39.93

Distribution of the farmers according to their decision making ability score of a respondent is given in Table 4.12.

Table 4.12 Distribution of the farmers according to their decision making ability

Categories (Scores)	Respondents farmers		Mean	SD
	Number	Percent		
Low decision making ability	48	24.7	36.34	3.59
Medium decision making ability	88	45.4		
High decision making ability	58	29.9		
Total	194	100		

Data contained in the Table 4.12 indicated that the highest proportion (45.4%) of the respondents had medium decision making ability as compared to (24.7%) and (29.9%) having low and high decision making ability respectively. Data again revealed that above three-fourth (75.3%) of the farmers had medium to high decision making ability. It is assumed that the farmers having more decision making ability might have more capacity to determine their satisfaction level on agricultural development in Bangladesh.

4.1.12 Organizational participation

The observed organizational participation score of the respondents ranged from 0 to 11. The mean score was 3.04 with the standard deviation 2.78. From the observed range, on the basis of organizational participation, the respondents were classified into three categories:

Categories	Basis of categorization
No organizational participation	0
Low organizational participation	1-3
Medium organizational participation	4-6
High organizational participation	> 6

Distribution of the farmers according to their organizational participation is shown in Table 4.13.

Table 4.13 Distribution of the farmers according to their organizational participation

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
No organizational participation	42	21.6	3.04	2.78
Low organizational participation	79	40.8		
Medium organizational participation	41	21.1		
High organizational participation	32	16.5		
Total	194	100		

Data contained in the Table 4.13 revealed that the majority (40.8%) of the farmers had low organizational participation as compared to (21.1%) and (16.5%) having medium and high organizational participation respectively. Rest 21.6% of the farmers had no organizational participation. Data again revealed that most (78.6%) of the farmers were organized in different types of organization from low to high level. It is assumed that the farmers having more organizational participation might have more capacity to determine their satisfaction level on agricultural development in Bangladesh.

4.1.13 Agricultural Experience

The agricultural experience score of the respondents ranged from 3 to 50. The mean score was 21.78 with the standard deviation 10.85. On the basis of agricultural experience, the respondents were classified into following three categories:

Categories	Basis of categorization
Low agricultural experience	<Mean –SD, i.e.< 10.93
Medium agricultural experience	Mean \pm SD, i.e. 10.94-32.63
High agricultural experience	> Mean + SD, i.e. > 32.63

Distribution of the farmers according to their agricultural experience is shown in Table 4.14.

Table 4.14 Distribution of the farmers according to their agricultural experience

Categories (Years)	Respondent farmers		Mean	SD
	Number	Percent		
Low agricultural experience	29	14.9	21.78	10.85
Medium agricultural experience	131	67.6		
High agricultural experience	34	17.5		
Total	194	100		

Data contained in the Table 4.14 revealed that the majority (67.6%) of the farmers had medium agricultural experience as compared to (14.9%) and (17.5%) having low and high agricultural experience respectively. Data again revealed that majority (85.1%) of the farmers had medium to high agricultural experience. It is assumed that the farmers having more agricultural experience might have more capacity to determine their satisfaction level on agricultural development in Bangladesh.

4.1.14 Problems faced in agriculture

The problems faced in agriculture score of the respondents ranged from 18 to 69 against the possible ranged 0-81. The mean score was 50.97 with the

standard deviation 8.13. On the basis of problems faced in agriculture, the respondents were classified into following three categories:

Categories	Basis of categorization
Low problems	<Mean – SD, i.e. < 42.84
Medium problems	Mean \pm SD, i.e. 42,84 – 59.1
High problems	> Mean + SD, i.e., > 59.1

Distribution of the farmers according to their problems faced in agriculture is shown in Table 4.15.

Table 4.15 Distribution of the farmers according to their problems faced in agriculture

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low problems	38	19.6	50.97	8.13
Medium problems	114	58.8		
High problems	42	21.6		
Total	194	100		

Data contained in the Table 4.15 revealed that the majority (58.8%) of the farmers had medium problems in agriculture as compared to (21.6%) and (19.6%) having high and low problems in agriculture respectively. Data again revealed that majority (78.4%) of the farmers had low to medium problems faced in conducting agricultural activities. It means that majority of the farmers were able to mitigate their problems in agricultural farming. It is assumed that the farmers having more capacity to mitigate their problems might have more capacity to determine their satisfaction level on agricultural development in Bangladesh.

4.2 Farmers' Satisfaction on agricultural development

Satisfaction of the farmers on agricultural development was the main focus variable of the study. The observed satisfaction score of the respondents ranged from 25 to 53 against the possible ranged 0-69. The mean scores were 40.83 with the standard deviation 5.94. Based on their satisfaction scores, the respondents were classified into three categories

Categories	Basis of categorization
Low satisfaction	$< \text{Mean} - \text{SD}$, i.e. < 34.89
Medium satisfaction	$\text{Mean} \pm \text{SD}$, i.e. $34.89 - 46.77$
High satisfaction	$> \text{Mean} + \text{SD}$, i.e. > 46.77

Distribution of the farmers according to their satisfaction is shown in Table 4.16.

Table 4.16 Distribution of the farmers according to their satisfaction on agricultural development in Bangladesh

Categories (Scores)	Respondent farmers		Mean	SD
	Number	Percent		
Low satisfaction	26	13.4	40.83	5.94
Medium satisfaction	131	67.5		
High satisfaction	37	19.1		
Total	194	100		

Data contained in the Table 4.16 revealed that the above two-thirds (67.5%) of the farmers had medium satisfaction on agricultural development as compared to 19.1% and 13.4% having high and low satisfaction respectively. It means that overwhelming majority (86.6%) of the farmers was moderately and highly satisfied on agricultural development has so for their achieved due to various

initiatives undertaken by GOs and NGOs in Bangladesh. It might be due to various activities done by both public and private initiatives.

4.3 Item wise Comparative Farmers’ satisfaction on agricultural development in selected areas of Bangladesh

The observed Satisfaction Index (SI) value of the satisfaction items ranged from 168 to 464 against the possible range of 0-582. Satisfaction Index (SI) of the satisfaction items is shown in Table 4.17.

On the basis of descending order of SI, it was observed that “co-operation from extension agent” ranked first followed by “co-operation of neighbouring farmer”, “co-operation from local leaders”, “co-operation of political leaders”, “co- operation of NGOs”, “co-operation of GOs”, “opportunity of opening bank account by 10 taka”, “subsidy from government for agricultural activities”, “increased production of fisheries”, “increased production of livestock”, “increased productions of agricultural crops”, “availability of quality seed”, “availability of credit for agricultural activities”, “availability of balanced fertilizers”, “availability of agricultural information”, “availability of pesticides”, “reasonable selling prices of agricultural product”, “buying price of agricultural inputs”, “availability of irrigation facilities”, “availability of agricultural instruments”, “marketing facilities”, “availability of labour” and “storages facilities”.

Table 4.17 Satisfaction Index (SI) with Rank Order

Satisfactions	Numbers of farmers				SI	Rank order
	Highly satisfied	Moderate satisfied	Low satisfied	Not satisfied		
Co-operation from extension agent	127	29	25	13	464	1
Co-operation of neighboring farmer	122	30	30	12	456	2

Co-operation from local leaders	109	33	28	24	421	3
Co-operation of political leaders	98	45	36	15	420	4
Co-operation of NGOs	109	27	38	20	419	5
Co-operation of GOs	102	41	20	31	408	6
Opportunity of opening bank account by 10 taka	102	31	29	32	397	7
Subsidy from government for agricultural activity	92	41	38	23	396	8
Increased Production of fisheries	89	38	35	32	378	9
Increased Production of livestock	82	41	44	27	372	10
Increased Productions of agricultural crops	68	55	49	22	363	11
Availability of quality seed	81	35	38	40	351	12
Availability of credit for agricultural activities	58	58	58	20	348	13
Availability of balanced fertilizers	52	61	55	26	333	14
Availability of agricultural information	53	65	41	35	330	15
Availability of pesticides	62	51	35	46	323	16
Reasonable selling prices of agricultural product	47	60	60	27	321	17
Buying price of agricultural inputs	50	48	53	43	299	18

Availability of irrigation facilities	38	61	50	45	286	19
Availability of agricultural instrument	34	55	45	60	257	20
Marketing facilities	31	45	41	77	224	21
Availability of labour	22	47	27	98	187	22
Storages facilities	18	38	38	100	168	23

Data in the Table 4.17 revealed that “Co-operation from extension agent” had the highest Satisfaction Index (464) based on the descending order of rank among the items. Actually, farmers are getting various types of agricultural information from different Agricultural Extension Service Providers. This might be the reason for the highest level of farmers’ satisfaction on co-operation from extension agent.

“Co-operation of neighboring farmers’ had the second highest Satisfaction Index based on descending order of rank among the items. After getting agricultural information from different Agricultural Extension Service Providers, farmers are taking active part for disseminating agricultural information to other farmers. It means that farmers are informed by progressive farmers. This might be the reason for the satisfaction of Co-operation of neighboring farmers.

“Co-operation from local leaders” had the third highest Satisfaction Index among the items. By the initiative of Government and the extension service providers, the local leaders are very much co-operative to their local followers. As a result, farmers are getting co-operation from local leaders. They are benefited by the co-operation from one to others.

“Co-operation of political leaders” had the fourth highest Satisfaction Index among the satisfaction items. Farmers are the main followers of the political leaders. They are always helpful to their followers. As Bangladesh is an agrarian country, political leaders are trying to develop the country people by helping them in various ways.

“Co-operation of NGOs” had the fifth highest Satisfaction Index among the satisfaction items. Besides Government organizations, Non-Government organizations are helping rural farmers by providing credit and technical support. Helping rural people is the main function of the NGOs of Bangladesh.

“Co-operation of GOs” had the sixth highest Satisfaction Index among the satisfaction items. Government Agricultural Extension Service providing organization like Department of Agricultural Extension (DAE), Department of Livestock services (DLS), Department of Fisheries (DOF) are the providing agricultural advice to the farmers in crop, livestock and fisheries sectors respectively. Other Government organizations are also helping the farmers for their betterment. So, farmers are happy with their activities.

“Opportunity of opening bank account by 10 taka” had the seventh highest Satisfaction Index among the statements. Farmers are happy with opportunity. They can get government subsidy directly by this account without the harassments of any third party.

“Subsidy from government for agricultural activity” had the eighth highest Satisfaction Index among the items. Farmers were satisfied with difference supporting activities like subsidy from Government. Generally, Government is providing subsidy for purchasing agricultural machineries all out the country. Special subsidies are provided by the Government in any adverse climatic condition.

“Increased Production of fisheries” had the ninth highest Satisfaction Index among the satisfaction items. Bangladesh is now fourth in fish production in

the world (FAO, 2016). Farmers were thus happy with fish production in Bangladesh.

“Increased Production of livestock” had the tenth highest Satisfaction Index among the satisfaction items. Many farmers were happy by producing livestock products. This was the reason for the result.

“Increased Productions of agricultural crops” had the eleventh highest Satisfaction Index among the satisfaction items. By the initiatives of the Government, Bangladesh is now self-sufficient in food crop production. So, their satisfaction level was higher.

“Availability of quality seed” had the twelfth highest Satisfaction Index among items. Presently farmers are getting quality seeds for crop production in time. Therefore, they are satisfied.

“Availability of credit for agricultural activities” had the thirteenth highest Satisfaction Index among the items. Farmers are getting agricultural credit for crop production from different Government and Non-government organization. Therefore, they were satisfied.

“Availability of balanced fertilizers” had the fourteenth highest Satisfaction Index among the items. Fertilizers are available in the market with subsidized price. Therefore, the farmers were satisfied.

“Availability of agricultural information” had the fifteenth highest Satisfaction Index among the items. Extension Service Providers are providing necessary information to the farmers for increasing their crop yield. Therefore, the farmers were satisfied.

“Availability of pesticides” had the sixteenth highest Satisfaction Index among the items. This was due to availability of pesticide facility in local market.

“Reasonable Selling prices of agricultural product” had the seventeenth highest Satisfaction Index among the items. Most of the farmers were getting logical price for their agricultural products. This might be the reason for this finding.

“Buying prices of agricultural inputs” had the eighteenth highest Satisfaction Index among the items. Farmers were able to buy their agricultural inputs from the local markets. Therefore, they were satisfied.

“Availability of irrigation facilities” had the nineteenth highest Satisfaction Index among the items. Actually farmers were able to purchase small irrigation pump with lower price. This might be the reason for this finding.

“Availability of agricultural instrument” had twenty highest Satisfaction Index among the items. Government made some subsidy for purchasing agricultural instruments. Farmers were getting agricultural instrument facilities from their neighbouring farmers. Therefore, they were satisfied.

“Marketing facilities” had twenty firsts highest Satisfaction Index among the items. Farmers had limited facilities for marketing their products. This was the reason they were satisfied.

“Availability of labour” had twenty second highest Satisfaction Index among the items. Agricultural labours are now engaged in various activities. As a result, there were limitations in availability of labours

“Storages facilities” had twenty thirds highest Satisfaction Index among the items. Storage facility was very limited in the study area. For this reason, farmers were lowering satisfied in the regard.

4.4 Contribution of the Selected Characteristics of the Farmers to their Satisfaction on Agricultural Development in Bangladesh

The purpose of this section was to examine the contribution of the selected characteristics of the farmers on their satisfaction on agricultural development in Bangladesh. For this study 14 characteristics of the farmers“ were selected as the independent variables.

Farmers’ satisfaction on agricultural development in selected areas of Bangladesh (Y) was the dependent variable of this study. The procedure followed in measuring the dependent variable and independent variables have already discussed in chapter III. Research and null hypotheses have been stated for testing the contribution/effect of the selected characteristics of the farmers to their satisfaction on agricultural development in Bangladesh (Chapter III). Pearson product moment correlation test was initially run to test the relationships between each of the selected characteristics of the farmers and their satisfaction on agricultural development in Bangladesh.

Correlation analysis showed that out of 14 characteristics of the farmers’, 12 had significant relationship with their satisfaction on agricultural development in Bangladesh. The characteristics of the farmers, viz., age, level of education, cosmopolitaness, individual local contact, NGOs contact, GOs contact, group meeting contact, mass media contact, decision making ability, organizational participation and agricultural experience of the farmers had significant positive relationship with their satisfaction on agricultural development in Bangladesh. But, problems faced in agriculture of the farmers had significant negative relationship with their satisfaction on agricultural development in Bangladesh. Result of Pearson Product Moment correlation test have been shown in Appendix- VI.

The independent variables in isolation would not give a comprehensive picture of the contribution of independent variables to the farmers’ satisfaction on

agricultural development in Bangladesh (Y). The different characteristics of the respondents may interact together to make a combined contribution to the farmers' satisfaction on agricultural development in Bangladesh. Keeping this fact in view linear multiple regression analysis was used to assess the contribution of the independent variables to the Farmers' satisfaction on agricultural development in selected areas of Bangladesh.

Full model multiple regression analyses were initially run by involving all the independent variables with farmers' satisfaction on agricultural development in Bangladesh (Y) as dependent variable.

It was observed that the full model regression results were misleading due to the existence of interrelationships among the independent variables. It was evident from correlation matrix showing the interrelationships among the independent variables and existence of contradiction in the sign of correlation co-efficient and regression co-efficient.

Droper and Smith (1981) suggested running stepwise multiple regression analysis to insert variables in turn until the regression equation is satisfactory. Therefore, in order to avoid the misleading results due to the problem of multicollinearity and to determine the best explanatory variables, the method of stepwise multiple regressions was employed by involving all the independent variables with the farmers satisfaction on agricultural development in Bangladesh. The objective of the step wise multiple regression model was to find out the contribution of the variables, which were significant only. Results of these sets of step wise multiple regression analysis in the form of a Table and equation have been discussed below:

All the selected 14 independent variables viz., age (X_1), level of education(X_2), farm size (X_3), annual family income (X_4) cosmopolitaness (X_5), individual local contact (X_6), NGOs contact (X_7), GOs contact (X_8), group meeting

contact (X₉), mass media contact (X₁₀), decision making ability (X₁₁), organizational participation (X₁₂), agricultural experience (X₁₃) and problem faced in agriculture (X₁₄) of this study were fitted together in this set of step wise multiple regression with farmers satisfaction on agricultural development in Bangladesh as the dependent variable (Y). Table 4.20 revealed the summarized results of step-wise multiple regression analysis of the farmers' satisfaction on agricultural development in Bangladesh with their 14 independent variables. It was observed that out of 14 independent variables only 5 variables namely cosmopolitaness (X₅), problems faced in agriculture (X₁₄), agricultural experience (X₁₃), individual local contact (X₆) and Decision making ability (X₁₁) were entered into regression equation.

Table 4.18 Summary of stepwise multiple regression analysis showing the contribution of all the 14 independent variables to the Farmers' satisfaction on agricultural development in selected areas of Bangladesh

Variables entered	Standardized Partial 'b' coefficient	Value of 't' (with probability level)	Adjusted R ²	Increase in R ²	Variation explained in percent
Cosmopolitaness (X ₅)	0.291	4.564 (0.000)	0.239	0.239	23.9
Problems faced in agriculture (X ₁₄)	-0.344	-6.496 (0.000)	0.390	0.151	15.1
Agricultural experience (X ₁₃)	0.246	4.582 (0.000)	0.446	0.056	5.60
Individual local contact (X ₆)	0.185	3.349 (0.001)	0.479	0.033	3.30
Decision making ability (X ₁₁)	0.133	2.113 (0.0036)	0.489	0.010	1.00
		Total		0.489	48.9

Multiple R = 0.708

R-square = 0.502

Adjusted R - square = 0.489

F-ratio = 37.891 at 0.000 level of significance

The remaining variables i.e. age (X_1), education (X_2), farm size (X_3), annual family income size (X_4), NGO contact (X_7), GO contact (X_8), group contact (X_9), mass media contact (X_{10}) and organizational participation (X_{12}) were not entered into the regression equation.

Data presented in Table 4.18 indicated that the multiple R, R^2 and adjusted R^2 in the step-wise multiple regression analysis were 0.708, 0.502 and 0.489 respectively, and the corresponding F-ratio of 37.891 were significant at 0.000 levels. The regression equation so obtained is presented below:

$$Y = 1.379 + 0.291X_5 - 0.344X_{14} + 0.246X_{13} + 0.185X_6 + 0.133X_{11}$$

Adjusted $R^2 = 0.489$
F-ratio = 37.891
Constant = 1.379

This indicated that the whole model of 14 variables explained 48.9 percent of the total variation in farmers' satisfaction on agricultural development in Bangladesh. But since the standardized regression coefficients (Beta weight) of 5 variables formed the equation and were significant, it might be assumed that whatever contribution was there, it was due to these 5 variables.

On the basis of stepwise regression analysis, contributions of significant 5 independent variables to farmers' satisfaction on agricultural development in Bangladesh as the dependent variable are presented below in order of importance.

Cosmopolitaness (X_5)

The co-efficient of correlation showed significant positive relationship between cosmopolitaness of the respondents and their satisfaction on agricultural development in Bangladesh (Appendix-VI).

Step-wise multiple regression analysis indicated that cosmopolitaness of the farmers had strong significant and positive contribution to their satisfaction on

agricultural development in Bangladesh.

Cosmopolitaness was by far found to be the most important positive contributor to the farmers satisfaction on agricultural development in Bangladesh. Cosmopolitaness of the farmers increases their satisfaction on agricultural development in Bangladesh. From the multiple regressions, it was concluded that cosmopolitaness of the farmers had first highest positive contribution to their satisfaction on agricultural development in Bangladesh. This implies that with the increase of cosmopolitaness of the farmers will increase their satisfaction on agricultural development in Bangladesh.

Problems faced in agriculture (X_{14})

Pearson product moment correlation co-efficient revealed that problem faced in agriculture by the farmers had negative correlation with their satisfaction on agricultural development in Bangladesh (Appendix-VI).

Step-wise multiple regression analysis indicated that problem faced in agriculture of the respondents was an important contributor and had significant but negative contribution to their satisfaction on agricultural development in Bangladesh.

Some farmers thought that there were some problems in agricultural development in Bangladesh. It is quite logical that the farmers who faced more problems in agriculture were not satisfied on agricultural development in Bangladesh in a larger scale. This might be the reason for problems faced in agriculture having the negative contribution to their satisfaction on agricultural development in Bangladesh.

Agricultural experience (X_{13})

Pearson product moment correlation co-efficient revealed that agricultural experience of the farmers had positive significant relationship with their satisfaction on agricultural development in Bangladesh (Appendix-VI).

Step-wise multiple regression analysis indicated that agricultural experience of the farmers had strong significant and positive contribution to their satisfaction on agricultural development in Bangladesh. Agricultural experience of the farmers was found to be the 2nd important positive contributor to their satisfaction on agricultural development in Bangladesh.

Experienced person could understand the merits and demerits of anything easily in a short time. By the motivational programme of different extension service providers, the farmers could improve their agricultural activities. Therefore, farmers having high experience in agriculture could easily understand about the agricultural development in Bangladesh. This might be the reason for agricultural experience of the farmers having the positive contribution to their satisfaction on agricultural development in Bangladesh.

Individual local contact (X₆)

Pearson product moment correlation co-efficient revealed that individual local contact of the farmers had significant positive correlation with their satisfaction on agricultural development in Bangladesh (Appendix-VI).

Step-wise multiple regression analysis indicated that individual local contact of the respondents was an important contributor and had significant but positive contribution to their satisfaction on agricultural development in Bangladesh.

Actually mass farmers of the study area as well as Bangladesh were satisfied on agricultural development in Bangladesh. Different agricultural extension service providing organizations and individuals are working for dissemination of agricultural information to the farmers. Local leaders, neighboring farmers and input dealers are also providing necessary information to the farmers. Therefore, it may be said that the farmers having greater contact with the local individual sources obviously had higher satisfaction on agricultural development in Bangladesh. This might be the reason for individual local contact of the farmers had the positive contribution to their satisfaction on

agricultural development in Bangladesh.

Decision making ability (X_{11})

Pearson product moment correlation co-efficient revealed that decision making ability of the farmers had positive relationship with their satisfaction on agricultural development in Bangladesh (Appendix-VI).

Step-wise multiple regression analysis indicated that decision making ability of the respondents was an important contributor and had significant but positive contribution to their satisfaction on agricultural development in Bangladesh.

Decision making ability makes a man efficient and suitable to perform his/her job properly. Different agricultural advisory service providing organizations of Bangladesh are providing various types of training on agricultural activities in the present study area including other areas of Bangladesh to their target people. As a result, the farmers of Bangladesh are now capable to make proper decision for their agricultural activities and finally they are satisfied. This might be the reason for decision making ability of the farmers had positive contribution to their satisfaction on agricultural development in Bangladesh.

4.5 Direct and Indirect Effects of the Selected Characteristics of the Farmers to their Satisfaction on Agricultural Development in Bangladesh

In the present study Pearson product moment correlation test, full model linear multiple regression and stepwise multiple regression were conducted. It is not possible to find out the direct effects and indirect effects separately by these tests. But, in path analysis, it is possible to get direct effects and indirect effects separately.

Path coefficient is simply a standardized partial regression coefficient and as such measures the direct influence of one variable upon another and permits the separation of the correlation coefficient into components of direct and indirect effects (Dewey and Lu, 1959). This allows the direct effect of an independent

variable and its indirect effect through other variables on the dependent variable (Sasmal and Chakrabarty, 1978).

Path coefficient analysis was employed in order to obtain clear understanding of the direct and indirect effects of selected independent variables. Path analysis was done involving the significant variables of final model of step-wise multiple regression analysis.

Direct effect of an independent variable on dependent variable is the standardized beta co-efficient (value of 'b' of regression analysis) of the respective independent variable. Whereas indirect effect of an independent variable through a channeled variable is measured by the following formula:

$$e = \sum b_x r$$

Where,

e = Total indirect effect of an independent variable

b = Direct effect of the variable through which indirect effect is channeled

r = Correlation co-efficient between respective independent variable and Variables through which indirect effect is channelled.

Path coefficients showing the direct and indirect effects of significant 5 independent variables of step-wise multiple regression analysis on Farmers' satisfaction on agricultural development in selected areas of Bangladesh have been presented in Table 4.19.

Analysis of data furnished in Table 4.19 indicated that among the independent variables, Problems faced in agriculture (X_{14}) had direct negative effect (-0.344) farmers' satisfaction on agricultural development in Bangladesh. Cosmopolitaness (X_5) of the farmers had the highest direct positive direction effect on their satisfaction on agricultural development in Bangladesh. Agricultural experience (X_{13}) and Individual local contact (X_6) had appreciable positive direct effect. Decision making ability (X_{11}) of the farmers

had the lowest direct positive effect (0.133) to their satisfaction on agricultural development in Bangladesh.

Here, it may be mentioned that without path co-efficient analysis it is not possible to know the indirect effects of an independent variable through other variables on the dependent variable. Therefore, emphasis has been given on the indirect effects which have been obtained from path co-efficient analysis (Table 4.19).

Decision making ability (X_{11}) had the highest (0.275) total indirect effect followed by cosmopolitaness (X_5). Individual local contact (X_6) and agricultural experience (X_{13}) had appreciable total indirect effect while the problems faced in agriculture (X_{14}) by the farmers had the lowest (-0.098) total indirect effect to their' satisfaction on agricultural development in Bangladesh.

Table 4.19 Path coefficients showing the direct and indirect effects of 5 significant independent variables of stepwise multiple regression analysis on the Farmers' satisfaction on agricultural development in selected areas of Bangladesh

Independent variables	Variables through which indirect effects are channeled	Indirect effects	Total indirect effect	Direct effect
Decision making ability (X_{11})	Cosmopolitaness (X_5)	0.161	0.275	0.133
	Individual local contact (X_6)	0.052		
	Agricultural experience (X_{13})	0.041		
	Problems faced in agriculture (X_{14})	0.021		
Cosmopolitaness (X_5)	Decision making ability (X_{11})	0.073	0.200	0.291
	Individual local contact (X_6)	0.062		
	Problems faced in agriculture (X_{14})	0.036		
	Agricultural experience (X_{13})	0.029		
Individual local contact (X_6)	Cosmopolitaness (X_5)	0.098	0.136	0.185
	Decision making ability (X_{11})	0.037		
	Problems faced in agriculture (X_{14})	0.006		
	Agricultural experience (X_{13})	-0.005		
Agricultural experience (X_{13})	Problems faced in agriculture (X_{14})	0.077	.129	0.246
	Cosmopolitaness (X_5)	0.034		
	Decision making ability (X_{11})	0.022		
	Individual local contact (X_6)	-0.004		
Problems faced in agriculture (X_{14})	Agricultural experience (X_{13})	-0.056	-0.098	-0.344
	Cosmopolitaness (X_5)	-0.031		
	Decision making ability (X_{11})	-0.008		
	Individual local contact (X_6)	-0.003		

On the basis of path analysis, the independent variables having indirect effects on Farmers' satisfaction on agricultural development in selected areas of Bangladesh have been presented below in descending order.

Decision making ability (X_{11})

Path analysis showed that decision making ability (X_{11}) of the farmers had the highest total indirect effect (0.275) and a positive direct effect of 0.133 (Table 4.19) on their satisfaction on agricultural development in Bangladesh. The indirect effect was mostly channeled positively through cosmopolitaness (X_5). The indirect effect of decision making ability (X_{11}) was somewhat positively channeled through individual local contact (X_6). There was negligible indirect effect of decision making ability (X_{11}) on farmers' satisfaction on agricultural development in Bangladesh through Agricultural experience (X_{13}) and Problems faced in agriculture (X_{14}).

It may be inferred that other variables remaining constant, decision making ability (X_{11}) of the farmers was a determinant of their satisfaction on agricultural development in Bangladesh.

Cosmopolitaness (X_5)

Path analysis showed that cosmopolitaness (X_5) of the farmers had the highest total indirect effect (0.200) and a positive direct effect of 0.291 (Table 4.19) on their satisfaction on agricultural development in Bangladesh. The indirect effect of cosmopolitaness (X_5) was somewhat positively channeled through decision making ability (X_{11}) and individual local contact (X_6). There were negligible indirect effect of cosmopolitaness (X_5) on farmers' satisfaction on agricultural development in Bangladesh through problems faced in agriculture (X_{14}) and agricultural experience (X_{13}).

It may be inferred that other variables remaining constant, cosmopolitaness (X_5) of the farmers was a determinant of the their' satisfaction on agricultural development in Bangladesh.

Individual local contact (X_6)

Path analysis showed that individual local contact (X_6) of the farmers had the highest total indirect effect (0.136) and a positive direct effect of 0.185 (Table 4.19) on their satisfaction on agricultural development in Bangladesh. The indirect effect of individual local contact (X_6) was somewhat positively channeled through cosmopolitaness (X_5). There were negligible indirect effect of individual local contact (X_6) on farmers' satisfaction on agricultural development in Bangladesh through decision making ability (X_{11}), problems faced in agriculture (X_{14}) and agricultural experience (X_{13}).

It may be inferred that other variables remaining constant, individual local contact (X_6) of the farmers was a determinant of the satisfaction on agricultural development in Bangladesh.

Agricultural experience (X_{13})

Path analysis showed that agricultural experience (X_{13}) of the farmers had the highest total indirect effect (0.129) and a positive direct effect of 0.246 (Table 4.19) on their satisfaction on agricultural development in Bangladesh. The indirect effect of agricultural experience (X_{13}) was somewhat positively channeled through problems faced in agriculture (X_{14}). There were negligible indirect effect of agricultural experience (X_{13}) on farmers' satisfaction on agricultural development in Bangladesh through cosmopolitaness (X_5), decision making ability (X_{11}) and individual local contact (X_6).

It may be inferred that other variables remaining constant, agricultural experience (X_{13}) of the farmers was a determinant of the satisfaction on agricultural development in Bangladesh.

Problems faced in agriculture (X_{14})

Path analysis showed that problems faced in agriculture (X_{14}) by the farmers had a total negative indirect effect (-0.098) and a negative direct effect of -0.344 (Table 4.19) on their satisfaction on agricultural development in

Bangladesh. There were negligible indirect negative effect of problems faced in agriculture (X_{14}) of the farmers on their satisfaction on agricultural development in Bangladesh through agricultural experience (X_{13}), cosmopolitaness (X_5), decision making ability (X_{11}) and individual local contact (X_6).

It may be inferred that other variables remaining constant, problems faced in agriculture (X_{14}) of the farmers was a determinant of their satisfaction on agricultural development in Bangladesh in negative direction.

4.6 Item wise Comparative severity of the problems faced by the farmers in Bangladesh

The observed Problem Faced Index (PFI) of the problems ranged from 217 to 370 against the possible range of 0-582. Problem Faced Index (PFI) of the selected problems is shown in Table 4.20.

On the basis of descending order PFI, it was observed that “uncertainty of pest control in case of severe attack” ranked first problem followed by “difficulty in collecting agricultural inputs”, “lack of farm animal”, “poor plant nutrient in soil”, “shortage of agricultural labor”, “lack of shortage facilities”, “poor infrastructure of market”, “high price of inputs for fisheries production”, “undesirable involvement of middle men”, “difficulty in producing fisheries product”, “difficulty in maintaining crop rotation”, “high price of inputs for agricultural production”, “low production”, “lack of capital for agricultural production”, “poor extension service of GOs and NGOs”, “lack of agricultural advisory service providing organizations”, “low price for agricultural products” “difficulty in preparing land for crop production”, “lack of agricultural information”, “poor and inadequate roads for transportation”, “lack of cooperation from local/political leaders”, “lack of fair price for agricultural products”, “high price of inputs for livestock production”, “difficulty in producing livestock products”, “lack of proper transport”, “lack of agricultural equipment”, “low price of livestock products” and “low price of

fisheries products”.

Table 4.20 Problem Faced Index (PFI) with Rank Order

Problems	Numbers of farmers				PFI	Rank order
	High problem	Moderate problem	Low problem	Problem not at all		
Uncertainty of pest control in case of severe attack	121	48	21	4	480	1
Difficulty in collecting agricultural inputs	115	44	27	8	460	2
Lack of farm animal	112	42	31	9	451	3
Poor plant nutrient in soil	109	49	25	11	450	4
Shortage of agricultural labor	107	45	29	13	440	5
Lack of shortage facilities	103	43	37	11	432	6
Poor infrastructure of market	100	50	29	15	429	7
High price of inputs for fisheries production	93	64	21	16	428	8
Undesirable involvement of middle men	94	58	23	19	421	9
Difficulty in producing fisheries product	86	62	32	14	414	10
Difficulty in maintaining crop rotation	81	64	35	14	406	11
High price of inputs for agricultural production	81	68	26	19	405	12
Low production	80	67	28	19	402	13

Lack of capital for agricultural production	79	55	44	16	391	14
Low price for agricultural products	67	58	40	29	357	15
Poor extension service of GOs and NGOs	68	52	56	18	364	16
Lack of agricultural advisory service providing organizations	62	61	43	28	351	17
Difficulty in preparing land for crop production	57	51	52	34	325	18
Lack of agricultural information	51	46	62	35	307	19
Poor and inadequate roads for transportation	46	45	72	31	300	20
Lack of co-operation from local/ political leaders	41	54	66	33	297	21
High price of inputs for production livestock	30	76	50	38	292	22
Difficulty in producing livestock products	27	62	71	34	276	23
Lack of proper transport	22	75	52	45	268	24
Lack of agricultural equipment's	19	72	62	41	263	25
Low price of livestock products	18	55	77	44	241	26
Low price of fisheries products	17	53	81	43	238	27

4.7 Suggestions for solving farmers problems

Extent of problems faced by the farmers is discussed in the section 4.1 of this Chapter and measuring procedures are described in the Chapter-III. Attempts has been made to compare the severity of the problems based on the descending order of the problems faced Index (PFI). Measuring procedures of PFI is described in the Chapter-III and the findings are described in the section 4.6 of this Chapter.

To solve the problems of the farmers, they were asked to make three important suggestions against each problem. Based on the highest citation numbers, three suggestions of each problem are mentioned in Table 4.21.

Table 4.21 Problems with probable suggestions

SL NO	Problems	Suggestions
1	Lack of agricultural information	1. Establishment of different agricultural information centres by the government (such as agricultural call centre).
		2. Increasing capacity of agricultural advisory service providers of the Bangladesh for disseminating agricultural information.
		3. Disseminating agricultural information among the farmers by using print and electronic media.
2	Lack of agricultural advisory servicing organizations providing	1. Establishment of sector wise agricultural advisory service providing organizations.
		2. Recruiting sufficient manpower in rural agricultural advisory service providing organizations.

		3. Increasing capacity of agricultural advisory service providing organizations.
3	Poor extension service of GOs and NGOs	<p>1. Monitoring and evaluation of government and Non-Government Extension service providing organizations</p> <p>2. Arranging more skill based training and motivations programmes for the individual extension service providers</p> <p>3. Involvement of sufficient extension service providing individual in each organizations</p>
4	Lack of co-operation from local/political leaders	<p>1. Arranging motivational campaign for the local/political leaders so that they can able to help the people</p> <p>2. Arrangement of result demonstration and method demonstration with local/political leaders</p> <p>3. Arranging focus group discussion with local/political leaders so that they can make them able to help the people</p>
5	Difficulty in collecting agricultural inputs	<p>1. Arrangement of co-operatives for distributing agricultural inputs to the farmers</p> <p>2. Providing sufficient credit to the farmers for buying agricultural inputs</p> <p>3. Ensuring the quality of agricultural inputs timely</p>
6	Difficulty in preparing land for crop production	<p>1. Insuring high quality agricultural equipment for land preparation for crop production</p> <p>2. Increasing irrigation facilities especially in summer season</p>

		3. Arranging training program to prepare proper agricultural land for crop production
7	Difficulty in producing livestock products	1. Minimizing input price for livestock production
		2. Providing technical support for livestock production
		3. Arranging training program to improve the quality of livestock products
8	Difficulty in producing fisheries product	1. Minimizing input price for fisheries production
		2. Providing technical support for fisheries production
		3. Arranging training program to improve the quality of fisheries products
9	Difficulty in maintaining crop rotation	1. Minimizing input price for livestock production
		2. Providing technical support for livestock production
		3. Arranging training program to improve the quality of livestock products
10	Poor plant nutrient in soil	1. Increasing the use of organic matter with balance fertilizer in soil
		2. Incorporate green manure in soil
		3. Increasing crop rotation in the agricultural fields
11	Uncertainty of pest control in case of severe attack	1. Increasing disease forecasting facilities to proper control of pest
		2. Increasing monitoring and evaluation facilities for pest control
		3. Judicial use of pesticides in case of severe attack
12	Lack of farm animal	1. Increasing farm animal for crop production

		2. Creating proper facilities to rearing farm animal
		3. Making availability of inputs for rearing farm animal
13	Low production	1. Cultivating high yielding varieties of crop
		2. Providing proper management support for crop production
		3. Controlling pests and diseases attract
14	Shortage of agricultural labour	1. Establishing mechanization facilities for agricultural production
		2. Providing subsidy for purchasing agricultural equipments
		3. Increasing human facilities for agricultural labours
15	High price of inputs for agricultural production	1. Providing subsidy for buying agricultural inputs
		2. To insure availability of good quality agricultural inputs for crop production with logical price
		3. Ensuring proper distribution system of agricultural input
16	High price of inputs for livestock production	1. Providing subsidy for buying agricultural inputs
		2. Livestock inputs price should be reduced
		3. To provide them low rate bank loan
17	High price of inputs for fisheries production	1. Increasing hatchery facilities
		2. Establishing fish sanctuary
		3. Reducing fisheries inputs price

18	Lower price of agricultural products	1. Ensuring logical price of agricultural products
		2. Monitoring agricultural market price by the government
		3. Reducing the number of middle-man from producers to consumers
19	Lower price of livestock products	1. Ensuring logical price for livestock products
		2. Increasing transport facilities all over the country for selling the livestock products
		3. Reducing input price for livestock production
20	Lower price of fisheries products	1. Ensuring logical price for fisheries
		2. Increasing quality of fisheries products
		3. Providing subsidy to the fish producer by the government
21	Lack of agricultural equipments	1. Reducing the price of agricultural equipment
		2. Providing subsidy by the government for buying agricultural equipments
		3. Invention of high quality agricultural equipments with low cost
22	Lack of capital for agricultural products	1. Provided credit to the farmers with low rate of interest for crop production
		2. Establishment of more banks to provide loan to the farmers
		3. Providing good quality inputs to the farmers on credit or free of cost

23	Poor and inadequate roads for transportation	1. Repair of damage roads
		2. Construction of new roads for increasing transportation facilities
		3. Providing more budgets for increasing transportation facilities
24	Difficulty for moving to a distance place	1. Developing communication facilities for the movement of the farmers
		2. Minimization of the communication cost
		3. Ensuring political rest all over the country
25	Lack of proper transport	1. Construction of new roads, bridges etc
		2. Rebuild the damage roads, bridges etc
		3. Decreasing fuel cost for transportation of agricultural products
26	Undesirable involvement of middle men	1. Decreasing the number of middle men for buying of agricultural inputs and selling of agricultural products
		2. Providing job facilities for the middlemen
		3. Development of value chain activities for the middlemen
27	Lack of storage facilities	1. Construct storage facilities for agricultural products
		2. Motivational campaign for using storage facilities for getting benefits
		3. Providing subsidy for establishing low cost storing facilities at local level

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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

5.1 Summary

5.1.1 Introduction

Agriculture is the source of food for people through crops, livestock, fisheries; the source of raw materials for industry, of timber for construction; and a generator of foreign exchange for the country through the export of agricultural commodities, whether raw or processed (GED, 2015). It is the motor of the development of the agro-industrial sector including food processing, input production and marketing, and related services. As main source of economic linkages in rural areas, it plays a fundamental role in reducing poverty, which remains a predominantly rural phenomenon. The role of agriculture is also fundamental in promoting nutritious diets, especially in the countryside where production and consumption patterns are closely linked (FPMU, 2015).

5.1.2 Objectives of the study

- To determine the extent of satisfaction on agricultural development in Bangladesh as perceived by the farmers
- To describe the selected characteristics of the farmers
- To find out the contribution of selected characteristics of the farmers to their satisfaction on agricultural development in Bangladesh
- To examine the severity of problems faced by the farmers in Bangladesh
- To suggest probable solutions of the problems faced by the farmers

5.1.3 Methodology

The study was conducted at purposively selected two upazilas namely Sreebordi and Jhinaigati under Sherpur district of Bangladesh. Total 392 famers which were considered as the population of the study. Among 392 farmers, 194 farmers were determined as the sample size of the study. The face to face interviewing method was used for data collection. A structured interview schedule containing both closed and open form questions was prepared in this purpose.

5.1.4 Statement of the hypothesis

The following null hypothesis was undertaken for the present study. There is no significant contribution of the selected characteristics of farmers to their satisfaction on agricultural development in Bangladesh. The selected characteristics are: age, education, farm size, annual family income, cosmopolitaness, individual local contact, NGO contact, GO contact, group media contact, mass media contact, decision making ability, organizational participation, agricultural experiences and problems faced in agriculture.

5.1.5 Selected characteristics of the farmers

Findings in respect of the 14 selected characteristics of the farmers summarized below:

Age: The highest proportion (51.0 percent) of the farmers was middle aged while 28.4 percent was old and 20.6 percent was young aged.

Education: The highest proportion (31.9 percent) of the respondent had secondary level of education, while 28.8 percent had primary level of education, 17.5 percent had illiterate and 22.2 percent had above secondary level of education.

Farm size: The highest proportion (85.6 percent) of the farmers had small farm size, while 9.8 percent had medium farm size, 1.5 percent had marginal farm size and 3.1 percent had large farm size.

Annual family income: Annual family income of the farmers ranged from 60 to 800 thousand Tk. with the mean of 263.47 thousand Tk. The highest proportion (57.2 percent) of the farmers had small annual family income compared with 38.2 percent and 4.6 percent having medium and high annual family income respectively.

Cosmopolitaness: The observed cosmopolitaness ranged from 4 to 17 with an average 10.33 and standard deviation 3.48. The highest proportion (60.3 percent) of the respondents had medium cosmopolitaness compared to 23.2 percent having high cosmopolitaness and 16.5 percent had low cosmopolitaness.

Individual local contact: Individual local contact ranged from 2 to 9 with an average 6.45 and standard deviation 1.74. The highest proportion (48.0 percent) of the respondents of the study area had the medium individual local contact, while 24.7 percent had low individual local contact and 27.3 percent had high individual local contact.

NGO contact: NGO contact ranged from 2 to 8 with an average 4.80 and standard deviation 1.48. The highest proportion (64.5 percent) of the respondents of the study area had the medium NGO contact, while 21.1 percent had low NGO contact and 14.4 percent had high NGO contact.

GO contact: GO contact ranged from 1 to 9 with an average 5.27 and standard deviation 1.74. The highest proportion (72.2 percent) of the respondents of the study area had the medium GO contact, while 14.9 percent had low GO contact and 12.9 percent had high GO contact.

Group media contact: Group media contact ranged from 2 to 11 with an average 6.70 and standard deviation 1.90. The highest proportion (63.4 percent) of the respondents of the study area had the medium group media contact, while 19.1 percent had low group media contact and 17.5 percent had high group media contact.

Mass media contact: Mass media contact ranged from 3 to 17 with an average 8.62 and standard deviation 3.58. The highest proportion (55.7 percent) of the respondents of the study area had the medium mass media contact, while 26.8 percent had low mass media contact and 17.5 percent had high mass media contact.

Decision making ability: The scores of the farmers regarding decision making ability ranged from 20 to 51 with the mean of 36.34. The highest proportion (45.4 percent) of the farmers had medium decision making ability, while 24.7 percent had low and 29.9 percent of farmers had high decision making ability.

Organizational participation: The observed organizational participation scores of the farmers ranged from 0 to 11 with the mean of 3.04. The highest proportion (40.8 percent) of the farmers had low organizational participation, while 21.6 percent had no, 21.1% had medium and 16.5percent farmers had high organizational participation.

Agricultural experience: The observed agricultural experience scores of the farmers ranged from 3 to 50 with the mean of 21.78. The highest proportion (67.6 percent) of the farmers had medium experience; while 14.9 percent had low and 17.5 percent farmers had high agricultural experience.

Problems faced in agriculture: The observed problems faced in agriculture scores of the farmers ranged from 33 to 69 with the mean of 50.97. The highest proportion (58.8 percent) of the farmers had medium problems faced in agriculture; while 19.6 percent had low and 21.6 percent farmers had high problems faced in agriculture.

5.1.6 Farmers' satisfaction on agricultural development in selected areas of Bangladesh

The satisfaction score of the farmers ranged from 25 to 53 with an average of 40.83 and the standard deviation 5.94. The highest proportion 67.5 percent of the farmers fell under medium satisfaction category while 19.1 percent had high satisfaction and 13.4 percent had low satisfaction.

5.1.7 Comparative satisfaction level of the farmers on agricultural development in Bangladesh

Rank order of the twenty three dimensions of the farmers' satisfaction on agricultural development in Bangladesh was measured. As per Satisfaction Index (SI) co-operation from extension agent the 1st and storages facilities was in the last position.

5.1.8 Contribution of the selected characteristics of the farmers on their satisfaction on agricultural development in Bangladesh

Cosmopolitaness, individual local contact, decision making ability and agricultural experience of the farmers had significant positive contribution to their satisfaction on agricultural development in Bangladesh. Problems faced by the farmers in agriculture had significant negative contribution to their satisfaction on agricultural development in Bangladesh. Characteristics of the farmers like age, education, farm size, annual family income, NGO contact, GO contact, group media contact, mass media contact and organizational participation had no significant contribution to their satisfaction on agricultural development in Bangladesh.

5.1.9 Comparative Severity of problems faced by the farmers in Bangladesh

Rank order of the twenty seven dimensions of the farmers' satisfaction on agricultural development in Bangladesh was measured. As per Problem Faced Index (PFI) uncertainty of the pest control in case of severe attack ranked 1st and low price of fisheries products was in the last position.

5.2 Conclusions

Conclusion is the final decision or judgment, which is placed through contention at the end or termination of a research work. The findings and relevant facts of research work prompted the researcher to draw following conclusions.

- i. The findings revealed that an overwhelming majority (86.6%) of the respondents had medium to high satisfaction on agricultural development in Bangladesh. It is therefore, concluded that the overall activities of the Government of Bangladesh for agricultural development is satisfactory. But, there is still a scope to improve raining performances for having higher satisfaction of the farmers.
- ii. Most of the farmers (83.5%) had medium to high cosmopolitaness. Findings indicated that cosmopolitaness of the farmers had significant positive contribution to their satisfaction on agricultural development in Bangladesh. So, it may be concluded that the farmers having higher cosmopolitaness, had higher satisfaction on agricultural development in Bangladesh. More efforts could be taken to increase cosmopolitaness so as improve level of satisfaction of the people.
- iii. Overwhelming majority (85.1%) of the farmers had medium to high agricultural experience. There existed a positive significant contribution of the farmers agricultural experience to their satisfaction on agricultural development in Bangladesh. Therefore, it may be concluded that the Farmers' satisfaction on agricultural development in Bangladesh in Bangladesh was higher to the experienced farmers.

- iv. More than three-fourths (75.3%) of the farmers had medium to high individual local contact. Findings indicated that individual local contact of the farmers had significant positive contribution to their satisfaction on agricultural development in Bangladesh. So, it may be concluded that if the farmers come in more contact with extension providers, electronic and print media, they could be more aware about achievement of agriculture which increase their satisfaction on agricultural development in Bangladesh.
- v. Above three-fourths (75.3%) of farmers had medium to high decision making ability. Finding also revealed that decision making ability of the farmer had significant contribution to their satisfaction on agricultural development in Bangladesh. Thus, it may be concluded that decision making ability makes a farmers able to understand about the government initiatives for the agricultural development in Bangladesh, which may led to increase their level of satisfaction on development of agriculture.
- vi. Majority (78.4%) of the farmers faced low to medium problems in conducting farming activities. Problems faced in agriculture by the farmers had negative contribution to their satisfaction on agricultural development. It is therefore, logically concluded that mitigation of problems of farmers can increase the level of satisfaction of farmers on agricultural development in Bangladesh.

5.3 Recommendations

Recommendations based on the findings and conclusions of the study have been presented below:

5.3.1 Recommendation for policy implications

- i. Majority (86.6%) of the farmers had medium to high satisfaction on agricultural development in Bangladesh. It means that still there are some farmers who are not much satisfied with the existing status of agricultural development in Bangladesh. It may be therefore, recommended that extension service providers should take initiatives for extension activities so farmer could increase their farm productivity and possess their level of satisfaction on agricultural development in Bangladesh.
- ii. Cosmopolitaness of the farmers had positive significant contribution to their satisfaction on agricultural development in Bangladesh. Therefore, it may be recommended that the extension service providers should increase their contact with the farmers to make them cosmopolite so that they could increase their level of awareness about development initiatives of the government which in turn increase satisfaction on agricultural development in Bangladesh.
- iii. Agricultural experience of the farmers had significant contribution to their satisfaction on agricultural development in Bangladesh. So, it is strongly recommended that adequate technical support, motivational campaign and training facilities should be extended to the young and low experienced farmers so that they could perform better farming activities and increase their level of satisfaction on agricultural development in Bangladesh.
- iv. Individual local contact of the farmers had significant contribution to their satisfaction on agricultural development in Bangladesh. So, it may be recommended that the extension

workers of the concerned authority should increase the contact with farmers personally and motivate them to be connected with electronic and print media that can help them to exchange related information which would increase their performance potentials of farm productivity which turns increase farmers satisfaction on agricultural development in Bangladesh.

- v. Decision making ability of the farmers had positive significant contribution to their satisfaction on agricultural development in Bangladesh. Therefore, it was recommended that, training should be provided and motivational campaign should be arranged for the farmers so that they could increase their decision making ability to increase their farm productivity and level of satisfaction on agricultural development in Bangladesh.
- vi. Problems faced in agriculture by the farmers had significant negative contribution to their satisfaction on agricultural development in Bangladesh. Therefore, it may be recommended that, necessary steps should be taken by the extension service providers to remove these problems of the farmers so that they can improve farming activities which in turn make their satisfaction level high on agricultural development in Bangladesh.

5.3.2 Recommendations for the future study

A single research work is very inadequate to have in-depth understanding of the farmers' satisfaction on agricultural development in selected areas of Bangladesh. Further studies should be undertaken covering more dimensions of the same issue. The following recommendations are made for the future study:

- i. The present study conducted on the population of the farmers of 2 villages of two unions under Shibardhi and Jhinaigati upazila of Sherpur district. The findings of the study needed to be varied by undertaking similar research in other zones of the country.
- ii. The study investigated the contributions of the 14 selected characteristics of the farmers with their satisfaction on agricultural development in Bangladesh. But farmers' satisfaction on agricultural development in Bangladesh might be affected by other various personal, social, psychological, cultural and situational factors, it is, therefore, recommended that further study should be conducted involving other characteristics of the farmers.
- iii. In addition to farmers' satisfaction on agricultural development in Bangladesh, the farmers also faced other problems such as social, economic, housing, sanitation, nutrition and domestic etc. Therefore, it may be recommended that research should be conducted by involving other dimensions of satisfaction of the farmers.

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APPENDIX-I



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Interview Schedule for data collection for the Research on **FARMERS' SATISFACTION ON AGRICULTURAL DEVELOPMENT IN SELECTED AREAS OF BANGLADESH**

Respondent No.

Name of the respondent:.....

Village:.....

Upazila.....

Union:

District:.....

(Please provide following information. Your information will be kept confidential and will be used for research purpose only)

1. Age

What is your present age? years

2. Education:

What is the level of your education?

- Illiterate.....
- Can sign only
- I studied up to class
- I passed examination

3. Farm size

Please mention the area of your land according to use.

Sl. No.	Type of land	Land area	
		Local unit	Hectare
A	Homestead land		
B	Own land under own cultivation		
C	Land given to others on barga		
D	Land taken from others on barga		
E	Land taken from others on lease		
Total= A+B+1/2(C+D) + E			

4. Annual family income

Please state your annual income from different sources.

Sl. No.	Sources of income	Amount (tk)
1	Crops	
2	Livestock	
3	Fishes	
4	Poultry	
5	Service	
6	Business	
7	Others	
Total		

5. Cosmopolitaness

Please mention your frequency of visits to the following places.

Sl. No.	Place of visit	Frequency of visit			
		Regularly (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1	Visit to other villages	≥5times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 time/ month ()
2	Visit to other union	≥5 times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 time/ month ()
3	Visit to own upazila sadar	≥4 times/ month ()	2-3 times/ month ()	1 time/ month ()	0 time/ month ()
4	Visit to other upazila sadar	≥3 times/ year ()	2 times/ year ()	1 time/ year ()	0 time/ year ()
5	Visit to own District town	≥4 times/ year ()	2-3 times/ year ()	1 time/ year ()	0 time/ year ()
6	Visit to other District town	≥3 times/ year ()	2 times/ year ()	1 time/ year ()	0 time/ year ()
7	Visit to Capital city (Dhaka)	≥3 times/ year ()	2 times/ year ()	1 time/ year ()	0 time/ year ()

6. Individual local contact

Please state the extent of your contact with the following local individuals.

Sl. No.	Individuals	Extent of contact with weights for frequencies			
		Regularly 3	Occasionally 2	Rarely 1	Not at 0
1	Neighbor farmers/ friends/ relatives	5-6 times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 times/ month ()
2	Farmer leaders	5-6 times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 times/ month ()
3	Seed/ Fertilizer/ Input dealers	5-6 times/ quarter ()	3-4 times/ quarter ()	1-2 times/ quarter ()	0 times/ quarter ()

7. NGO contact

Please state the extent of your contact with the following NGO personnel.

Sl. No.	NGO personnel	Extent of contact with weights for frequencies			
		Regularly 3	Occasionally 2	Rarely 1	Not at all 0
1	Village/ union level NGO Workers	5-6 times/ quarter ()	3-4 times/ quarter ()	1-2 times/ quarter ()	0 times/ quarter ()
2	Upazilla Level NGO Workers	5-6 times/ six months ()	3-4 times/ six months ()	1-2 times/ six months ()	0 times/ six months
3	District NGO Personnel	5-6 times/ year ()	3-4 times/ year ()	1-2 times/ year ()	0 times/ year ()

8. GO contact

Please state the extent of your contact with the following GO personnel.

Sl. No.	GO personnel	Extent of contact with weights for frequencies			
		Regularly 3	Occasionall 2	Rarely 1	Not at all 0
1	Sub Assistant Agriculture Officers (SAAO)	5-6 times/ quarter ()	3-4 times/ quarter ()	1-2 times/ quarter ()	0 times/ quarter ()
2	Upazilla level Agriculture Officers	5-6 times/ six months ()	3-4 times/ six months ()	1-2 times/ six months ()	0 times/ six months
3	District or above Level Agricultural Officers	5-6 times/ year ()	3-4 times/ year ()	1-2 times/ year ()	0 times/ year ()

9. Group media contact

Please state the extent of your contact with the group media.

S l. N	Media	Extent of contact with weights for frequencies			
		Regularl 3	Occasionall 2	Rarely 1	Not at all 0
1	Group discussion	≥5 times/ year ()	3-4 times/ year ()	1-2 times/ year ()	0 times/ year
2	Field day	≥3 times/ year ()	2 times/ year ()	1 time/ year ()	0 ti me
3	Result demonstration	1 time/ year ()	1 time/ 2 year ()	1 time/ ≥3 year ()	0 time/ ≥3 year
4	Participation in agricultural training course	≥4 times/ year ()	2-3 times/ life ()	1 time/ life ()	0 ti m

10. Mass media contact

Please state the extent of your contact with the mass media.

Sl. No .	Media	Extent of contact with weights for frequencies			
		Regularly 3	Occasionally 2	Rarely 1	Not at 0
1	Daily paper	≥5 times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 ti m
2	Radio	≥5 times/ week ()	3-4 times/ week ()	1-2 times/ week ()	0 times/ week
3	Television	≥5 times/ month ()	3-4 times/ month ()	1-2 times/ month ()	0 ti m
4	Poster	≥5 times/ year ()	3-4 times/ year ()	1-2 times/ year ()	0 times/ year
5	Leaflet	≥5 times/ year ()	3-4 times/ year ()	1-2 times/ year ()	0 times/ year
6	Agricultural fair	1 time/ year ()	1 time/ 2 years ()	1 time/ ≥3 years ()	0 time/ ≥3

11. Decision making ability

Sl. No.	Item	Level of decision making		
		Discussion with other	Decision with family member	Full decision by own self
1	Education of children			
2	Family health care and treatment			
3	Purchase, sale or mortgage of land			
4	Making and purchasing of furniture, ornament, household goods, etc.			
5	Casting vote			
6	Attending social solemnity			
7	Marriage of sons/ daughter/ brothers/ sisters			
8	Family planning			
9	Agricultural crop production			
10	Fish production			
	Livestock production			
11	Buying of agricultural input			
12	Selling of agricultural output			
13	Lending and borrowing of money			
14	Participation in income generating activities			
15	Making new house			
16	Daily expenditure			
17	Participation in social organizations			
18	Participation in political activities			

12. Organizational participation

Please indicate the nature of participation in the following organizations.

Sl. No.	Name of the organizations	No participation (0)	Nature of Involvement with duration (year)		
			As ordinary member (1)	As Executive member (2)	President Secretary (3)
1	NGO organized				

2	Krishak Samabay Somity				
3	Village Development				
4	Irrigation Committee				
5	Mosque/Madrassa Committee/ Bazar/ School/ Union Parishad				
10	Others (if any)				

13. Agricultural experiences

How many years you are engaged with Agriculture?

Ans:.....(years)

14. Problems faced in agriculture

Please indicate the extent of problems faced by you in agriculture.

Items of problem	Extent of problem faced			
	Large Problem	Moderate problem	Less problem	Not at all problem
Social problems				
1. Lack of agricultural information				
2. Lack of agricultural advisory service providing organizations				
3. Poor extension service of GOs and NGOs				
4. Lack of cooperation from local/political leaders				
Technical problems				
5. Difficulty in collecting agricultural inputs				
6. Difficulty in preparing land for crop production				
7. Difficulty in producing livestock products				
8. Difficulty in producing fisheries product				
9. Difficulty in maintaining crop rotation				
10. Poor plant nutrient in soil				
11. Uncertainty of pest control in case of severe attack				
Economic problems				
12. Lack of farm animal				
13. Low production				
14. Shortage of agricultural labor				
15. High price of inputs for agricultural production				
16. High price of inputs for livestock production				

Items of problem	Extent of problem faced			
	Large Problem	Moderate problem	Less problem	Not at all problem
17. High price of inputs for fisheries production				
18. Lower price of agricultural products				
19. Lower price of livestock products				
20. Lower price of fisheries products				
21. Lack of agricultural equipment's				
22. Lack of capital or loan for agricultural production				
Marketing problems				
23. Poor and inadequate roads for transportation				
24. Difficulty for moving to a distance place				
25. Lack of proper transport				
26. Undesirable involvement of middle men				
27. Lack of storage facilities				

15. Please mention your suggestions to solve the problems mentioned in question no. - 10.

Items of problem		Suggestions
Social problems		
1.	Lack of agricultural information	1. 2. 3.
2.	Lack of agricultural advisory service providing organizations	1. 2. 3.
3.	Poor extension service of GOs and NGOs	1. 2. 3.
4.	Lack of cooperation from local/political leaders	1. 2. 3.
Technical problems		
5.	Difficulty in collecting agricultural inputs	1. 2. 3.
6.	Difficulty in preparing	1.

Items of problem		Suggestions
	land for crop production	2. 3.
7.	Difficulty in producing livestock products	1. 2. 3.
8.	Difficulty in producing fisheries product	1. 2. 3.
9.	Difficulty in maintaining crop rotation	1. 2. 3.
10.	Poor plant nutrient in soil	1. 2. 3.
11.	Uncertainty of pest control in case of severe attack	1. 2. 3.
Economic problems		
12.	Lack of farm animal	1. 2. 3.
13.	Low production	1. 2. 3.
14.	Shortage of agricultural labor	1. 2. 3.
15.	High price of inputs for agricultural production	1. 2. 3.
16.	High price of inputs for livestock production	1. 2. 3.
17.	High price of inputs for fisheries production	1. 2. 3.

18.	Lower price of agricultural products	1. 2. 3.
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Items of problem		Suggestions
19.	Lower price of livestock products	1. 2. 3.
20.	Lower price of fisheries products	1. 2. 3.
21.	Lack of agricultural equipments	1. 2. 3.
22.	Lack of capital or loan for agricultural production	1. 2. 3.
Marketing problems		
23.	Poor and inadequate roads for transportation	1. 2. 3.
24.	Difficulty for moving to a distance place	1. 2. 3.
25.	Lack of proper transport	1. 2. 3.
26.	Undesirable involvement of middle men	1. 2. 3.
27.	Lack of storage facilities	1. 2. 3.

16. Farmers' Satisfaction on agricultural development

Please extent of satisfaction on agricultural development in Bangladesh

Sl. No.	Items	Highly satisfied	Moderate satisfied	Low satisfied	Not satisfied
1	Availability of Agricultural information				

2	Buying price of agricultural inputs				
3	Reasonable selling price of agricultural product				
4	Marketing facilities				
5	Storage facilities				
6	Co-operation from extension agent				
7	Co-operation from local leaders				
8	Availability of irrigation facilities				
9	Availability of quality seed				
10	Availability of pesticides				
11	Availability of balanced fertilizers				
12	Availability of agricultural instrument				
13	Co-operation of neighboring farmer				
14	Availability of labour				
15	Increased production of agricultural crops				
16	Increased production of fisheries				
17	Increased production of livestock				
18	Subsidy from government for agricultural activities				
19	Opportunity of opening Bank account by 10 taka				
20	Availability of credit for agricultural activities				
21	Co-operation of GOs				
22	Co-operation of NGOs				
23	Co-operation of local/ political leaders				

Thank you for your kind co-operation

.....
Signature of the interviewer & date

Appendix-II

Letter from the Supervisor to the Judges to rate the items of the scale on
“Farmers’ satisfaction on agricultural development in selected areas of Bangladesh”

From

02.05.2018

Dr. Md. Sekender Ali

Professor, Department of Agricultural Extension & Information System

Sher-e-Bangla Agricultural University, Dhaka

Date:

To

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Subject: **Judgment of items of the scale on “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” of Interview Schedule for collecting data of a PhD research**

Dear Sir

This is in connection with the study of one of my PhD student, Mr. Farrukh Ahamed. He has undertaken a research study on "Farmers’ Satisfaction on Agricultural Development in Bangladesh”. This study requires suggestions from Judges for selection of items for measuring Farmers’ satisfaction on agricultural development selected areas of Bangladesh. This would be very helpful to design and prepare research instrument for the study. In this regard, I have the pleasure to inform you that you have been selected as one of the Judges for selecting and rating items of the scale. You are requested to rate the items of **“Farmers’ satisfaction on agricultural development selected areas of Bangladesh”** with the scale of 1-9 (1 for least appropriate and 9 for most appropriate) at the right side of the items.

You are also requested to edit the whole questionnaire for necessary correction, modification, addition and deletion of different questions of the interview schedule. Your efforts will be definitely helpful to the quality of the PhD research. The aforesaid scale and the interview schedule are attached herewith for your necessary action.

Please return the materials back at your earliest convenience after completing the work.

With personal regards sincerely yours,

Prof. Dr. Md. Sekender Ali

Supervisor of the Concerned PhD Candidate

Department of Agricultural Extension & Information System

Sher-e-Bangla Agricultural University, Dhaka

Please rate the items of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” with the scale of 1-9 (1 for least appropriate and 9 for most appropriate) at the right side of the items.

Sl. No	Items	Highly satisfied	Moderate satisfied	Low satisfied	Not satisfied	Weight for appropriateness (1-9)
1	Availability of Agricultural information					
2	Buying price of Agricultural inputs					
3	Reasonable selling price of Agricultural product					
4	Marketing facilities					
5	Storage facilities					
6	Co-operation from extension agent					
7	Co-operation from local leaders					
8	Availability of irrigation facilities					
9	Availability of quality seed					
10	Availability of pesticides					
11	Availability of balanced fertilizers					
12	Availability of agricultural instrument					

13	Co-operation of neighboring farmer					
14	Availability of labour					
15	Increased Production of agricultural crops					
16	Increased Production of fisheries					
17	Increased Production of livestock					
18	Subsidy from government for agricultural activity					
19	Opportunity of opening Bank account by 10 taka					
20	Availability of credit for agricultural activities					
21	Co-operation of GOs					
22	Co-operation of NGOs					
23	Co-operation of local/ political leaders					

Thank you for your kind co-operation

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Signature of the Judge

Appendix-III

Appropriateness of the items of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale

Sl. No.	Items	Average Appropriateness score (out of 9)
1	Availability of Agricultural information	5.82
2	Buying prize of Agricultural inputs	7.23
3	Reasonable selling prize of Agricultural product	7.18
4	Marketing facilities	6.68
5	Storage facilities	5.09
6	Co-operation from extension agent	5.45
7	Co-operation from local leaders	6.77
8	Availability of irrigation facilities	5.73
9	Availability of quality seed	5.55
10	Availability of pesticides	5.32
11	Availability of balanced fertilizers	6.32
12	Availability of agricultural instrument	4.86
13	Co-operation of neighboring farmer	4.50
14	Availability of labour	6.95
15	Increased production of agricultural crops	6.45
16	Increased production of fisheries	7.23
17	Increased production of livestock	6.86
18	Subsidy from government for agricultural activity	6.82
19	Opportunity of opening Bank account by 10 taka	6.64
20	Availability of credit for agricultural activities	7.32
21	Co-operation of GOs	6.32
22	Co-operation of NGOs	7.68
23	Co-operation of local/ political leaders	6.00

Appendix-IV

Value of Correlation Co-efficient ‘r’ between individual item score of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale and composite score of the variable for determining validity of the items and overall scale

Sl. No.	Items	Value of Correlation Co-efficient ‘r’ with “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh”
1	Availability of Agricultural information	0.712 ^{**}
2	Buying prize of Agricultural inputs	0.705 ^{**}
3	Reasonable selling prize of Agricultural product	0.735 ^{**}
4	Marketing facilities	0.448 [*]
5	Storage facilities	0.649 ^{**}
6	Co-operation from extension agent	0.629 ^{**}
7	Co-operation from local leaders	0.686 ^{**}
8	Availability of irrigation facilities	0.785 ^{**}
9	Availability of quality seed	0.777 ^{**}
10	Availability of pesticide/ insecticide	0.556 ^{**}
11	Availability of balanced fertilizers	0.441 [*]
12	Availability of agricultural instrument	0.625 ^{**}
13	Co-operation of neighboring farmer	0.618 ^{**}
14	Availability of labour	0.585 ^{**}
15	Increased production of agricultural crops	0.517 ^{**}
16	Increased production of fisheries	0.423 [*]
17	Increased production of livestock	0.436 [*]
18	Subsidy from government for agricultural activity	0.564 ^{**}
19	Opportunity of opening Bank account by 10 taka	0.754 ^{**}

20	Availability of credit for agricultural activities	0.674**
21	Co-operation of GOs	0.499**
22	Co-operation of NGOs	0.650**
23	Co-operation of local/ political leaders	0.767**

*significant at 0.05 level, **significant at 0.01 level

Appendix-V

Value of Correlation Co-efficient ‘r’ of the total score of odd numbered items with the total score of even numbered items of “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh” scale; and each of total score of odd numbered items and even numbered score with the composite score of the variable for determining reliability of the scale

	Total score of odd numbered items (item no: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23)	Total score of even numbered items (item no: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22)	Composite score of the variable “Farmers’ satisfaction on agricultural development in selected areas of
Total score of odd numbered items (item no: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23)	-		
Total score of even numbered items (item no: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22)	0.866**	-	
Composite score of the variable “Farmers’ satisfaction on agricultural development in selected areas of Bangladesh”	0.973**	0.0.958**	-

**significant at 0.01 level

Appendix-VI

Correlation Matrix of Dependent and Independent Variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	Y
X1	1														
X2	0.085	1													
X3	0.012	0.266**	1												
X4	0.061	0.352**	0.668**	1											
X5	0.059	0.548**	0.113	0.256**	1										
X6	-0.035	0.312**	0.008	0.114	0.336**	1									
X7	0.121	0.551**	0.178*	0.303**	0.567**	0.521**	1								
X8	0.149*	0.488**	0.135	0.235**	0.651**	0.354**	0.616**	1							
X9	0.120	0.499**	0.192**	0.268**	0.510**	0.487**	0.649**	0.491**	1						
X10	0.149*	0.599**	0.161*	0.285**	0.747**	0.301**	0.602**	0.688**	0.580**	1					
X11	0.128	0.257**	-0.036	0.109	0.555**	0.279**	0.439**	0.473**	0.349**	0.464**	1				
X12	0.173*	0.551**	0.171*	0.347**	0.574**	0.193**	0.424**	0.521**	0.426**	0.583**	0.455**	1			
X13	0.911**	0.096	0.030	0.071	0.118	-0.024	0.140	0.194**	0.104	0.164*	0.167*	0.245**	1		
X14	-0.224**	-0.239**	-0.134	-0.115	-0.105	-0.020	-0.252**	-0.138	-0.168*	-0.197**	-0.061	-0.304**	-0.225**	1	
Y	0.317**	0.333**	-0.003	0.131	0.493**	0.321**	0.479**	0.408**	0.387**	0.419**	0.408**	0.401**	0.376**	-0.442**	1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

X1=Age	X9= Group media contact
X2= Education	X10= Mass media contact
X3= Farm size	X11= Decision making ability
X4= Family annual income	X12= Organizational participation
X5= Cosmopolitaness	X13= Agricultural experience
X6= Individual local contact	X14= Problem faced
X7= NGO contact	Y= Farmers' satisfaction on agricultural
X8= GO contact	development in selected areas of Bangladesh