LIVELIHOOD IMPROVEMENT OF FARMERS THROUGH PARTICIPATION IN SERP PROGRAM

A Thesis
By

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MASTER OF SCIENCE
IN
AGRICULTURAL EXTENSION

Department of Agricultural Extension
Hajee Mohammad Danesh Science and Technology University
Dinajpur

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ABSTRACT

LIVELIHOOD IMPROVEMENT OF FARMERS THROUGH PARTICIPATION IN SERP PROGRAM

The study aimed at exploring the livelihood improvement of the SERP program participants and finding out the relationships between some of the selected characteristics of the farmers and their livelihood improvement. Data were collected by using a pre-tested interview schedule from the farmers of four unions under Atwari upazila of Panchagarh district. Data were collected from randomly selected 103 respondents of the total 1030 SERP beneficiaries by using simple random sampling method from 17 May to 25 June, 2014. The selected nine (9) characteristics of the farmers such as age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension media contact and organizational participation were considered as the independent variables where livelihood improvement of the farmers constituted the dependent variable. Livelihood improvement of the farmers was measured by 5 point modified Likert scale. It was found that the observed score of livelihood improvement of the participating farmers ranged from 51 to 101 in score while the possible range was 45 to 225. The mean livelihood improvement score was 81.83 with a standard deviation of 9.43. Among the farmers, 66.0 percent belonged to medium status of livelihood improvement status while 14.6 percent of them had high status of livelihood improvement and 19.4 percent had low status of livelihood improvement. The variation regarding different assets of livelihood was minimum, the highest status of livelihood improvement was observed in case of natural capital and it was the lowest in case of social capital. Four (4) out of nine (9) selected characteristics of the farmers are education, farm size, annual income and agricultural knowledge had significant positive relationships with their livelihood improvement. Rests of the characteristics are age, family size, training experience, extension media contact and organizational participation had no significant relationship with their livelihood improvement.

CHAPTER I

INTRODUCTION

1.1 General Background

Bangladesh is a developing country where 76.47 percent of her total population lives in the rural areas (AIS, 2007). Agriculture is the principal means of livelihoods in Bangladesh. Rural participants are intimately involved in all phases of agricultural activities in rural areas. People, who primarily work as unpaid family worker, accounted for 45.6 percent of the total employment in agriculture (FAO, 2003). The daily life of rural participant is characterized by search for water, fuel and inputs for agriculture or household production for maintaining their livelihoods. The fundamental requirement for the improvement of livelihoods of the household is to inhance peoples strength and activities essential for the means of living. The livelihood improvement is founded on a belief that people require a range of assets to achieve a positive livelihood outcome. The major livelihood components are human, social, financial, physical and natural capitals (DFID, 2000).

Livelihood improvement has been enjoined as a fundamental responsibility on the state by various national policies in Bangladesh. Sustainability of livelihood is therefore lies at the core of government's economic policy. Livelihood improvement and sustainability is the main issue in the various development programs of the country. Governments have accorded top priority to livelihood development programs. Different programs dealing with improvement of the quality of life of the poor through promotion of viable economic and social activities under various non-government organizations are also remarkable.

1.1.1 History of SERP program in Bangladesh

Service Emergency for Rural People (SERP) is a specialised non-profit oriented development association, which dedicates its expertise since more than five decades towards the elimination of the causes of poverty and marginalisation in the South and the East Asia. Its mission is to actively contribute to the improvement of the living conditions of economically, socially and politically disadvantaged people within the frame of the human rights. It implements programmes and projects in 30 partner countries and provides short and long-term advisory services to a broad range of international clients in numerous additional countries. It works in five thematic fields, one of which is 'Rural Economy'.

In Bangladesh, it was worked to since 2000, till June 2011 under the name of Inter cooperation (IC), and has specialised in rural economy, natural resource management, local

governance and disaster risk reduction. SERP Bangladesh believes that sustainable agriculture and a thriving rural economy are crucial for improving rural livelihoods. Therefore, one of the main areas of focus is rural economy with aspects such as sustainable agriculture, food security, value chain and market development, private sector development and rural finance.

SERP (Service Emergency for Rural People) offers technical supports and particular innovative rural advisory service like problem finding through Focus Group Discussion (FGD), Key Information Discussion (KID) and to make people learn how they could do based use of their existing assets and to ensured their livelihood improved and sustainable.The thematic competence includes sustainable agriculture systems and food security, agricultural extension, value chain facilitation, making markets work for the poor private sector development, quality management and business planning corporate social responsibility, business development services.

1.2 Statement of the Problem

The major objective of the SERP is to improve livelihood status through income generation. To address this issue, the smallholder's i.e. landless, marginal farmers are being given technical support through SERP. Under the associations, farmers are also receive training on various subjects like various type of income generating activities includes, homestead tree plantation, vegetable production, poultry and livestock development, fish culture, cottage industry etc. they are also expected to utilize their knowledge and skills in order to increase their income and thereby improve their livelihoods.

Therefore, the present study undertakes to find out the followings research questions.

1. What is the present level of livelihood improvement status of the SERP program participants due to participation in SERP program?

2. What relationships exist between selected characteristics of the SERP farmers and their livelihood improvement?

1.3 Specific Objectives of the Study

In the view of the above discussion and in order to give proper direction to the study, the researcher undertook the present research with the following specific objectives:

1. To determine the selected characteristics of SERP program participants. The characteristics are:

i) Age,
ii) Education,
iii) Family size,
iv) Farm size,
v) Annual income,
vi) Training experience,
vii) Agricultural knowledge,
viii) Extension media contact, and
ix) Organizational participation.

2. To determine the livelihood improvement status of SERP program participants as perceived by them in terms of the following livelihood capitals:
    a) human capital,
    b) social capital,
    c) financial capital,
    d) physical capital, and
    e) natural capital.
3. To explore the relationships between livelihood improvement of the SERP participants with their selected characteristics.

1.4 Justification of the Study

Now-a-days, not only the government sector but also most of the non-government sectors are increasingly aware that they have a major responsibility for rural development and betterment of the livelihood of farmers. They are mainly launching programs to eradicate poverty and trying to make the people's livelihood sustainable. As village people have no sufficient employment opportunities and income earning sources to maintain their livelihood, they are the vulnerable class of the society and they are expected to uplift their personal, social and economic dimensions by increasing their access and control over resources. For understanding any meaningful socio-economic development program, if the main target is to involve the poorer section of rural people in development activities, it needs to know the specific problem issues. The issues on socio-economic development need more attention and thus it deserves a specific investigation. It is necessary to conduct study regarding to the performance of different livelihood program activities. Considering the present livelihood condition, the Service Emergency for Rural People (SERP) is selected for this piece of research. The findings of the study are expected to be of great value to the researchers, extension service providers, students and particularly planners in formulating and designing for future livelihood improvement program.

1.5 Assumptions of the Study

The researchers have the following assumptions in mind while undertaking this study:

1. The respondents will be capable of furnishing proper responses to the questions contained in the interview schedule.
2. The responses furnished by the respondent will be valid and reliable.
3. Information furnished by the beneficiaries, included in the sample, is the representative of the whole population of the study.
4. The researcher who personally collected data well adjusted himself to the social environment of the study area. Hence, the data collected from the respondents will be free from the interviewer bias.
5. The findings of the study are expected to be useful in planning and execution of the various programs in connection with the livelihood improvement of the farmers.

1.6 Limitations of the Study

Considering time, money and other resources available to the researcher, the following limitations will be taken into consideration:

1. The study was confined to the four (4) unions of Atwari upazila of Panchagarh district.
2. There were many people in the study area but only the SERP beneficiaries were selected for the study.
3. Characteristics of the rural people were many and varied. But only nine (9) characteristics were considered for this study.
4. For information of the study, the researchers had to depend on data as furnished by the selected SERP beneficiaries during data collection.
5. When the researcher was a female and a respondent is male, some difficulties were arising during interview, but this subsequent problem was discarded by establishing proper rapport.

1.7 Definition of the Terms

A number of key terms used throughout the study are defined below for clarify of understanding:

Livelihood: The livelihood of a household or individual can be interpreted as their 'means of living'. Their means of living is based on their capabilities, assets (financial, physical, human, natural resource and social) and activities.

Livelihood assets: Livelihood assets are the means of production available to a given individual household or groups that can be used in their livelihood activities. These assets are the base on which livelihoods is built and, in general, the greater and more varied the assets base the higher and more durable the level of social security.

Natural capital: The natural resource stock from which resource useful livelihood is derived.

Human capital: The skills, knowledge, ability to labor and good health are important to the ability to pursue livelihood strategies.

Physical capital: The basic infrastructure (transport, shelter, water, energy, and communications) and production equipment and means, which enable people to pursue their livelihoods.

Social capital: The horizontal and vertical social resources (networks, memberships groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of their livelihood. In addition, security perspective and to some extent social norms, values, beliefs also belong to social capital.

Financial capital: The financial resources which are available to people (whether savings, supplies of credit, or regular remittances or persons) and which provide them with different livelihood option.

Vulnerability: Vulnerability is defined as 'a condition resulting from physical, social, economic and environmental factors or processes, which increases the susceptibility of a community to the impact of a hazard.'

Vulnerability context: Vulnerability context refers to seasonality, trends, and shocks that affect the people livelihood.

Livelihood strategies: The overarching terms used to denote the range of combination of activities and choice that people make/undertake in order to achieve their livelihood. Livelihood strategies are intimately connected with people's objectives the beneficial

livelihood outcomes that they seek. Some versions of livelihoods analysis use the term 'adaptive strategies' instead of 'livelihood strategies.' Adaptive strategies are distinguished from 'coping strategies' adopted in terms of crisis.

Livelihood outcomes: Livelihood Outcomes are the achievements of outputs of livelihood strategies. It helps to understand the 'output' of the current configuration of factors within the livelihood framework; what motivates people to behave as they do; what their priorities are; how they are likely to respond to new opportunities; and which performance indicators should be used to assess to support activity. The most important livelihood outcomes are: more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of resource base.

Livelihood dimensions/aspects: It refers those indicators (food security; education; health and sanitation; shelter and family assets; family clothing condition; and social upliftment) which are used to measure the livelihood status.

Livelihood status: Livelihood status of an individual refers to the position of her/his household's living condition on the basis of her/his existing socio-economic status.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with review of past researchers related to this investigation. The reviews are conveniently presented based on the major objectives of the study. This study deals with the 'Livelihood Improvement of Farmers through Participation in SERP Program.' That is why, direct literature is not available for this research. This chapter deals with four sections. Concepts of sustainable livelihood have been presented in the first section, while reviews regarding sustainable livelihoods are highlighted in the second section. The third section deals with literature on relationships between some selected characteristics of the beneficiaries and livelihood while the fourth section presents the conceptual framework of the study.

2.1 Concept of Livelihood Improvement and Sustainable Livelihood Framework

Sustainable livelihood framework

According to DFID (1999) the livelihoods framework is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor. It was developed over a period of several months by the Sustainable Rural Livelihoods Advisory committee, building on earlier work by the Institute of Development Studies (amongst others). The individual components of the framework are described in short below.

2.1.1 Vulnerability

Vulnerability context frames the external environment in which people exist. The livelihoods of the People and the wider availability of assets are fundamentally affected by critical as well as by shocks and seasonality-over which they have limited or no control (DFID 2002). Some examples are given below:

Trend: Population trends, resource trends, national/international economic trends, trends (including politics) and technological trends.

Shocks: Human health shocks, natural shocks, economic shocks conflict and crop livestock stock health shocks.

Seasonality: Prices, production, health and employment opportunity.

2.1.2 Livelihood assets

Livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built. Increasing access, which can take the form of ownership or the right to use these assets, is a primary concern for DFID in its support of livelihoods and poverty elimination (DFID, 2002).These assets are widely known as 'asset pentagon' are stated below:

Human capital:

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives.

Financial capital:

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. The definition used here is not economically robust in that it includes flows as well as stocks and it can contribute to consumption as well as production. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies.

Social capital:

There is much debate about what exactly is meant by the term 'social capital. In the context of the sustainable livelihoods framework it is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives. These are developed through: networks and connectedness, membership of formalized groups, relationships of trust etc.

Natural capital:

There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production (trees. land, etc.).

Physical capital:

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. The components of infrastructure are usually essential for sustainable livelihoods. Affordable transport secures shelter and buildings, adequate water supply and sanitation, clean, affordable energy; and access to information (communications).

2.1.3 Transforming structures and processes

Transforming structures and processes within the livelihoods framework are the institutions, organizations, policies and legislation that shape livelihoods. Their importance cannot be overemphasized. They operate at all levels, from the household to international area, and in all spheres, from the most private to the most public (DFID, 2002).

Structure:

Structures in the framework are the hardware-the organizations, both private and public that set and implement policy and legislation deliver services, purchase, and trade and perform all manner of other functions that affect livelihoods. They draw their legitimacy the basic governance framework.

Public sector:

Political (legislative) bodies at various levels from local through to national, Executive agencies (ministries, departments), judicial bodies/ quasi-governmental agencies.

Private sector:

Commercial enterprises and corporations, civil society or membership organizations (of varying degrees of formality), NGOs (international, national, local).

Process:

If structures can be thought of as hardware, processes can be thought of as software. They determine the way in which structures and individuals operate and interact. Like software, they are both crucial and complex; not only are there many types of processes operating at a variety of different levels, but there are also overlap and conflict between them. The important examples of the transforming processes of importance to livelihoods shown below:

Policies: Macro, sectoral, redistributive and regulatory.

Legislation: International agreements and domestic.

Institutions: Markets, institutions that regulate access to assets and rules of game within structures.

Culture: Societal norms and beliefs.

Power relations: Age, gender, caste and class.

2.1.4 Livelihood strategies

The livelihoods approach seeks to promote choice, opportunity and diversity. This is nowhere more apparent than in its treatment of livelihoods strategies the overarching term used to denote the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals including productive activities, investment strategies, reproductive choices, etc.

2.2 Relationships between the Selected Characteristics of the Respondents and their Livelihood Improvement

The selected characteristics of the beneficiaries of SERP were selected as independent variables of the study. The available literature regarding relationship between the selected characteristics of the respondents and their livelihood improvement are presented below:

2.2.1 Age and livelihood improvement

Hoque (2011) found a negative relationship between age and livelihood status in his study on socio-economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Rahman (2005) observed that age of the respondent was positively significant with their improvement in food availability, negatively significant with their improvement in income but not significant with their improvement in housing.

Sharmin (2005) observed that age of the respondents did not show any significant relationship with their livelihood improvement.

Mortuza *et al.* (2004) observed in his study that age had no significant relationship with their livelihood in the coastal region in Bangladesh.

Saifuddin (2004) found that age of the rural women had positive relationship with their improvement of socio-economic status due to climatic preventive activities.

Islam (2003) found that there was a significant positive relationship between age of the beneficiaries of seed production program of Proshika and their living status in terms of annual income, food consumption, housing condition, household assets, drinking water source and medicare facilities in their technological intervention.

2.2.2 Education and livelihood improvement

Billah (2013) observed in his study that level of formal education had significant relationship with their livelihood status in the adoption of farming practices due to climate change.

Rashid (2012) found a positive relationship between years of schooling and livelihood status in his study on status of fruit cultivation by the farmers of Satkhira district in response to climate change.

Hoque (2011) found a negative relationship between level of education and livelihood status in his study on socio economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Mortuza *et al.* (2004) found that family education had significant relationship with their livelihood.

Rokanuzzaman (2004) found that education had no significant relationship with their livelihood status due to joining CBFM-2 project activities of the beneficiaries.

Saifuddin (2004) found that education level of the rural women had no significant relationship with their improvement of socio economic status.

Kabir (2003) conducted a study and found that there was no relationship between education of the beneficiaries of PDBF and their living condition.

2.2.3 Family size and livelihood improvement

Billah (2013) observed in his study that family size had no significant relationship with their livelihood status in adaptation of farming practices by the smallholder farmers in response to climate change.

Rashid (2012) found a positive significant relationship between family size and livelihood status in his study on status of fruit cultivation by the farmers of Satkhira district in response to climate change.

Hoque (2011) found a negative relationship between household size and livelihood status in his study on socio economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Saufiddin (2004) stated that household size of the rural woman had significant and positive relationship with their improvement of socio economic status.

Mortuza *et al.* (2004) found that family size of group member had no significant relationship with livelihood status of the respondents.

Rokanuzzaman (2004) found that family size had no significant relationship with their livelihood status due to joining the CE3FM-2 project activities of the beneficiaries.

2.2.4 Farm size and livelihood improvement

Mortuze *et al.* (2004) found that farm size of group member had no significant positive relationship with their livelihood.

Rokanuzzaman (2004) found that farm size had no significant relationship with their livelihood status due to joining the CBFM-2 project activities of the beneficiaries.

Ali (2003) conducted a study on impact of micro-credit in the poverty alleviation of BRAC women beneficiaries in a selected area of Dinajpur district. He found a significant positive relationship between farm size of the BRAC's beneficiaries and their livelihood condition.

Islam (2002) conducted study on poverty alleviation of the rural women through some of the selected activities of Grameen Bank. He reported that there was no significant relationship between farm size of the beneficiaries of Grameen Bank and their living status.

2.2.5 Annual income and livelihood improvement

Billah (2013) reported in his study that annual income had positive significant relationship with their livelihood status on the adoption of farming practices by the smallholder farmers in response to climate change.

Rashid (2012) found a positive relationship between annual income and livelihood status in his study on status of fruit cultivation by the farmers of Satkhira district in response to climate change.

Hoque (2011) found a positive significant relationship between family income and livelihood status in his study on socio-economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Hossain (2010) conducted a study on human living status and their income generating activities, he reported that annual income is positively significant with their living status in a coastal district.

Mortuza *et al.* (2004) found that family income had significant positive relationship with livelihood.

2.2.6 Training experience and livelihood improvement

Hoque (2011) found a positive relationship between training experience and livelihood status in his study on socio-economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Hossain (2010) conducted a study on human living status and their income generating activities, he reported that training experiences is positively significant with their living status in a coastal district.

Saifuddin (2004) found that training experiences of the rural woman had no significant relationship with their improvement of socio-economic status.

2.2.7 Agricultural knowledge and livelihood improvement

Khatun (2004) found that knowledge of the farmers had a positive and significant relationship with their extent of knowledge and contact with information.

Samad (2004) conclude that the agricultural knowledge of the rural farmers had significant positive relationship with the livelihood improvement.

2.2.8 Extension media contact and livelihood improvement

Billah (2013) observed in his study that communication exposure had positive significant relationship with their livelihood status on the adoption of farming practices by the smallholder's farmers in response to climate change.

Rashid (2012) found a positive significant relationship between extension media contact and livelihood status in his study on status of fruit cultivation by the farmers of Satkhira district in response to climate change.

Hoque (2011) found a negative relationship between communication exposure and livelihood status in his study on socio economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Hossain (2010) conducted a study on human living status and their income generating activities, he reported that communication exposure is positively significant with their living status in a coastal district.

Islam (2004) reported that extension media contact showed significant positive relationship with the extent of knowledge on livelihood in his study entitled 'extent of knowledge and information system in rural community for improving rural livelihood of farmers'.

Rokanuzzaman (2004) found that extension media contact had no significant relationship with their livelihood status due to joining the CBFM-2 project activities of the beneficiaries.

2.2.9 Organizational participation and livelihood improvement

Rashid (2012) found a positive relationship between organizational participation and livelihood status in his study on status of fruit cultivation by the farmers of Satkhira district in response to climate change.

Hoque (2011) found a negative relationship between organizational participation and livelihood status in his study on socio-economic improvement of the commercial fish farmers due to transformation from crop farming to aquaculture.

Rasel (2004) reported that organizational participation did not have any significant relationship with the living conditions.

Yesmin (2007) reported that organizational participation have to significant relationship with the livelihood status.

2.3 Conceptual Framework

There are some livelihood models developed by various authors which are more or less alike to each other with some slight modification into the structural build up. The conceptual framework of each model has got the background of potential thoughts and ideas and encompasses the explanation of every bit of livelihood elements. The models are described below:

2.3.1 Livelihood framework of DFID

The concept of livelihood has been defined as the economic activities poor people undertake in their totalities (Ashley and Carney, 1999). DFID (1999) illustrated a livelihood framework with agricultural technologies as illustrated in figure 2.1.

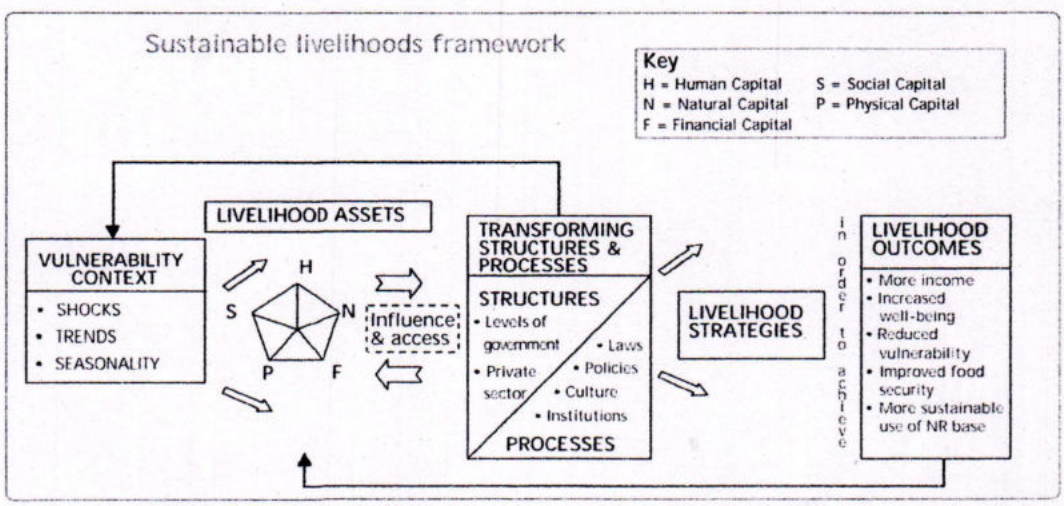

Figure 2.1 Livelihood framework as given by DFID (1999)

Numerous frameworks have already been drawn to make people understands the livelihood complexity. These frameworks always try to elucidate the linkage between different factors, show how these factors influence the livelihood and find the point where the intervention is to be made. The frame work is going to be illustrated here is a strong approach given by DFID to present the main factors and relationships that affect poor people's livelihoods. Limitations of poverty profile have been overcome by this framework through providing a way of analysis how people use the resources at their disposal in a given policy and institutional framework to deal with vulnerability. The above stated framework shows how three interacting elements (vulnerability context, livelihood assets, policies, institutions and processes i.e. people's ability) lead to diverse livelihood strategies and outcome.

2.3.2 Conceptual framework of the present study

The conceptual framework of Rahman (2002) and Rashid (2006) was kept in mind while farming the structural arrangement for the dependent and independent variables of this research. This study was concerned with dependent variable named livelihood improvement and the selected individual characteristics of SERP participants as independent variables. There are many factors which influence livelihood improvement. According to DFID (2000), there are 5 core assets or types of capital upon which livelihood status built. These 'asset pentagon' are: a) human capital, b) natural capital, c) financial capital, d) physical capital, and e) social capital. There are many characteristics which influence the livelihood improvement of SERP program participants. In a single study, it is neither possible nor desirable to investigate all the factors taken into consideration that are responsible for livelihood improvement. Therefore, after careful consideration of respondents' situation, only nine characteristics have been selected for investigation in the present study. The selected characteristics are age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension media contact, and organizational participation. Considering the past research and main theme of present study, a conceptual model was constructed, and is presented in Figure 2.2.

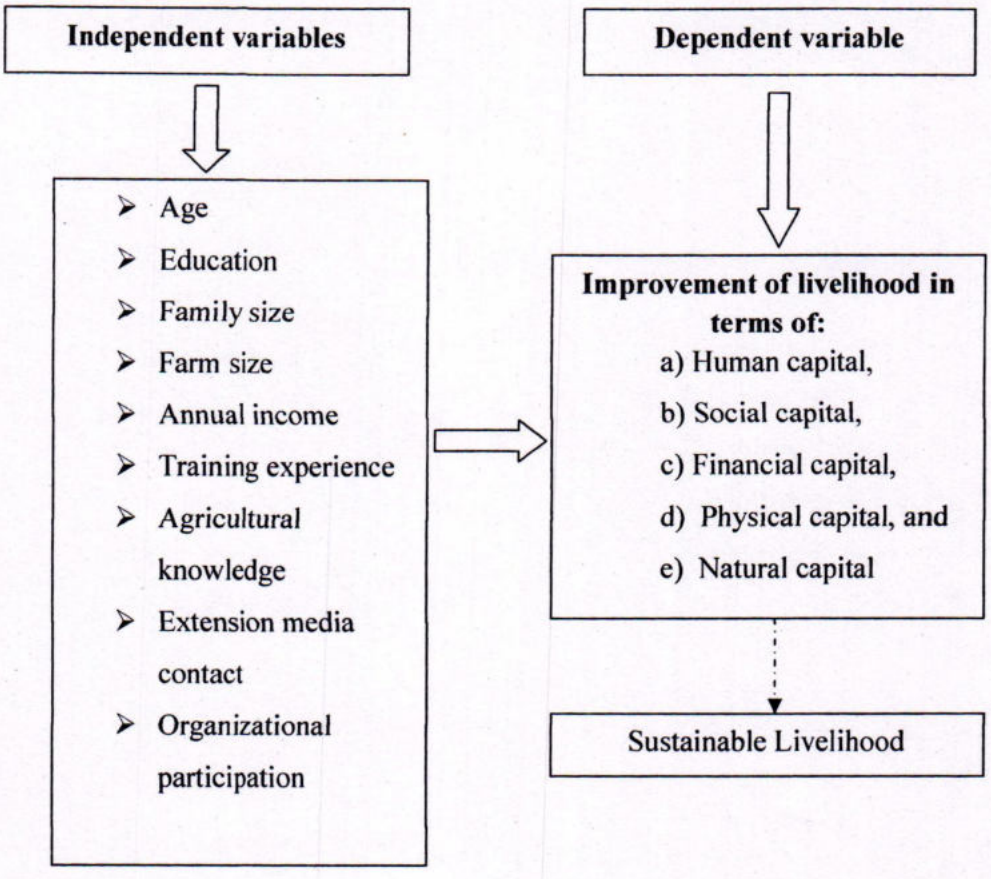

Figure 2.2 Conceptual framework of the study

CHAPTER III

METHODOLOGY

In any scientific research, methodology deserves a very careful consideration. Methodology should be such that it enables will the researcher to collect valid information and by analysis the same will help to arrive at appropriate decisions. The methods and procedures followed in conducting this research have been discussed in this chapter.

3.1 Locale of the Study

The study was conducted in Atwari upazila, Panchagarh district where SERP program is implemented. Four unions of this upazila, namely Radhanagar, Balarampur, Mirzapur and Alowakhowa were selected for this study.

3.2 Population and Sample of the Study

The total numbers of SERP participants were 1030 the targeted population of this study. But data were collected from a sample rather than from the whole population. A total 10 percent of the SERP participants were of about 103 SERP participants were randomly selected as sample by using simple random sampling method for the purpose of this study. Thus, the total sample size is 103 (Table 3.1) shows the population and sample sizes of different unions included in the study.

Table 3.1 Distribution of population and sample of the respondents

Name of Unions	Total SERP program participants	Respondents
Radhanagar	410	41
Balarampur	320	32
Mirzapur	180	18
Alowakhowa	120	12
Total	1030	103

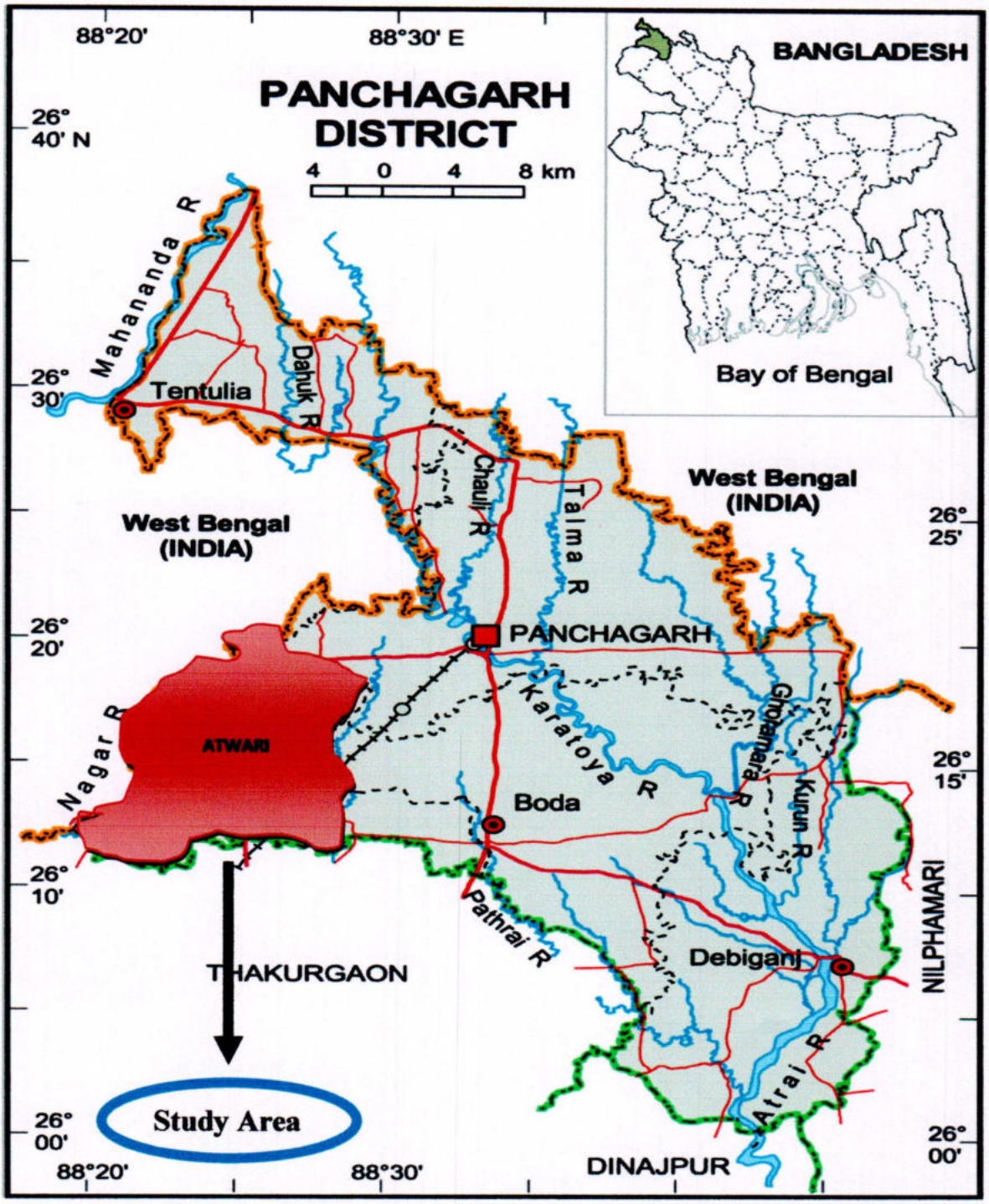

Figure 3.1 A map of Panchagarh district showing Atawri upazila (Bangladesh inset)

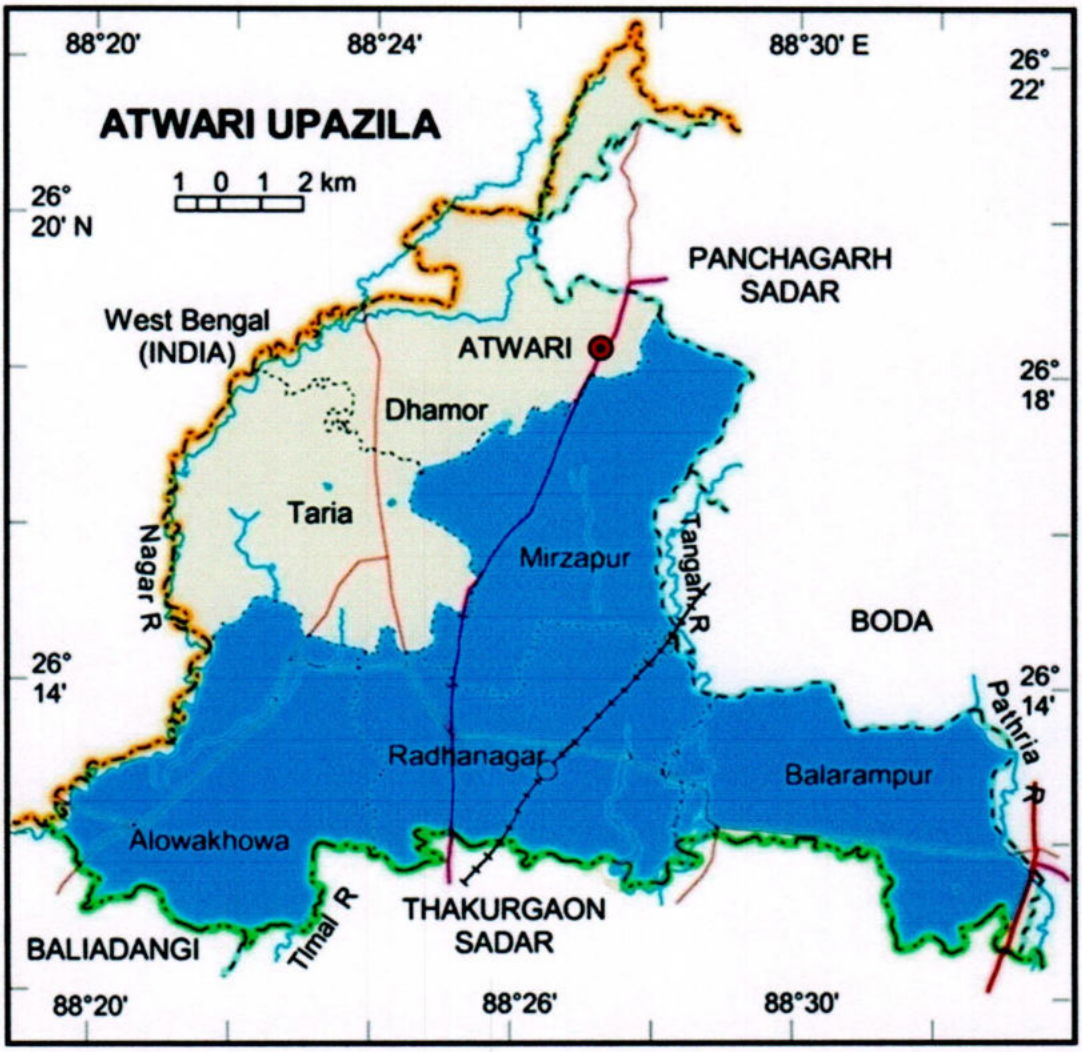

Figure 3.2 A map of Atwari upazila showing the study area

3.3 Variables of the Study

Measurement of the variables constitutes an important task of any social research. In this study, the livelihood improvements of participant farmers were the dependent variable. The selected characteristics of sampled farmers were considered as the independent variables of the study. These were age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension media contact and organizational participation.

3.3.1 Measurement of independent variables

3.3.1.1 Age

The age of a respondent was determined in terms of the actual years passed from his/her birth to the day of interview. A score of one (1) was assigned to each year of age.

3.3.1.2 Education

The education was measured on the basis of grade (class) passed by a respondent. A score of one (1) was scored for each year of schooling in formal institution. For example, if a respondent passed the final exam of class V, his education score was taken as 5. Score 0.5 was given to the respondent who could sign his/her name and a zero (0) was given to the respondent who could not read and write.

3.3.1.3 Family size

The total number of the family members measured by assigning a score of one (1) for each member of the family. For example, if a family contained three (3) members, the score of the family was three.

3.3.1.4 Farm size

Farm size of the respondent referred to the total area of land on which his/her family carried out farming operations. It measured in the hectares for each respondent using the following formula:

$$FS = \{A + B + C + (D \times 0.5) + (E \times 0.5)\}$$

Where, FS = Farm size

A = Homestead area

B = Own land under own civilization

C = Land taken from others as lease

D = Land taken from others as borga

E = Land given to others as borga.

3.3.1.5 Annual income

Annual income was the total financial return of a household from farming (crops, livestock, poultry and fish) and from non-farm sources (job, business and others) in one year. The earnings from these sources were added together for computation of annual income score. Annual household income was expressed in (000) thousand Taka.

3.3.1.6 Training experience

Training experience was determined by total number of days of training received by the farmers from any organization in their entire lifetime.

3.3.1.7 Agricultural knowledge

Agricultural knowledge of a respondent on performing agricultural activities was measured on four (4) technical aspects of agricultural production. The four (4) technical aspects were as follows: field crop, vegetable, poultry and fisheries. Total thirteen (13) questions were asked from these technical aspects to the respondents and full score was given to the respondents for correct answer and zero (0) for wrong answer. For partially correct answer proportionate partial score was given on the basis of degree of correctness of the answers. The scores assigned against each of the 13 questions were added together to obtain the total agricultural knowledge score of the respondents total range 0-29.

3.3.1.8 Extension media contact

An extension media contact score was computed for each respondent on the basis of his extent of contact with ten selected extension media. Each respondent was asked to indicate the frequency of his contact with each of the ten selected media. The procedure of assigning scores for each medium was done based on a four-point rating scale (high=3, moderate=2, low=1, and not at all=0). Total extension media contact score of respondent was measured by summing all of the extension media contact scores. The possible score of extension media contact could be ranged from 0 to 30, where 0 indicate no extension media contact and 30 indicated the highest level of extension media contact. Weights assigned for the extension media contact as followed:

Contact	Name of extension media	Frequency of contact	Weight
Individual contact	Neighbors and friends	Not even once	0
		1-2 times	1
		3-4 times	2
		5 or more times	3
	Sub Assistant Agricultural Officer	Not even once	0
		1-2 times	1
		3-4 times	2
		5 or more times	3
	NGO personnel	Not even once	0
		1-2 times	1
		3-4 times	2
		5 or more times	3
Group contact	Result demonstration	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
	Group discussion	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
	Farmer's field day	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
Mass media contact	Listening radio program	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
	Watching TV program	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
	Listening folk song program	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3
	Reading daily newspaper	Not even once	0
		Only 1 time	1
		2 times	2
		3 or more times	3

3.3.1.9 Organizational participation

Organizational participation of a respondent was measured on the basis of the nature of his/her involvement and duration of participation in different organizations. Organizational participation was operationalized using the following formula:

Organizational participation score = $Pgm \times N_1 Y_1 + Pem \times N_2 Y_2 + Peo \times N_3 Y_3$

Where, Pgm = Participation as general member

Pem = Participation as executive committee member

Peo = Participation as executive officer

The scoring strategies were as follows:

Nature of participation	**Score assigned**
Not involved	0
Participation as general member	1
Participation as executive committee member	2
Participation as executive officer (chairman/president)	3

The N_1, N_2, N_3 referred to the number of organizations to which a subject had been associated as an general member, executive committee member and executive officer, respectively; and Y_1, Y_2 and Y_3 referred to duration of participation in years in the same order, respectively.

3.3.2 Measurement of dependent variable

Livelihood improvement status of the members of SERP is the dependent variable of this study. This variable was measured by computing a composite livelihood improvement score based on each of the five components of 'livelihood asset pentagon' (DFID, 2000): (i) human capital (ii) social capital (iii) financial capital (iv) physical capital and (v) natural capital. Each of the capitals was measured against nine statements. Each of the statements was put against 5 point modified Likert scale: strongly agree, agree, neutral, disagree and strongly disagree and score given as 5, 4, 3, 2 and 1, respectively for positive statements and the scoring technique was reverse for the negative statements. The total scores for each of the livelihood capital could range from 9 to 45, where 9 indicated no improvement and 45 indicated high improvement regarding the concerned livelihood capital. The overall score for livelihood improvement was computed by adding the scores obtained by all of the capitals of livelihood asset pentagon. Thus, total scores for overall livelihood improvement status could

vary from 45 to 225, where 45 indicated no improvement and 225 indicated very high improvement of overall livelihood status of the farmers through participation in SERP program.

3.4 Instrument for Collection of Data

In order to collect relevant data, an interview schedule was carefully prepared, keeping the objectives of the study in mind. The interview schedule contained both open and closed form of questions. The draft interview schedule was pre-tested in actual field situation before using the same for collection of data. This pre-test facilitated the researcher to identify faulty and ambiguous questions. Ten participants from different parts of the study area were interviewed for the pre-test. Necessary alteration, additions and adjustments were made in the schedule on the basis of the pre-test result. The interview schedule was then printed in its final form for collection of data.

3.5 Data Collection

The prime task in materializing objectives of the study was to collect data by interviewing 103 respondents. Data were collected by the researcher herself using structured interview schedule through face-to-face contact. The researcher was first established rapport with the respondents and clearly explains the objectives of the study by using local language as far as possible. As a result, the respondents were furnished proper responses to the questions and statements without any hesitation. Data were collected during the period from 17 May to 25 June, 2014.

3.6 Compilation of Data

At the end of data collection, the collected data was coded, compiled, tabulated and analyzed. The local units were converted into standard units. The qualitative data was transferred into quantitative data by appropriate scoring technique. The response of the respondents that was recorded in the interview schedule was transferred into a master sheet for entering the data into the computer.

3.7 Statistical Analysis

The collected data were compiled, tabulated, coded and analyzed for statistical analysis according to the objectives of the research. The coded data were put into the computer for statistical analysis. The SPSS (Statistical Package for Social Sciences) computer program was used for analyzing the data. Various descriptive statistical measures such as frequency, number, percentage, mean and standard deviation were used for categorization and describing the variables. Pearson's Product Moment Correlation coefficient (r) was used for testing the

relationships between the concerned variables. Five (5) percent level of significance was used as a basis for rejecting any null hypothesis throughout of the study.

3.8 Hypothesis

A hypothesis is a proposition, which can be put to a test to determine its validity (Goode and Hatt, 1981). According to Kerlinger (1973) a hypothesis is a conjectural statement of the relation between or more variables. In broad sense hypothesis are divided into two categories: (a) Research hypothesis, and (b) Null-hypothesis.

3.8.1 Research hypothesis

Research hypothesis (H_a) states anticipated relationships between concerned variables. Based on review of literature and development of conceptual framework, the research hypothesis was: 'there are relationships between 9 selected characteristics of the participants with their livelihood improvement'.

3.8.2 Null hypothesis

Null hypothesis (H_o) states that there is no relationship between the concerned variables. Therefore, the null hypothesis of this study is 'there are no relationships between 9 selected characteristics of the participants with their livelihood improvement'.

CHAPTER IV
FINDINGS AND DISCUSSIONS

The findings of this study and their logical interpretations have been systematically presented in different sections of this chapter according to the objectives of the study. The first section deals with the selected characteristics of the SERP beneficiaries in respect of their livelihood condition. The second section deals with the livelihood improvement of the SERP program participants. The third section deals with the relationships between selected characteristics of the respondent and their present livelihood improvement.

4.1 Selected Characteristics of the Farmers

The nine (9) selected characteristics of the farmers such as age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension contact media, organizational participation were the independent variables of this study. The findings of the characteristics of the participants are presented in Table 4.1 and have been discussed in sub-sequent sections. The respondents were classified in suitable categories for describing their selected characteristics.

4.1.1 Age

Age of the farmers was found to vary from 30 to 55 years with an average of 40.05 years and a standard deviation of 5.69 years. Based on their age the farmers were classified into three categories namely 'young' (up to 35) 'medium' (36-50) and 'old'(above 50). Data presented in Table 4.1 indicated that about 30 percent of the farmers fell in the young age category, while more than while half of the farmers (68.9 percent) fell in the medium aged category and about 2 percent in the old category. Data of Table 4.1 indicates that an overwhelming majority of the SERP beneficiaries were medium aged. Rural society of Bangladesh maintain traditional norms, values, custom and this is very much favorable for medium aged SERP beneficiaries to become involve in various organizational activities. Also they are likely to influence highly for family and community decision-making because they are energetic and well acquainted with farm and non-farm activities.

Table 4.1 Mainfeatures and categorization of the SERP participants (N=103)

Characteristics	Scoring method	Range		Categories	Respondents		Mean	SD
		Possible	Observed		No.	%		
Age	No. of year	Unknown	30-55	Young (up to35)	30	29.1	40.05	5.69
				Medium (36-50)	71	68.9		
				Old (above 50)	2	1.9		
Education	Year of schooling	Unknown	0.5-12	Can sign only (0.5)	13	12.6	7.41	3.16
				Primary (1-5)	16	15.5		
				Secondary (6-10)	67	65.0		
				Higher secondary (above 10)	7	6.8		
Family size	No. of members	Unknown	2-6	Small (up to 3)	15	14.6	4.12	0.70
				Medium (4-5)	85	82.5		
				Large (above 5)	3	2.9		
Farm size	Hectare	Unknown	0.121-1.736	Marginal (up to 0.2)	5	4.9	0.54	0.28
				Small (0.21-1.0)	92	89.3		
				Medium (1.01-3.0)	6	5.8		
Annual income	('000' Tk.)	Unknown	46-290	Low (up to 120)	54	52.4	124.5	45.92
				Medium (121-200)	41	39.8		
				High (above 200)	8	7.8		
Training experience	Day	Unknown	2-11	low (up to 3)	23	22.3	5.49	2.12
				Medium (4-7)	70	68.0		
				High (above 7)	10	9.7		
Agricultural knowledge	Score	0-29	11-29	Low (11-18)	15	14.6	22.0	3.36
				Medium (19-25)	70	68.0		
				High (26-29)	18	17.5		
Extension media contact	Score	0-30	7-21	Low (up to 11)	58	56.3	11.55	3.25
				Medium (12-15)	30	29.1		
				High (above 15)	15	14.6		
Organizational participation	Score	Unknown	2.5-33	Low (up to 13)	66	64.1	9.73	4.47
				Medium (14-23)	32	31.1		
				High (above 23)	5	4.9		

4.1.2 Education

Exposure to formal education is very important for shaping-up the behavior of an individual. The family educational scores of the farmers ranged from 0.5 to 12, the mean being 7.41 years and standard deviation is 3.16 years. Based on education scores, the farmers were classified into can sign only (0.5), Primary education (1-5), Secondary education (6-10) and higher secondary (above10) presented in Table 4.1. Data presented in Table 4.1 indicate that about 12.6 percent farmers were under can sign only category 15.5 percent primary, 65 percent had secondary education and 6.8 percent had higher secondary education. For this reason, it can be assumed that the education of the sample farmers may be higher rather national average literacy rate.

4.1.3 Family size

The family size of the respondents ranged from 2 to 6 with an average of 4.12 and a standard deviation of 0.70. On the basis of their family size scores, the farmers were classified into three categories namely 'small' (up to 3), 'medium' (4 to 5) and 'large' (above 5). The distribution of the farmers according to their family size is shown in Table 4.1. Data presented in Table 4.1 indicate that overwhelming of the farmers 82.5 percent have medium sized family. On the other hand 14.6 percent had small family and 2.9 percent had large family. Family is a fundamental social unit or social groupings. The members of which are united by bonds of kinship. The importance of the family in determining the character and structure of the society is tremendous. Family background directly or indirectly influences a person's behavior, social position and outlook of life. It could be a good source of farmers through participation in SERP program.

4.1.4 Farm size

Farm size of the respondents of the study area ranged from 0.121 to 1.736 hectare. The mean of farm size was 0.54 hectare with standard deviation of 0.28 hectare. Depending on the farm size, the farmers were classified into three categories namely 'marginal' (up to 0.2 ha), 'small' (0.21-1.0 ha) and 'medium' (1.01-3.0 ha) are presented along with their distribution in Table 4.1. Data presented in Table 4.1 show that the majority of the respondents were small farm sized (89.3 percent), 5.8 percent had medium farm size and 4.9 percent are marginal farmer.This means that overall farm size of the farmers of the study area was higher compared to the farmers of other areas of Bangladesh. In might be an indication that the medium farm holders were more interested to receive latest agricultural information from SERP program.

4.1.5 Annual income

The annual income of the beneficiaries ranged from 46 to 290 thousand taka with a mean of 124.5 thousand taka and standard deviation of 45.92 thousand taka. On the basis of annual income the respondents were divided into three categories namely 'low' (up to 120), 'medium' (121-200) and 'high' (above 200) income category. The distribution of the farmers according to their annual income is shown in Table 4.1. Data indicates that the highest proportion (52.4 percent) of the respondent farmers had low income followed by 39.8 percent having medium income and 7.8 percent had high annual income. Majority (92.2 percent) of the respondents belonged to low to medium income categories. Findings reveal that the

annual income of the respondents was low to medium because most of the family members are not involved in income generating activities.

4.1.6 Training experience

The training experience score of the respondents ranged from 2 to 11 days with a mean of 5.49 days and standard deviation of 2.12 days. The respondents were classified into three categories namely 'low' (up to 3), 'medium' (4-7) and 'high' (above7). The distribution of the farmers on the basis of the training experience scores is shown in Table 4.1. The highest proportion (68.0 percent) of the respondents had medium training experience while 22.3 percent had low training orientation and 9.7 percent having high training experience, respectively. The result might be due to that the participants may receive training moderately from different organization.

4.1.7 Agricultural knowledge

The agricultural knowledge scores of the respondents ranged from 11 to 29, against the possible range of 0 to 29. The mean of 22.0 and standard deviation is 3.36 (Table 4.1). On the basis of agricultural knowledge scores the farmers were categorized into three groups namely 'low' (11-18), 'medium' (19-25) and 'high' (26-29) as shown in Table 4. This table shows that highest proportion (68.0 percent) of the respondents had medium agricultural knowledge while 17.5 percent having high agricultural knowledge and 14.6 percent had low agricultural knowledge. It can be clearly seen from the findings that an overwhelming majority of the farmers had either medium to high knowledge in different agricultural aspects. Such findings are quite logical because most of the respondent farmers are closely attached with farming activities and these experiences increase their agricultural knowledge.

4.1.8 Extension media contact

The extension media contact scores could range from 0 to 30. However, the scores of the respondents ranged from 7 to 21 with average scores of 11.55 and standard deviation of 3.25. The respondents were classified into three categories namely 'low' (up to 11), 'medium' (12-15) and 'high' (above 15) according to their responses as shown in the Table 4.1. The data in Table 4.1 indicates that most of the respondent farmers (56.3 percent) had low contact with different extension media as compared to 29.1 percent had medium contact and 14.6 percent had high contact. This may be due to the reason that the respondents contact strongly with the extension media.

4.1.9 Organizational participation

The observed scores of organizational participation of the respondent farmers ranged from 2.5 to 33 years. The average scores were 9.73 and standard deviation was 4.47. The respondent farmers were classified into three categories namely 'low' (up to 13), 'medium' (14-23) and 'high' (above 23) according to their responses is shown in the Table 4.1. The table shows that the highest proportion (64.1 percent) of the respondents had low organizational participation followed by 31.1 percent had medium and 4.9 percent had high organizational participation. The finding indicates that the farmers of the study area were not adequately participated with different types of organizations. The rural society of Bangladesh maintain traditional norms, beliefs, customs and these tradition not allowed the farmers to involve in different organizations more intensively.

4.2 Livelihood Improvement based on Five Capitals

This section deals with the livelihood improvement of participants in each of the five capitals viz. human, social, financial, physical and natural capitals. These are the given below:

4.2.1 Improvement of human capital

The possible range of improvement score of human capital of the farmers could range from 9 to 45 whiles the observed range of 11 to 25 with an average of 18.13 and standard deviation of 2.89, respectively (Table 4.2). They were classified into three categories namely 'low' (up to 17), 'medium' (18-22), and 'high' (above 22). The highest proportion (64.1 percent) of the respondents had medium status of improvement of human capital followed by 28.2 percent had low and 7.8 percent had high improvement of human capital.

Table 4.2 Capitalwise livelihood improvement status of the participants (N=103)

Livelihood improvement	Range		Respondents			Mean	Std. deviation
	Possible	Observed	Category	Frequency	Percent		
Human capital	9-45	11-25	Low (up to17) Medium (18-22) High (above 22)	29 66 8	28.2 64.1 7.8	18.13	2.89
Social capital	9-45	7-21	Low (up to12) Medium (13-16) High (above 16)	38 47 18	36.4 45.6 17.5	13.37	2.76
Financial capital	9-45	4-20	Low (up to 9) Medium (10-14) High (above 14)	18 57 26	17.5 57.3 25.2	18.82	2.49
Physical capital	9-45	11-24	Low (up to 16) Medium (17-20) High (above 20)	34 57 12	33.0 55.3 11.7	17.42	2.88
Natural capital	9-45	13-25	Low (up to 17) Medium (18-21) High (above 21)	13 84 6	12.6 81.6 5.8	19.06	1.85

4.2.2 Improvement of social capital

The possible range of improvement of social capital score of the farmers could range from 9 to 45 while the observed range of 7 to 21 with average of 13.37 and a standard deviation of 2.76, respectively (Table 4.2). They were classified into three categories namely 'low' (up to 12), 'medium' (13-16), and 'high' (above 16). The highest proportion (45.6 percent) of the respondents had medium status of improvement of social capital followed by 36.4 percent had low improvement and 17.5 percent had high improvement of social capital.

4.2.3 Improvement of financial capital

The possible range of improvement of financial capital score of the farmers could range from 9 to 45 while the observed range of 4 to 20 with an average of 18.82 and a standard deviation of 2.49, respectively (Table 4.2). They were classified into three categories namely 'low' (up to 9), 'medium' (10-14) and 'high' (above 14). The highest proportion (57.3 percent) of the respondents had medium status of livelihood improvement of financial capital followed by 25.2 percent had high improvement and 17.5 percent had low improvement of financial capital.

4.2.4 Improvement of physical capital

The possible range of improvement of physical capital score of the farmers could range from 9 to 45 while the observed range of 11 to 24 with an average of 17.42 and a standard deviation of 2.88, respectively (Table 4.2). They were classified into three categories namely 'low' (up to 16), 'medium' (17-20) and 'high' (above 20). The highest proportion (55.3 percent) of the respondents had medium improvement of physical capital followed by 33.0 percent had low improvement and 11.7 percent had high improvement of physical capital.

4.2.5 Improvement of natural capital

The possible range of improvement of natural capital score of the farmers could range from 9 to 45 while the observed range of 13 to 25 with an average of 19.06 and a standard deviation of 1.85, respectively (Table 4.2). They were classified into three categories namely 'low' (up to 17), 'medium' (18-21) and 'high' (above 21). The highest proportion of (81.6 percent) of the respondents had medium improvement of natural capital followed by 12.6 percent had low improvement and 5.8 percent had high improvement of natural capital.

A comparative observation of the Table 4.2 gives a clear idea that the highest variation among the participant farmers existed regarding human capital having a standard deviation of 2.89. On the contrary, the lowest variation of standard deviation 1.85 was in natural capital. Livelihood improvement status regarding the rest three capitals namely –social, financial and physical capitals was more or less similar.

4.2.6 Overall livelihood improvement

The observed score of overall livelihood improvement of the respondents ranged from 51 to 101 percent while the possible range was 45 to 225 (Table 4.3). The mean score of livelihood improvement status was 81.83 percent with standard deviation of 9.43. Based on the possible range of livelihood improvement of the farmers, they were classified into three categories namely 'low' (up to 71), 'medium' (72-90) and 'high'(above 90). Findings show that among the respondents 66.0 percent belonged to medium status of livelihood improvement while 19.4 percent had low status of livelihood improvement and 14.6 percent had high status of livelihood improvement. The findings implied that most of the respondents were clustered around the medium category of livelihood improvement.

Table 4.3 Categorization of the farmers according to livelihood improvement status

Range		Participants			Mean	Std. dev.
Possible	Observed	Category	Freq.	Percent		
45-225	51-101	Low (up to 71)	20	19.4	81.83	9.43
		Medium (72-90)	68	66.0		
		High (above 90)	15	14.6		

The overall livelihood improvement status of the farmers was medium. This indicates that improvement occurred regarding livelihood status among the farmers. But still it is possible to improve their livelihood status of the farmer because only 14.6 percent of the farmers had highly improved livelihood status.

4.3 Relationships between the Dependent and Independent Variables

This section deals with the findings of the relationships between the selected dependent and independent variables of the study. The independent variables of the farmers are: age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension media contact and organizational participation. The dependent variables were livelihood improvement of farmers through participation in SERP program. Pearson's Product Moment Correlation of co-efficient (r) was used to determine the relationships between the selected independent and dependent variables and to accept or reject the null hypothesis. Five percent (0.05) and one percent (0.01) level of significance was used as the basis for acceptance or rejection of a null hypothesis. A summary of the correlation analysis is presented in Table 4.4 and the correlation matrix in the Appendix- B.

Table 4.4 Relationships between the dependent and independent variables

Dependent variable	Independent variables	Computed values of 'r' with 101 df	Tabulated value of 'r'	
			0.05 level	0.01 level
Livelihood improvement	Age	-0.037	± 0.194	± 0.252
	Education	0.300**		
	Family size	-0.122		
	Farm size	0.227*		
	Annual income	0.343**		
	Training experience	0.180		
	Agricultural knowledge	0.529**		
	Extension media contact	0.100		
	Organizational participation	0.170		

*Correlation is significant at the 0.05 level of significance and
** Correlation is significant at the 0.01 level of significance

4.3.1 Relationships between age and livelihood improvement of farmers

The computed correlation coefficient between age of the participants and their livelihood improvement status was -0.037 (Table 4.4). Based on the computed 'r' value the relationship between age and livelihood improvement of participation was not significant. Hence, the concerned null hypothesis could not be rejected. The researcher concluded that age had no relationship with their livelihood improvement.

4.3.2 Relationships between education and livelihood improvement of farmers

The computed correlation coefficient between education of the respondents and their livelihood improvement status was 0.300 (Table 4.4). Based on the computed 'r' value the relationship between education and livelihood improvement of respondents was significant at 0.01 level of significance with 101 df. and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there was a positive correlation between the educations of the respondents with their livelihood improvement through participation in SERP program.

4.3.3 Relationships between family size and livelihood improvement of farmers

The computed correlation coefficient between family size of the respondent farmers and their livelihood improvement was -0.122 (Table 4.4). Based on the computed 'r' value the relationship between family size and livelihood improvement of respondents was non-significant and followed a negative relationship. Hence, the concerned null hypothesis could

not be rejected. From the above result, it could be concluded that, livelihood improvement was decreased with the increase in family size.

4.3.4 Relationships between farm size and livelihood improvement of farmers

The computed correlation coefficient between farm size of the respondents and their livelihood improvement was 0.227 (Table 4.4). Based on the computed 'r' value the relationship between farm size and livelihood improvement of respondents was significant at 0.05 level of significance with 101 df. and followed a positive trend. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there was a positive correlation between the farm size of the respondents with their livelihood improvement.

4.3.5 Relationships between annual income and livelihood improvement of farmers

The computed correlation coefficient between annual income of the respondents and their livelihood improvement was 0.343 (Table 4.4). Based on the computed 'r' value the relationship between annual income and livelihood improvement of respondents was significant at 0.01 level of significance with 101 df. and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there was a positive correlation between the annual incomes of the respondents with their livelihood improvement.

4.3.6 Relationships between training experience and livelihood improvement of farmers

The computed correlation coefficient between training experience of the respondents and their livelihood improvement was 0.180 (Table 4.4). Based on the computed 'r' value the relationship between training experience and livelihood improvement of respondent was not significant. Hence, the concerned null hypothesis could not be rejected. The researcher concluded that training experience had no relationship with their livelihood improvement.

4.3.7 Relationships between agricultural knowledge and livelihood improvement of farmers

The computed value of coefficients of correlation between the agricultural knowledge and livelihood improvement was found 0.529 (Table 4.4). Based on the computed 'r' value the relationship between agricultural knowledge and livelihood improvement of the respondents was significant at 0.01 level of significance with 101 df. and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there was a positive correlation between the agricultural knowledge of the respondents with their livelihood improvement.

4.3.8 Relationships between extension media contact and livelihood improvement of farmers

The computed correlation coefficient between Extension media contact of the respondents and their livelihood improvement was 0.100 (Table 4.4). Based on the computed 'r' value the relationship between extension media contactand livelihood improvement of respondents was not significant. Hence, the concerned null hypothesis could be rejected. The researcher concluded that extension media contact had no relationship with their livelihood improvement.

4.3.9 Relationships between organizational participation and livelihood improvement of farmers

The computed correlation coefficient between organizational participation of the respondents and their livelihood improvement was 0.170 (Table 4.4). Based on the computed 'r' value the relationship between organizational participation and livelihood improvement of respondents was not significant. Hence, the concerned null hypothesis could not be rejected. The researcher concluded that organizational participation had no relationship with their livelihood improvement.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of findings, conclusions and recommendations are chronologically given as below:

5.1 Summary of Findings

The present study was undertaken with the objectives, to determine the livelihood status of SERP program participants as perceived by them in terms of the livelihood capitals, to determine the selected characteristics of SERP program participants and to explore the relationships between livelihood improvements of the SERP participants with their selected characteristics. The study was conducted in four unions Radhanagar, Balarampur, Mirzapur, Alowakhowa of Atwari upazila of Panchagarh district. The total numbers of SERP program participants 1030 were the targeted population for the study. But data were collected from a sample rather than from the whole population. A total of 10 percent SERP program participants of about 103 farmers were randomly selected as sample by using simple random sampling method. Data were collected by the researcher herself during 17 May to 25 June, 2014. In this study, livelihoods improvement of the SERP program participants was the dependent variable. The selected characteristics of those people were considered as the independent variables of the study these are age, education, family size, farm size, annual income, training experience, agricultural knowledge, extension media contact and organizational participation.

5.1.1 Individual characteristics of the SERP program participants

It was found that 68.9 percent of the respondents had medium aged while 29.1 percent had young aged and 1.9 percent had old aged, respectively. The relationship between age and livelihood improvement of the respondents was not significant.

In case of education 12.6 percent respondents can sign their name only, 15.5 percent had education of primary level, 65.0 percent had secondary education and only 6.8 percent respondents had higher secondary education. The relationship between education and livelihood improvement of respondents was significant at 0.01 level of significance with 101 df. and a positive relationship.

The percentage of the respondents belonging to medium family category was 82.5 percent, 14.6 percent under small family and 2.9 percent under large family category. The relationship between family size and livelihood improvement of the respondents was not significant.

It was found that 4.9 percent of the farmers belonging to marginal farm sized category compared to 89.3 percent had small farm and 5.8 percent had medium farm size respectively. The relationship between farm size and livelihood improvement of respondents was significant at 0.05 level of significance with 101 df. and a positive relationship.

In case of annual income 52.4 percent of the respondent farmers had low income followed by 39.8 percent having medium income and 7.8 percent high annual income. The relationship between annual income and livelihood improvement of the respondents was significant at 0.01 level of significance with 101 df. and a positive relationship.

It was found that 68.0 percent of the respondents had medium training experience while 22.3 percent had low training experience and 9.7 percent had high training experience, respectively. The relationship between training experience and livelihood improvement of the respondents was not significant.

The highest proportions (68.0 percent) of the respondents had medium agricultural knowledge while 17.5 percent had high agricultural knowledge and 14.6 percent had low agricultural knowledge. The relationship between agricultural knowledge and livelihood improvement of the respondents was significant at 0.01 level of significance with 101 df. and a positive relationship.

56.3 percent of the respondents had low contact with different extension media compared to 29.1 percent had medium contact and 14.6 percent had high contact. The relationship between extension media contact and livelihood improvement of the respondents was not significant.

It was revealed that 64.1percent of the respondents had low organizational participation followed by 31.1 percent had medium and 4.9 percent had high organizational participation. The relationship between organizational participation and livelihood improvement of the respondents was not significant.

5.1.2 Livelihood improvement on five capitals

The highest proportion (64.1 percent) of the respondents had medium status of improvement of human capital followed by 28.2 percent had low and 7.8 percent had high improvement of human capital.

The highest proportion (45.6 percent) of the respondents had medium status of improvement of social capital followed by 36.4 percent had low improvement and 17.5 percent had high improvement of social capital.

The highest proportion (57.3 percent) of the respondents had medium status of livelihood improvement of financial capital followed by 25.2 percent had high improvement and 17.5 percent had low improvement of financial capital.

The highest proportion (55.3 percent) of the respondents had medium improvement of physical capital followed by 33.0 percent had low improvement and 11.7 percent had high improvement of physical capital.

The highest proportion of (81.6 percent) of the respondents had medium improvement of natural capital followed by 12.6 percent had low improvement and 5.8 percent had high improvement of natural capital.

5.1.3 Overall livelihood improvement status

The observed score of livelihood improvement status of the respondent farmers ranged from 51 to 101 while the possible range was 45 to 225. The average livelihood improvement status mean was 81.83 with a standard deviation was 9.43. Among the respondents about 66.0 percent had medium livelihood improvement while about 19.4 percent had low livelihood improvement and about 14.6 percent had high livelihood improvement.

5.2 Conclusions

On the basis of the findings of the study and their logical interpretations the following conclusions were drawn:

1. The variation regarding different assets of livelihood was minimum, the highest status of livelihood improvement was observed in case of natural capital and that was the lowest in case of social capital. Findings indicate that the farmers' knowledge and skill on agricultural practices, working ability in adverse condition, top down agricultural technology dissemination had been improved to activities of SERP program.

2. The findings indicate that 65.0 percent respondents belonged to secondary level and it may be concluded that education of the study area provides a unique opportunity which is essential for greater livelihood improvement practices in SERP program.

The findings indicate that 89.3 percent of the respondents had small farm size. So, it could be concluded that the larger the farm size, the greater the livelihood improvement status of the farmers.

The findings indicate that 52.4 percent of the respondents had low income. So, it could be concluded that more the annual income, the greater the livelihood improvement status of the farmers.

The findings also indicate that 68.0 percent of the respondents had medium agricultural knowledge. This may be concluded that an individual farmer becomes aware of the recent information on various aspects of livelihood improvement in SERP program.

3. Among the nine selected characteristics of SERP program participants, four characteristics namely; education, farm size, annual income and agricultural knowledge of the respondents had positive significant relationship with their livelihood improvement of the farmers. So, these are the important indicators for increasing livelihood improvement status of the farmers. In case of age, family size, training experience, extension media contact and organizational participation of the respondents had no significant relationship with their livelihood improvement of the farmers.

5.3 Recommendations

5.3.1 Recommendations for policy makers

Some suggestions have been made considering policy perspective for getting farmers development. The following suggestions refer mainly to the program and implementations aspects:

1. Need based training programs should be developed and implemented extensively for the SERP program respondent's for livelihood improvement.

2. Strengthening the linkage between GO and NGO collaboration with farmers of SERP group to make available of the required inputs, technologies and information's for agricultural practices need to be ensured.

3. For increasing farmers' knowledge information delivery system should be developed. Need based information's should be provided in this regard.

5.3.2 Recommendations for further study

The study conducted in some specific location cannot provide all the information for proper understanding about farmers' livelihood improvement and related matters. The following recommendations are suggested for further study in this connection:

1. The present study on the livelihood improvement was conducted in one selected district of Bangladesh. Findings of this study should be verified by similar research in other areas.

2. This study investigated the relationship of nine characteristics of the farmers with their livelihood improvement status. Therefore, further research could be conducted to assess the relationships of other characteristics of the farmers with the same.

3. In this study livelihood improvement of SERP participants have been investigated. But there are so many NGOs as well as GOs which are working for agricultural development in the other community of this country. Those organizations should be included in future.

4. The study was conducted only with the SERP beneficiaries of the study area. It is necessary to conduct similar studies involving all types of beneficiaries and non-beneficiaries.

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APPENDIX-A

English Version of Interview Schedule

Department of Agricultural Extension
Hajee Mohammad Danesh Science and Technology University
Dinajpur
Livelihood Improvement of Farmers through Participation in SERP Program

Name of the respondent..... Serial No: .....

Village..... Union.....

Upazila..... District.....

(Please provide necessary information for the following issues)

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

2. Education: Please mention your level of education

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

b) Can sign name only: (.....)

c) Have passed class: (.....)

3. Family Size: Please indicate the numbers of your family members

Male	Female	Total

4. Farm Size: Please indicate area of your land according to use

Sl. No.	Use	Local Unit	Hectare
1.	Homestead area		
2.	Own land under own cultivation		
3.	Land taken from others as lease		
4.	Land taken from others as borga		
5.	Land given to others as borga		
Total land (Equation) = {1+2+3+(4×½)+(5×½)}			

5. Annual income: Please indicate the production and income of your family has earned last year from different sources.

A. Agricultural sources:

Sl.	Source of income	Production (Kg)	Market price (Tk.)	Total price (Taka)
A.	Agriculture			
B.	Fisheries			
C.	Livestock			
D.	Service			
E.	Small business			
F.	Others(please specify)			
Total income =				

6. Training experience: Did you receive any training related to agricultural activities?

Yes..... No.....

If yes, please mention the duration of training:.....days.

7. Agricultural knowledge: Please answer the following questions

Sl. No.	Questions	Total marks	Marks obtained
a. Field crop related			
1.	Name of two modern rice varieties.	2	
2.	Name two beneficial insect of rice.	2	
3.	State two criteria of good seeds.	2	
4.	What do you mean by soil fertility?	3	
5.	Name two crops of green manure fertilizer.	2	
b. Vegetable related			
1.	Mention two winter vegetable varieties.	2	
2.	Name two harmful insects of vegetable.	2	
3.	Name of two profitable vegetables which are quick growing and low cost in production.	2	
c. Poultry related			
1.	Name of two disease of poultry.	2	
2.	Proper vaccination time of poultry.	3	
d. Fisheries related			
1.	Mention two fast growing varieties of fish.	2	
2.	Causes of liming in pond.	3	
3.	Name two predatory fish species.	2	

8. Extension media contact: Please mention about your extent of contact with the following extension media.

Name of extension media		Frequency of contact			
		High	Moderate	Low	Not at all
Individual contact	Neighbors and friends				
	Sub Assistant Agricultural Officer				
	NGO personnel				
Group contact	Result demonstration				
	Group discussion				
	Farmer's field day				
Mass media contact	Listening radio program				
	Watching TV program				
	Listening folk song program				
	Reading daily newspaper				

9. Organizational participation: Please mention the nature of participation with following organizations

Sl. No.	Name of the organization	Nature of participation						
		Not involved	As general member		As executive committee member		As executive officer (chairman/president)	
			Yes?	Duration	Yes?	Duration	Yes?	Duration
1.	Common Interest Group(CIG)							
2.	NGO group							
3.	School committee							
4.	Market committee							
5.	Moshjid/Madrasah committee							
6.	Others							

10. Livelihood Improvement

A. Human capital: Please express your opinion about the following statements

Sl. No.	Statements	SA	A	N	DA	SDA
1 (-)	Lack of skill and knowledge on improved varieties, production and preservation and marketing still persisting					
2 (+)	Participation in training program(s) of SERP for improving technical knowledge					
3 (-)	Inadequate training facilities in the rural areas still persisting					
4 (+)	Exchanging ideas from visit to others' field					
5(+)	Improves knowledge on different crop (including rice, fish, poultry etc.) production technologies					
6 (+)	Experimentally the technical knowledge gathered by SERP program in own situation					
7 (-)	Insufficient awareness on health and nutrition still persisting					
8 (+)	Increased skill on different crop (rice/fish) harvesting, storage/preservation and other post-harvest operation					
9 (+)	Increase awareness and knowledge on health and nutrition					

(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

B. Social capital

Sl. No.	Statements	SA	A	N	DA	SDA
1 (+)	Getting help from relatives, friends, and local leaders					
2 (-)	Social constraints to participate in social group still persisting					
3 (+)	Increased advocacy knowledge in different social issues					
4 (+)	Participating in social group meetings regularly					
5 (+)	Getting assistance from SERP service providers					
6 (-)	Land ownership problem with relatives or neighbors still persisting					
7 (+)	Increased social status, security and trust					
8 (+)	Increased access to social groups					
9 (-)	Poor linkage with SERP service provider					

(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

C. Financial capital

Sl. No.	Statements	SA	A	N	DA	SDA
1 (-)	Lack of savings or investment capitals still persisting					
2 (+)	Borrowing credit from NGOs, local money lender during financial crisis					
3 (+)	Increased access to institutional credits					
4 (+)	Earning money by alternate agricultural activities production					
5 (-)	Credit facilities are not adequate still persisting					
6 (+)	Receiving monetary support from SERP					
7 (+)	Increased total family income (at least 30%)					
8 (+)	Increased amount of savings (at least 30%)					
9 (-)	Seasonal market price of crop affecting income still persisting					

(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

D. Physical capital

Sl. No.	Statements	SA	A	N	DA	SDA
1 (+)	Increased access to quality seed, fertilizer insecticides and irrigation facilities					
2 (-)	Crop and seed storage facilities are still not well developed					
3 (+)	Increased amount of livestock, poultry and fish					
4 (+)	Mortgaging land for managing money					
5 (+)	Use of unused land around house					
6 (+)	Ensuring improved environment for poultry and livestock production					
7 (-)	Unavailability of quality seed, fertilizer insecticides and irrigation on time still persisting					
8 (+)	Improved the housing condition					
9 (-)	Housing facilities is still not well developed					

(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

E. Natural capital

Sl. No.	Statements	SA	A	N	DA	SDA
1 (-)	Regular crop damage due to natural calamities still persisting					
2 (+)	Growing poultry animal at small scale					
3 (-)	Natural water body is still not sufficient					
4 (+)	Produce multi-crop in a single year					
5 (+)	Growing natural vegetation around house stead and unused lands					
6 (-)	Land is still not fertile enough for good production					
7 (+)	Increased intensive cropping					
8 (+)	Increased natural vegetation					
9 (+)	Increased total production of different crops (including rice, poultry, livestock and fish)					

(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

Thanks for your kind co-operations.

Signature of the interviewer with date

APPENDIX-B

Correlation Matrix between Dependent and Independent Variable

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Y
X1	1									
X2	-0.491**	1								
X3	0.586**	-0.254**	1							
X4	0.149	0.013	0.265**	1						
X5	0.057	0.174	0.144	0.724**	1					
X6	-0.001	-0.071	0.027	0.293**	0.259**	1				
X7	-0.127	0.301**	-0.187	0.222*	0.400**	0.181	1			
X8	0.026	0.076	0.070	0.365**	0.333**	0.309**	0.073	1		
X9	0.559**	-0.167	0.148	0.125	0.170	-0.029	0.083	0.084	1	
Y	-0.037	0.300**	-0.122	0.227*	0.343**	0.180	0.529**	0.100	0.170	1

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

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

X1 = Age
X2 = Education
X3 = Family size
X4 = Farm size
X5 = Annual income
X6 = Training experience
X7 = Agricultural knowledge
X8 = Extension media contact
X9 = Organizational participation
Y = Livelihood improvement