LIVELIHOOD IMPROVEMENT OF THE FARM FAMILIES THROUGH PARTICIPATION IN *EKTEE BARI EKTEE KHAMAR* PROJECT

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This is to certify that the thesis entitled, **"LIVELIHOOD IMPROVEMENT OF THE FARM FAMILIES THROUGH PARTICIPATION IN *EKTEE BARI EKTEE KHAMAR* PROJECT"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN AGRICULTURAL EXTENSION,** embodies the result of a piece of bona fide research work carried out by **ANTARA ANEKA KEYA,** Registration No. **17-08203** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated: June, 2018
Place: Dhaka, Bangladesh

....
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Dedicated
To
My Beloved
Parents

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ABSTRACT

The study aimed at assessing the livelihood improvement of the *Ektee Bari Ektee Khamar (EBEK)* project farmers and finding out the relationships between selected characteristics of the farmers and their livelihood improvement. A pre-tested interview schedule was used for collecting data from the farmers of Dinajpur Sadar and Birgonj upazila under Dinajpur district. Data were collected from 115 sample farmers selected by Stratified sampling method procedure from a population of 384 OHOF project farmers from 09 September to 28 October, 2018. Livelihood improvement of the farmers was measured by 5 point rating scale. Among the farmers, 50.4 percent belonged to high status of livelihood improvement while 31.3 percent of them had medium status of livelihood improvement and 18.3 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 physical capital and it was the lowest in case of financial capital. Six out of ten selected characteristics of the farmers such as age, education, training experience, agricultural knowledge, use of information sources and preference of information sources had significant positive relationships with their livelihood improvement. Based on problem confrontation the first major problem is 'lack of quality seeds and seedlings' (PCI 237.6), the second major problem is 'low training facilities' (PCI 215.6) and the third priority problem of the famers is 'lack of knowledge on storage, processing and preservation' (PCI 186.0). The OHOF project farmers' top most three suggested solutions for solving the problems are 'necessary credit support should be provided as and when necessary', 'arrangement of organized marketing system with reasonable price of the produces' and 'timely and demand led advice by the extension personnel at farmers doorstep', respectively.

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CHAPTER 1
INTRODUCTION

1.1 General Background

Bangladesh is an agricultural country with an area of 147,570 square km and the population is 168.1 million with the growth rate of 1 percent (BBS, 2017). About 85 percent of the total population live in rural area and are directly or indirectly engaged in a wide range of agricultural activities. The agriculture sector accounts for 14.10 percent of the country's GDP (Bangladesh Economic Review, 2017). The livelihood of the people of the country depends upon agriculture for their employment, nutrition, poverty alleviation, human resource development and food security.

Agriculture sector is the single largest contributor to income and employment generation and accepted the challenge to achieve self-sufficiency in food production. It shoulders the responsibility to reduce rural poverty. For their livelihoods rural people depend on land, which is fertile but extremely vulnerable. Again the socio-economic condition of the Farm families of the country is very poor. The farm families are the main contributor to the economy of the country and also the major portion of the population. To develop the country it is very important to develop the household situation of the farm families.

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. The government has taken steps for developing the poor rural communities and has accorded top priority to livelihood development programs. Different projects 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.

Ektee Bari Ektee Khamar (EBEK) project is one of the major steps taken to develop the situation of the poor farm families and reduce the poverty level of the country. The success of *Ektee Bari Ektee Khamar* approach depends on the adoption and practice of the Farm families and for better adoption and practice we have to know the perception of the Farm families ' toward *Ektee Bari Ektee Khamar* approach. The major objective of the *EBEK*

project is to improve livelihood status through farming and income generation. To address this issue, the smallholder's i.e. landless, marginal Farm families are being given technical support through *EBEK* project. Farm families are also receive training on various subjects like various type of farm based income generating activities includes, vegetable production, poultry and livestock development, fish culture, etc. They are also expected to utilize their knowledge and skills in order to increase their income and thereby improve their livelihoods. The project focuses on alleviating poverty and increasing food security, diversification of high value non-cereal crops such as fruit and vegetables, and development of non-crop agriculture such as fishery, poultry and livestock.

1.2 Statement of the Problem

Ektee Bari Ektee Khamar project is undertaken for the generation and sustainability of overall management of different production programs as well as marketing, preservation and storage of produced commodities at field level. Farm families are the main executor and beneficiaries of this project. The Farm families can produce diversified products which will ensure their food security and also economic stability. Integration of products in a balanced way will also ensure resource recycling. For the successful adoption and sustainability of this project it is very important to know the livelihood improvement scenario of the Farm families through participation in this project.

In the view of the above discussion, facts and the need for having an understanding of the livelihood improvement of the Farm families through participation in *EBEK* project for better implementation and adoption of the project. The present study entitled "livelihood improvement of the Farm families through participation in *Ektee Bari Ektee Khamar* project" was undertaken. The study aimed at providing information regarding the following questions:

i) What is the present level of livelihood improvement status of the *EBEK* project Farm families ?

ii) What are the characteristics of the *EBEK* project farmers?

iii) What relationships exist between selected characteristics of the *EBEK* project Farm families and their livelihood improvement?

iv) What are the problems confronted by the *EBEK* project Farm families in agricultural activities?

1.3 Specific Objectives of the Study

In 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 and describe the livelihood improvement status of *EBEK* project Farm families as perceived by them in terms of the following livelihood capitals:

    i. Human capital,
    ii. Social capital,
    iii. Financial capital,
    iv. Physical capital, and
    v. Natural capital.

2. To determine and describe the selected characteristics of *EBEK* project Farm families . The characteristics are:

    i. Age
    ii. Education,
    iii. Family size,
    iv. Farm size,
    v. Annual income
    vi. Training experience,
    vii. Agricultural knowledge,
    viii. Use of information sources, and
    ix. Preference of information sources.

3. To explore the relationships between livelihood improvement of the *EBEK* project Farm families with their selected characteristics.

4. To identify problem confrontation by the *EBEK* project Farm families in agricultural activities.

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 Farm families . Considering this target they are mainly launching different projects 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 *Ektee Bari Ektee Khamar (EBEK)* project 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 policy planners in formulating and designing for future livelihood improvement program.

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 and Hatt, 1952). The researcher had the following assumptions in mind while undertaking this study.

i. The respondents selected of the study were competent to satisfy the queries designed by the investigator.

ii. The responses furnished by the respondent will be valid and reliable.

iii. Information furnished by the beneficiaries, included in the sample, is the representative of the whole population of the study.

iv. The researcher who acted as interviewer was well adjusted to the social environment of the study area. Hence, the data collected by him from the respondents were free from bias and prejudice.

v. 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 Farm families .

vi. The researcher who acted as interviewer was well adjusted to the social environment of the study area. Hence, the respondents furnished their correct opinions without hesitation.

vii. The findings of the study will have general implication to any part of the country where, physical, socio-economic and cultural conditions do not differ much from the study area.

1.6 Limitations of the Study

The study was undertaken with a view to have an understanding of the livelihood improvement of the Farm families ' through participation in *Ektee Bari Ektee Khamar* project. In order to conduct the research in a meaningful and manageable way it becomes necessary to impose some limitations in regard to certain aspects of the study. Considering the time, money and other resources of the researchers, the following limitations have been observed throughout the study:

i. The study was confined to Dinajpur Sadar and Birgonj upazila under Dinajpur district.

ii. There were many Farm families in the study area but only the *EBEK* project Farm families were selected for the study.

iii. Characteristics of the rural Farm families are many and varied, but time, money and other resources did not permit the researcher to include all of them in the study. Hence, only nine characteristics of the Farm families were selected for investigation in this area.

iv. Various constraints are likely to be faced by the Farm families . However, fifteen problems have been considered for investigation in this study.

v. The investigation was depended on the data furnished by the selected Farm families during their interview.

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

vii. Reluctance of the Farm families to provide information was overcome by establishing proper rapport.

viii. The findings of the study were particularly applicable to the study area. However, these may also have general implications for other areas.

1.7 Definition of the Terms

For clarity of understanding certain terms frequently used throughout the study are defined and interpreted as follows:

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 (DFID, 2002).

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 (DFID, 2002). 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 flows useful livelihood is derived.

Human capital: The skills, knowledge, ability to labor and good health 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 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.

Ektee Bari Ektee Khamar **project:** This is mainly a project taken by the Government of Bangladesh. In this project integrated farming is practiced by the Farm families who are poor and landless. The government gives the Farm families training, credit supply and input materials initially to adopt this approach and improve their livelihood.

Problems confrontation: Problems confrontation are the elements which hinder/ resist/ oppose in doing some activities of operation in a certain period. In other words the problems confrontation in agricultural activities is those, which act as the barriers to the agricultural activities by the Farm families .

CHAPTER 2
REVIEW OF LITERATURE

This chapter deals with review of past researches 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 the Farm families through participation in *Ektee Bari Ektee Khamar* project". That is no direct literature is available for this research. Thus, different literatures relevant with this research are cited in this chapter. There are three sections in this chapter. Concepts of sustainable livelihood have been presented in the first section, while the second section deals with literature on relationships between the selected characteristics of the Farm families and their livelihood. The final section presents the conceptual framework of the study.

2.1 Concept of Sustainable Livelihood and the Framework

According to Department for International Development (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 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. The individual components of the framework are described in short below.
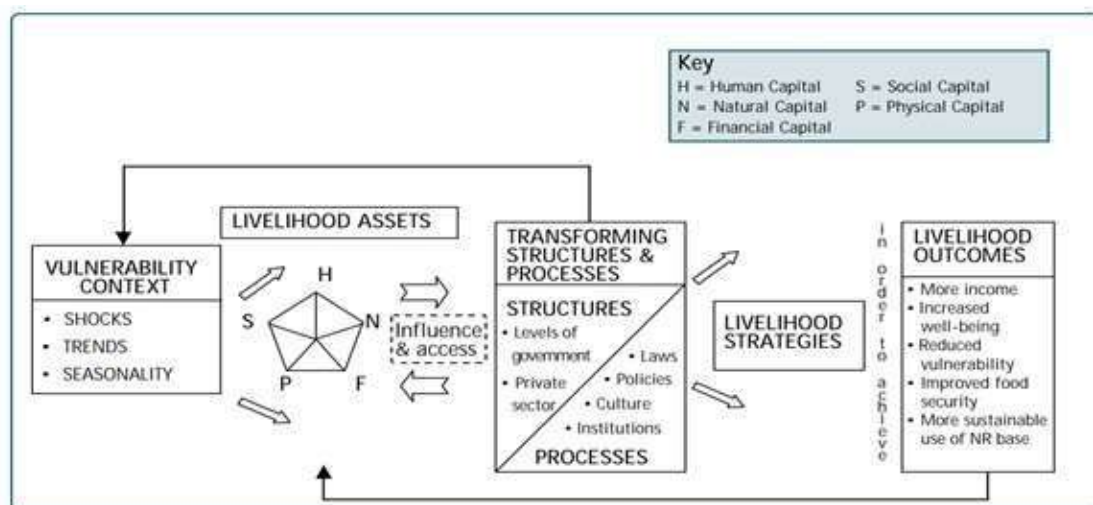
Figure 2.1 Sustainable livelihood framework (DFID, 1999)

The framework 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.

2.1.1 Vulnerability context: 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:

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' is 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 *EBEK* were selected as Explanatory variables of the study. The available literature regarding relationships 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 Farm families 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 medi-care 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families 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 Farm families had significant positive relationship with the livelihood improvement.

2.2.8 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 Farm families 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 Farm families 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 has to significant relationship with the livelihood status.

2.2.9 Use of information sources 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 Farm families 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 Farm families 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 Farm families 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 Farm families '.

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.

2.2.10 Preference of information sources and livelihood improvement

There is no direct review of literature was found by several search of internet, journal and previous thesis on preference of information sources and the livelihood improvement through participation in different projects.

2.3 Conceptual Framework of the Study

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. These models already been drawn to make people understands the livelihood complexity. These frameworks 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 DFID (1999) framework 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. Thus the researcher used the DFID (1999) framework for conceptualizing the present study.

The conceptual framework of Rahman (2002) and Rashid (2006) was kept in mind while farming the structural arrangement for the focus and Explanatory variables of this research. This study was concerned with focus variable named livelihood improvement and the selected individual characteristics of *EBEK* project participants as Explanatory variables. There are many factors which influence livelihood improvement. According to DFID (2000), there are five 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. These five capitals are used for measuring the livelihood improvement of the *EBEK* project participants. There are many characteristics which influence the livelihood improvement of *EBEK* project 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
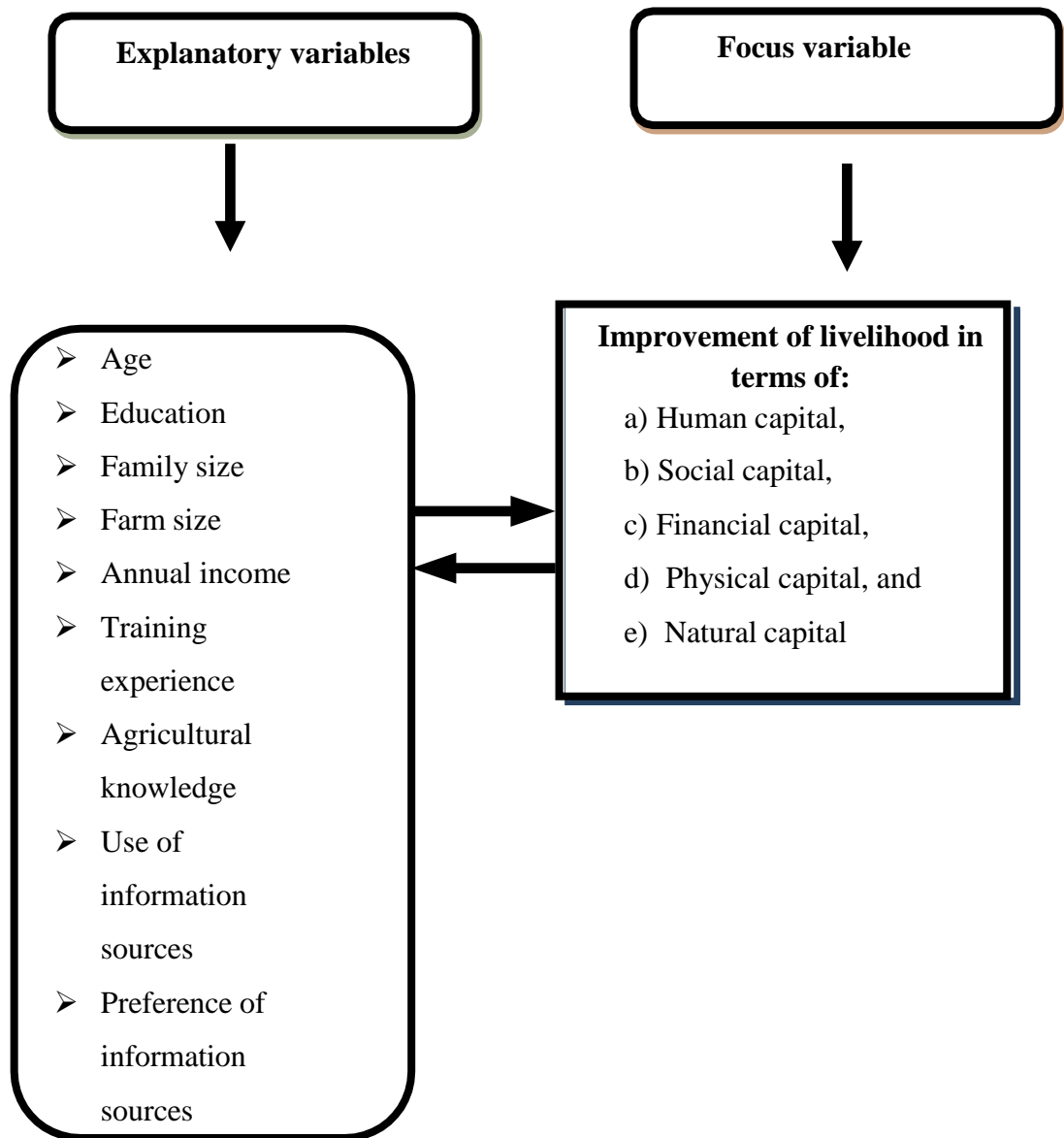
Figure 2.2 Conceptual framework of the study

CHAPTER 3
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 Dinajpur Sadar and Birgonj upazila under Dinajpur district. Figure 3.1 show the map of Dinajpur Sadar and Birgonj upazila of Dinajpur district.

3.2 Population and Sample of the Study

Stratified Sampling Method procedure was followed for sample selection of the study. In the first stage Sadar and Birgonj upazila were selected randomly from the thirteen upazilas of Dinajpur district. There are 206 project Farm families in Sadar upazila and 178 project Farm families in Birgonj upazila under *Ektee Bari Ektee Khamar* project and these Farm families constitute the population of the study. A list of these population Farm families was prepared with the help of respective Upazila Shomajsheba Offices. Data were collected from a sample rather than from the whole population. A total of 30 percent of the population consisting 115 *EBEK* project Farm families were randomly selected as sample by using simple random sampling method from the population list. Thus, the total sample size is 115. Table 3.1 shows the population and sample distribution of the study. A reserve list of 11 Farm families (10% of the sample) also prepared for use in case of unavailability of sample Farm families during interview.

Table 3.1 Distribution of population and sample of the respondents

Name of upazila	Total *EBEK* Farm families	Sample	Reserve list
Sadar	206	62	6
Birgonj	178	53	5
Total	384	115	11
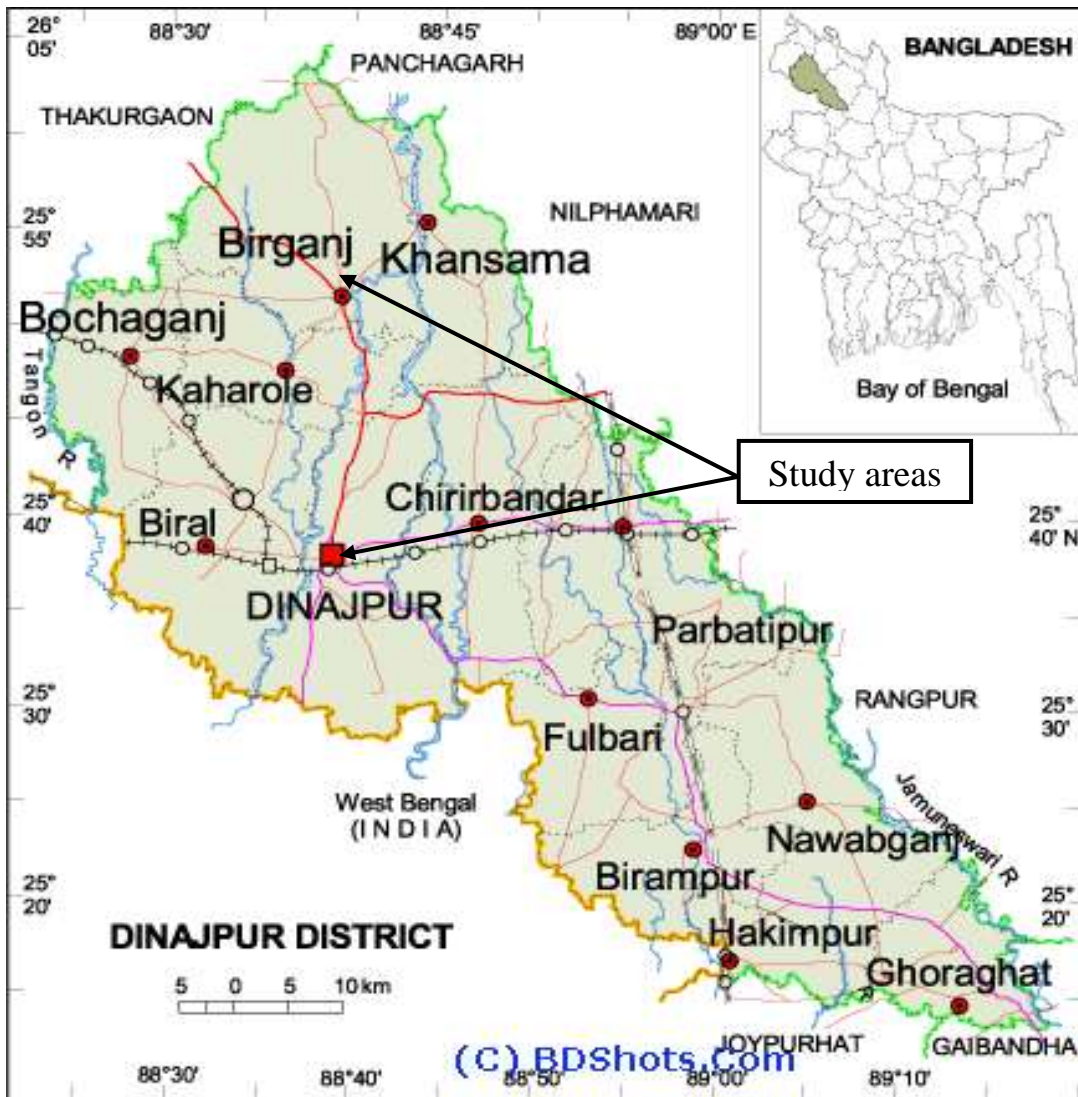
Figure 3.1 Map of Dinajpur district showing the study areas (Bangladesh inset)

3.3 Measurement of the Variables of the Study

Measurement of the variables constitutes an important task of any social research. In this study, the livelihood improvement of participants was the focus variable. The selected characteristics of sampled Farm families were considered as the Explanatory variables. 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 explanatory 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 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/her 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 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:

$$FS = \{A+B+C+(D\times\tfrac{1}{2})+(E\times\tfrac{1}{2})\}$$

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, forestry, fisheries, livestock and poultry) and from non-farm sources (service, small business and others) in last 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 Farm families 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 by thirteen (13) questions. These questions were asked 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. The possible score of agricultural knowledge could range from 0 to 30, where 0 indicate no agricultural knowledge and 30 indicated the highest level of agricultural knowledge.

3.3.1.8 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 a 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.

3.3.1.9 Use of information sources

Use of information sources score was computed for each respondent on the basis of his/her extent of use of information sources with seventeen selected information sources. The extent of the use of information sources was determined with a four-point rating scale; 3 for "frequently", 2 for "occasionally, 1 for "rarely", and 0 for "not at all". Total use of information sources score of a respondent was measured by summing of all individual score.

3.3.1.10 Preference of information sources

Preference of information sources score was computed for each respondent on the basis of his extent of preference of information sources with seventeen selected information sources. The extent of the preference of information sources was determined with a four-point rating scale; 3 for "highly", 2 for "moderately", 1 for "low", and 0 for "not at all". Total preference of extension media score of a respondent was measured by summing of all individual score.

3.3.2 Measurement of focus variable

Livelihood improvement status of the ***Ektee Bari Ektee Khamar (EBEK)*** Farm families is the focus 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 five

statements. Each of the statements was put against 5 point rating 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 5 to 25, where 5 indicated no improvement and 25 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 25 to 125, where 25 indicated no improvement and 125 indicated very high improvement of overall livelihood status of the Farm families through participation in *EBEK* project.

3.3.3 Problem confrontation in agricultural activities and the suggested solutions

This variable was measured by computing the extent of various problems of the respondents with 15 selected problems as obtained in response to item number 11 of the interview schedule (Appendix A). Each respondent was asked to indicate the extent of his/her problem confrontation as high, medium, low and not at all and scores assigned as 3, 2, 1 and 0, respectively. A Problem Confrontation Index (PCI) for each 15 selected items was computed by using the following formula:

$$PCI = (P_h \times 3) + (P_m \times 2) + (P_l \times 1) + (P_n \times 0)$$

Where,

P_h = Percentage of the respondents with high problem

P_m = Percentage of the respondents with medium problem

P_l = Percentage of the respondents with low problem

P_n = Percentage of the respondents with not at all

Problem Confrontation Index (PCI) for any one of the selected problem could range from 0 to 255, where, 0 indicated no problem confrontation and 255 indicated severe problem confrontation. The suggested solution of the *EBEK* project Farm families related to the problems they faced in agricultural activities is measured by number of citations. The suggestions are ranked as per the number of citations.

3.4 Instrument for Data Collection

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 110 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 09 September to 28 October, 2018.

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

As defined by Goode and Hatt (1981) "a hypothesis is a proportion, which can be put to a test to determine its validity". Again, hypothesis is a conjectural statement of the relation between two or more variables. There are two criteria for good hypothesis and hypothesis statements. Hypothesis is statements about the relations between variables and hypothesis carry clear implication for testing the stated relations. Hypothesis may be broadly divided into two categories; namely, research hypothesis and null hypothesis.

3.8.1 Research hypothesis

The following research hypothesis was put forward to test relationships between each of the nine characteristics of the Farm families namely- age, education, family size, farm size, annual income, training experience, agricultural knowledge, use of information sources, preference of information sources and the livelihood improvement of the Farm families through participation in *Ektee Bari Ektee Khamar* project.

H_1: Each of nine characteristics was related to the livelihood improvement of the Farm families through participation in *Ektee Bari Ektee Khamar* project.

3.8.2 Null hypothesis

Each of research hypotheses was converted into null form for the purpose of statistical testing. The null hypothesis was as followed-

H_0: There is no relationship between each of the selected characteristics of Farm families and their livelihood improvement through participation in one farm one house project.

CHAPTER 4
FINDINGS AND DISCUSSION

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 livelihood improvement of the *EBEK* project Farm families . The second section deals with the selected characteristics of the One House One House *(EBEK)* project Farm families . The third section deals with the relationships between selected characteristics of the respondent and their livelihood improvement.

4.1 Livelihood Improvement of the *EBEK* Project Farm families

This section deals with the livelihood improvement of the *EBEK* project Farm families . The livelihood improvement in terms of five capitals of livelihood and the overall livelihood improvement are described in this section.

4.1.1 Improvement of human capital

The possible range of livelihood improvement score of human capital of the project Farm families could range from 5 to 25 whiles the observed range is same with a mean of 15.97 and standard deviation of 6.81 (Table 4.1). They were classified into three categories namely 'low' (1-8), 'medium' (9- 17), and 'high' (above 17). The highest proportion (47.0 percent) of the respondents had high status of improvement of human capital followed by 33.9 percent had medium and 19.1 percent had low improvement of human capital.

Table 4.1 Capital wise distribution of the participants (N=115)

Livelihood Improvement	Range		Respondents			Mean	SD
	Possible	Observed	Category	Frequency	Percent		
Human Capital	5-25	5-25	Low (1-8)	22	19.1	15.97	6.81
			Medium (9-17)	39	33.9		
			High (above 17)	54	47.0		
Social capital	5-25	5-25	Low (1-8)	21	18.3	16.77	6.80
			Medium (9-17)	36	31.3		
			High (above 17)	58	50.4		
Financial capital	5-25	5-25	Low (1-8)	18	15.7	15.91	6.98
			Medium (9-17)	42	36.5		
			High (above 17)	55	47.8		
Physical capital	5-25	5-24	Low (1-8)	21	18.3	16.80	6.56
			Medium (9-17)	35	30.4		
			High (above 17)	59	51.3		
Natural capital	5-25	5-24	Low (1-8)	23	20.0	16.71	6.54
			Medium (9-17)	32	27.8		
			High (above 17)	60	52.2		

4.1.2 Improvement of social capital

The possible range of improvement of social capital score of the Farm families could range from 5 to 25 while the observed range is same with a mean of 16.77 and a standard deviation of 6.80 (Table 4.1). They were classified into three categories namely 'low' (1-8), 'medium' (9- 17), and 'high' (above 17). The highest proportion (50.4 percent) of the respondents had high status of improvement of social capital followed by 31.3 percent had medium improvement and 18.3 percent had low improvement of social capital.

4.1.3 Improvement of financial capital

The possible range of improvement of financial capital score of the Farm families could range from 5 to 25 while the observed range is same with an average of 15.91 and a standard deviation of 6.98 (Table 4.1). They were classified into three categories namely 'low' (1-8), 'medium' (9-17) and 'high' (above 17). The highest proportion (47.8 percent) of the respondents had high status of livelihood improvement of financial capital followed by 36.5

percent had medium improvement and 15.7 percent had low improvement of financial capital.

4.1.4 Improvement of physical capital

The possible range of improvement of physical capital score of the Farm families could range from 5 to 25 while the observed range of 5 to 24 with an average of 16.80 and a standard deviation of 6.56 (Table 4.1). They were classified into three categories namely 'low' (1-8), 'medium' (9-17) and 'high' (above 17). The highest proportion (51.3 percent) of the respondents had high improvement of physical capital followed by 30.4 percent had medium improvement and 18.3 percent had low improvement of physical capital.

4.1.5 Improvement of natural capital

The possible range of improvement of natural capital score of the Farm families could range from 5 to 25 while the observed range of 5 to 24 with an average of 16.71 and a standard deviation of 6.54 (Table 4.1). They were classified into three categories namely 'low' (1-8), 'medium' (9-17) and 'high' (above 17). The highest proportion of (52.2 percent) of the respondents had high improvement of natural capital followed by 27.8 percent had medium improvement and 20.0 percent had low improvement of natural capital.

A comparative observation of the Table 4.2 gives a clear idea that the highest variation among the project Farm families existed regarding financial capital having a standard deviation of 6.98. On the contrary, the lowest variation of standard deviation 6.54 and 6.56 was in natural and physical capital, respectively. Livelihood improvement status regarding the rest two capitals namely – social and human capitals was more or less similar.

4.1.6 Overall livelihood improvement

The observed score of overall livelihood improvement of the respondents ranged from 25 to 120 percent while the possible range was 25 to 125 (Table 4.2). The mean score of livelihood improvement status was 82.17 with the standard deviation of 33.19.

Table 4.2 Categorization of the Farm families according to livelihood improvement status

Range		Participants			Mean	SD
Possible	Observed	Category	Freq.	Percent		
25-125	25-120	Low (1-42)	21	18.3	82.17	33.19
		Medium (43-83)	36	31.3		
		High (above 83)	58	50.4		

Based on the possible range of livelihood improvement of the Farm families , they were classified into three categories namely 'low' (1-42), 'medium' (43-83) and 'high' (above 83). Findings show that among the respondents 50.4 percent belonged to high livelihood improvement category while 31.3 percent had medium livelihood improvement and 18.3 percent had low livelihood improvement. The findings implied that most of the respondents were clustered around the medium to high category of livelihood improvement. This indicates that improvement occurred regarding livelihood status among the Farm families .

4.2   Selected Characteristics of the *EBEK* Project Farm families

The ten selected characteristics of the *EBEK* project Farm families such as age, education, family size, farm size, annual income, training experience, agricultural knowledge, organizational participation, use of information sources and preference of information sources are the Explanatory variables of this study. The findings of these characteristics are presented in Table 4.3 and have been discussed in subsequent sub-sections. The respondents were classified in suitable categories for describing their selected characteristics.

4.2.1 Age

Age of the Farm families was found to vary from 21 to 61 with an average of 38.68 and a standard deviation of 10.66. Based on their age the *EBEK* project Farm families were classified into three categories namely 'young' (up to 35) 'medium' (36-55) and 'old' (above 55). Data presented in Table 4.3 indicated that about 53.0 percent of the Farm families fell in the young aged category, whiles 37.4 percent fell in the medium aged category and about 9.6 percent in the old category. Data of Table 4.3 also indicates that an overwhelming majority of the *EBEK* project participants were young and medium aged. Rural society of Bangladesh maintain traditional norms, values, custom and this is very much favorable for young aged *EBEK* participants 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 4.3 Descriptive statistics of selected characteristics of *EBEK* participants (N=115)

Characteristics	Scoring method	Range		Categories	Respondents		Mean	SD
		Possible	Observed		No.	%		
Age	No. of year	Unknown	21-61	Young (up to 35)	61	53.0	38.68	10.66
				Medium (36-55)	43	37.4		
				Old (above 55)	11	9.6		
Education	Year of schooling	Unknown	0.5-16.0	Can sign only (0.5)	18	15.7	6.90	3.97
				Primary(1-5)	32	27.8		
				Secondary(6-10)	47	40.9		
				Higher secondary and above (above 10)	18	15.7		
Family size	No. of members	Unknown	2-11	Small (up to 4)	59	51.3	4.96	2.07
				Medium(5-6)	37	32.2		
				Large (above 6)	19	16.5		
Farm size	Hectare	Unknown	0.02-0.51	Marginal (0.02-0.2)	96	83.5	0.12	0.11
				Small (0.21-1.0)	19	16.5		
Annual income	('000' Tk.)	Unknown	36-480	Low (up to 75)	13	11.3	195.77	120.06
				Medium (75.01-310)	83	72.2		
				High (above 310)	19	16.5		
Training experience	Day	Unknown	5-90	Low (up to 5)	7	6.1	22.42	16.60
				Medium (6-15)	45	39.1		
				Long (16-30)	51	44.3		
				Very long (above 30)	12	10.4		
Agricultural knowledge	Score	0-30	5-30	Low (up to 10)	26	22.6	15.49	6.37
				Medium (11-20)	60	52.2		
				High (21-30)	29	25.2		
Organizational participation	Year	Unknown	1-21	Low (up to 7)	71	61.7	7.10	5.23
				Medium (8-14)	29	25.2		
				High (above 14)	15	13.0		
Use of information sources	Score	0-51	5-49	Low (up to 17)	23	20.0	24.43	8.53
				Medium (18-34)	67	58.3		
				High (above 34)	25	21.7		
Preference of information sources	Score	0-51	14-48	Low (up to 17)	14	12.2	24.33	6.52
				Medium (18-34)	89	77.4		
				High (above 34)	12	10.4		

4.2.2 Education

The education scores of the Farm families ranged from 0.5 to 16.0, the mean being 7.35 and standard deviation is 3.59. Based on educational qualification scores, the Farm families were classified into can sign only (0.5), Primary education (1-5), Secondary education (6-10) and higher secondary (above 10) present in Table 4.3. Data presented in Table 4.3 also indicate that 40.9 percent *EBEK* project Farm families had secondary level of education followed by 27.8 percent under primary level and 15.7 percent under higher secondary and abvoe and also under can sign name only category. For this reason, it can be assumed that the education of the sample Farm families may be higher rather national average literacy rate. Exposure to formal education is very important for shaping-up the behavior of an individual. This might help an individual to intensely participate in development activities like *EBEK* project.

4.2.3 Family size

On the basis of their family size scores, the *EBEK* project Farm families were classified into three categories namely 'small' (up to 4), 'medium' (5 to 6) and 'large' (above 6). The distribution of the Farm families according to their family size is shown in Table 4.3. Data presented in Table 4.3 indicate that 51.3 percent Farm families have small sized family followed by 32.2 percent had medium family and 16.5 percent had large family. The family size of the respondents ranged from 2 to 11 with an average of 4.96 and a standard deviation of 2.07. 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 influencing factor of the Farm families for participation in *EBEK* and thereby their livelihood improvement.

4.2.4 Farm size

Farm size of the respondents of the study area ranged from 0.02 to 0.51 hectare. The mean of farm size is 0.12 hectare with standard deviation of 0.11 hectare. Depending on the farm size, the Farm families were classified into two categories namely 'marginal' (0.02-0.2 ha), and 'small' (0.21-1.0 ha) are presented along with their distribution in Table 4.3. Data presented in Table 4.3 show that the majority of the respondents are under marginal farm sized category (83.5 percent) where the rest part of the respondents belong under small farm size category (16.5 percent). It indicates that, the *EBEK* project Farm families are less land holders which is the prime selection criteria to be a participant of *EBEK* project.

4.2.5 Annual income

The annual income of the beneficiaries ranged from 36 to 480 thousand taka with a mean of 195.77 thousand taka and standard deviation of 120.06 thousand taka. On the basis of annual income the respondents were divided into three categories namely 'low' (up to 75), 'medium' (75.01-310) and 'high' (above 310) income category. The distribution of the Farm families according to their annual income is shown in Table 4.3. Data indicates that the highest proportion (72.2 percent) of the respondents had medium income followed by 16.5 percent having high income and 11.3 percent had low annual income. Findings reveal that the annual income of the respondents was medium to high. It might me an indication of economic development of the respondents due to participation in *EBEK* project.

4.2.6 Training experience

The training experience score of the respondents ranged from 5 to 90 days with a mean of 22.42 and standard deviation of 16.60. The respondents were classified into three categories according to training experience duration namely 'low' (up to 5), 'medium' (6-15), 'long' (16-30) and 'very long' (above 30). The distribution of the Farm families on the basis of the training experience scores is shown in Table 4.3. The highest proportion (44.3 percent) of the respondents had long training experience while 39.1 percent had medium training experience, 10.4 percent had very long training experience and 6.1 percent had low training experience. The result might be due to the fact that the participants of *EBEK* project have the provision of taking regular training from Upazila Shomaj Sheba Office as well as Upazila Agriculture Office.

4.2.7 Agricultural knowledge

The agricultural knowledge scores of the respondents ranged from 5 to 30, against the possible range of 0 to 30. The mean is 15.49 and standard deviation is 6.37. On the basis of agricultural knowledge scores the Farm families were categorized into three groups namely 'low' (1-10), 'medium' (11-20) and 'high' (21-30) as shown in Table 4.3. This table shows that highest proportion (52.2 percent) of the respondents had medium agricultural knowledge while 25.2 percent having high agricultural knowledge and 22.6 percent had low agricultural knowledge. It can be clearly seen from the findings that an overwhelming majority of the Farm families had either medium to high knowledge in different agricultural aspects. Such findings are quite logical because most of the respondent Farm families are closely attached with farming activities through participation in *EBEK* project and these experiences increase their agricultural knowledge.

4.2.8 Organizational participation

The observed scores of organizational participation of the respondents ranged from 1 to 21 years. The average scores are 7.10 and standard deviation is 5.23. The respondents are classified into three categories namely 'low' (up to 7), 'medium' (8-14) and 'high' (above 14) according to their responses is shown in the Table 4.3. The table shows that the highest proportion (61.7 percent) of the respondents had low organizational participation followed by 25.2 percent had medium and 13.0 percent had high organizational participation. The findings indicate that the *EBEK* project Farm families 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 Farm families to involve in different organizations more intensively.

4.2.9 Use of information sources

The use of information sources scores ranged from 5 to 49. However, the scores of the respondents could range from 0 to 51 with average scores of 24.43 and standard deviation of 8.53. The respondents were classified into three categories namely 'low' (up to 17), 'medium' (18-34) and 'high' (above 34) according to their responses as shown in the Table 4.3. The results of Table 4.3 indicates that highest proportion (58.3 percent) of the respondents had medium use of information sources while 21.7 percent had high use and 20.0 percent had low use of information sources. It can also be seen that majority of the Farm families had medium use of information sources. This may be due to the reason that the respondents contact regularly with different extension media.

4.2.10 Preference of information sources

The preference of information sources scores ranged from 14 to 48. However, the scores of the respondents could range from 0 to 51 with average scores of 24.33 and standard deviation of 6.52. The respondents were classified into three categories namely 'low' (up to 17), 'medium' (18-34) and 'high' (above 34) according to their responses as shown in the Table 4.3. The results of Table 4.3 indicates that highest proportion (77.4 percent) of the respondents had medium preference of information sources while 12.2 percent had low preference and 10.4 percent had high preference of information sources. It can also be seen that majority of the Farm families had medium preference of information sources. This may be due to the reason that the information sources which are preferred by the respondents might be more reliable to the respondents. So, they preferred to use the information sources.

4.3 Relationships between the Focus and Explanatory Variables

This section deals with the findings of the relationships between the selected focus and Explanatory variables of the study. The Explanatory variables of the ***EBEK*** project Farm families are: age, education, family size, farm size, annual income, training experience, agricultural knowledge, organizational participation, use of information sources and preference of information sources. The focus variable is livelihood improvement of the project Farm families through participation in ***EBEK***. Pearson's Product Moment Correlation of co-efficient (r) was used to determine the relationships between the selected Explanatory and focus 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.

4.3.1 Relationships between age and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between age of the participants and their livelihood improvement status is 0.204 (Table 4.4). Based on the computed 'r' value the relationship between age and livelihood improvement of ***EBEK*** project Farm families is significant at five percent level of significance with 113 degrees of freedom. Hence, the concerned null hypothesis could be rejected. The researcher concluded that age of the ***EBEK*** project Farm families has significant relationship with their livelihood improvement.

Table 4.4 Relationships between the focus and Explanatory variables

Focus variable	Explanatory variables	Computed values of 'r'with 113 df.	Tabulated value of 'r'	
			0.05 level	0.01 level
Livelihood improvement of *EBEK* Farm families	Age	0.204*	±.182	±.237
	Education	0.193*		
	Family size	0.017		
	Farm size	0.002		
	Annual income	-0.037		
	Training experience	0.332**		
	Agricultural knowledge	0.246**		
	Organizational participation	0.073		
	Use of information sources	0.276**		
	Preference of information sources	0.187*		

*Correlation is significant at the 0.05 level and** Correlation is significant at the 0.01 level.

4.3.2 Relationships between education and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between education of the respondents and their livelihood improvement status is 0.193 (Table 4.4). Based on the computed 'r' value the relationship between education and livelihood improvement of respondents was significant at five percent level of significance with 113 degrees of freedom 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 education of the respondents with their livelihood improvement through participation in *EBEK*.

4.3.3 Relationships between family size and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between family size of the respondent Farm families and their livelihood improvement is 0.017 (Table 4.4). Based on the computed 'r' value the relationship between family size and livelihood improvement of respondents was non-significant. Hence, the concerned null hypothesis could not be rejected. The researcher concluded that family had no significant relationship with their livelihood improvement.

4.3.4 Relationships between farm size and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between farm size of the respondents and their livelihood improvement is 0.002 (Table 4.4). Based on the computed 'r' value the relationship between farm size and livelihood improvement of respondents was not significant. Hence, the concerned null hypothesis could not be rejected. From the above result, it could be concluded that, farm size had no significant relationship with their livelihood improvement.

4.3.5 Relationships between annual income and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between annual income of the respondents and their livelihood improvement is -0.037 (Table 4.4). Based on the computed 'r' value the relationship between annual income and livelihood improvement of respondents was not significant. Hence, the concerned null hypothesis could not be rejected. From the above result, it could be concluded that, annual income had no significant relationship with their livelihood improvement.

4.3.6 Relationships between training experience and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between training experience of the respondents and their livelihood improvement is 0.332 (Table 4.4). Based on the computed 'r' value the relationship between training experience and livelihood improvement of the respondent is significant at one percent level of significance with 113 degrees of freedom and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there is a positive correlation between the training experiences of the respondents with their livelihood improvement through participation in *EBEK*. .

4.3.7 Relationships between agricultural knowledge and livelihood improvement of *EBEK* Farm families

The computed value of coefficients of correlation between the agricultural knowledge and livelihood improvement is 0.246 (Table 4.4). Based on the computed 'r' value the relationship between agricultural knowledge and livelihood improvement of the respondents is significant at one percent level of significance with 113 degrees of freedom and followed positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there is a positive correlation between the agricultural knowledge of the respondents with their livelihood improvement.

4.3.8 Relationships between organizational participation and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between organizational participation of the respondents and their livelihood improvement is 0.073 (Table 4.4). Based on the computed 'r' value the relationship between organizational participation and livelihood improvement of respondents is not significant at 0.05 level of significance with 113 degrees if freedom. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there is no correlation between the organizational participation of the respondents with their livelihood improvement.

4.3.9 Relationships between use of information sources and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between use of information sources by the respondents and their livelihood improvement is 0.276 (Table 4.4). Based on the computed 'r' value the

relationship between the use of information sources and livelihood improvement of respondents is significant at one percent level of significance with 113 degrees of freedom and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there is a positive correlation between the uses of information sources by the respondents with their livelihood improvement.

4.3.10 Relationships between preference of information sources and livelihood improvement of *EBEK* Farm families

The computed correlation coefficient between preference of information sources by the respondents and their livelihood improvement is 0.187 (Table 4.4). Based on the computed 'r' value the relationship between the preference of information sources and livelihood improvement of respondents is significant at five percent level of significance with 113 degrees of freedom and followed a positive relationship. Hence, the concerned null hypothesis could be rejected. Thus, it could be said that there is a positive correlation between the preferences of information sources by the respondents with their livelihood improvement.

4.4 Problem confrontation by the *EBEK* project Farm families in agricultural activities

Percentage distribution of the Farm families according to their problem faced in each of the 15 problems related to agricultural activities has been showed in the Table 4.5 along with Problem Confrontation Index (PCI) and their rank order. Problem Confrontation Index (PCI) of the Farm families on aquaculture ranged from 87.9 to 237.6 (Table 4.5).

Based on PCIs the first major problem is 'lack of quality seeds and seedlings' (PCI 237.6) as lack of proper technical knowledge on quality seed preservation and seedling production. One cannot expect good production without quality seed and seedlings.
Second major problem is 'low training facilities' (PCI 215.6). As shortage of man power in government social welfare organization and agricultural offices Farm families ' have not enough training facilities in the study area. Due to lack of proper training facilities Farm families applying traditional method for agricultural activities as a result they fail to achieve expected level of agricultural production.

Third priority problem of the famers is 'lack of knowledge on storage, processing and preservation' (PCI 186.0). Unplanned storage, processing and preservation by the Farm families is the main cause of qualify seed and seedling.

Table 4.5 Problem confrontation by the *EBEK* Farm families in agricultural activities

Sl No.	Problems	Not at all (0)	Low (1)	Medium (2)	High (3)	PCI	Rank
Extension-service related problem							
1.	Insufficient quality to provide extension services by extension agents	18.3	21.7	30.4	29.6	171.3	7
2.	Only resource-rich Farm families can get the benefit of extension services	33.0	25.2	41.7	0.0	108.6	11
3.	Less reliability of the agents	3.5	76.5	20.0	0.0	116.5	10
4.	Teaching methods are not time demanding	0.0	66.1	33.9	0.0	133.9	8
5.	Low training facilities	8.7	20.9	16.5	53.9	215.6	2
Input related problem							
6.	Lack of quality seeds and seedlings	0.0	3.5	55.7	40.9	237.6	1
7.	High price of pesticides, insecticides for disease control	0.0	25.2	73.0	1.7	176.3	5
8.	Lack of water exchange capacity	0.0	27.8	62.6	9.6	181.8	4
9.	High price of farm workers	24.3	43.5	32.2	0.0	107.9	12
10.	Lack of knowledge on storage, processing and preservation	9.6	20.0	45.2	25.2	186.0	3
11.	Trouble of production gears maintenance	19.1	68.7	10.4	1.7	94.6	13
Socio-economic problem							
12.	Lack of security in farm	27.8	56.5	15.7	0.0	87.9	15
13.	Lack of investment for production	0.0	27.0	71.3	1.7	174.7	6
Marketing problem							
14.	Lack of marketing facilities	13.9	60.0	20.9	5.2	117.4	9
15.	Not get proper price from the middlemen	32.2	47.8	17.4	2.6	90.4	14

PCI: Problem Confrontation Index

Table 4.6 Ranked Order of the Problem confrontation according to ascending order.

Sl. No.	Problems	PCI	Rank
1	Lack of quality seeds and seedlings	237.6	1
2	Low training facilities	215.6	2
3	Lack of knowledge on storage, processing and preservation	186.0	3
4	Lack of water exchange capacity	181.8	4
5	High price of pesticides, insecticides for disease control	176.3	5
6	Lack of investment for production	174.7	6
7	Insufficient quality to provide extension services by extension agents	171.3	7
8	Teaching methods are not time demanding	133.9	8
9	Lack of marketing facilities	117.4	9
10	Less reliability of the agents	116.5	10
11	Only resource-rich Farm families can get the benefit of extension services	108.6	11
12	High price of farm workers	107.9	12
13	Trouble of production gears maintenance	94.6	13
14	Not get proper price from the middlemen	90.4	14
15	Lack of security in farm	87.9	15

PCI: Ranked Order of the Problem confrontation according to ascending order.

4.4.1 Suggested solutions of the problems

The ranked order of the suggested solutions given by the Farm families in relation to their problems in agricultural activities is given in Table 4.6.

Table 4.7 Ranked order of the solutions suggested by the *EBEK* project Farm families in relation to problems in agricultural activities

Suggested solutions	Frequencies of response	Rank order
Necessary credit support should be provided as and when necessary	81	1
Arrangement of organized marketing system with reasonable price of the produces	74	2
Timely and demand led advice by the extension personnel at Farm families doorstep	72	3
Government should provide sufficient training facilities for different aquaculture practices as well as on new concepts, long term training for complex subject matter	66	4
Assurance of quality seed and seedlings as and when necessary at reasonable price from government organization to the Farm families .	61	5

Table 4.6 indicates that *EBEK* project Farm families demanded credit support and training facility as vital for agricultural activities. They also demanded organized marketing system for getting reasonable prices of the produces and timely and demand lead advice by the extension personnel at Farm families doorstep for successful agricultural activities. Their other suggestions are 'government should provide sufficient training facilities for different aquaculture practices as well as on new concepts, long term training for complex subject matter' and 'assurance of quality seed and seedlings as and when necessary at reasonable price from government organization to the Farm families '.

CHAPTER 5
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 improvement of *EBEK* project Farm families , to determine the selected characteristics of *EBEK* project Farm families and to explore the relationships between livelihood improvements of the *EBEK* project Farm families with their selected characteristics. The study was conducted in Sadar and Birgonj upazila under Dinajpur district. The total numbers of *EBEK* participants' were 384 the targeted population for the study. A total of 30 percent *EBEK* participants of 115 were randomly selected as sample by using multistage random sampling method. Data were collected by the researcher herself during 10 September to 14 November, 2018. In this study, livelihoods improvement of the *EBEK* project Farm families was the focus variable. The selected characteristics of these Farm families were considered as the Explanatory variables of the study are: age, education, family size, farm size, annual income, training experience, agricultural knowledge, organizational participation, use of information sources and preference of information sources. The problems faced by the *EBEK* project Farm families related to agricultural activities and their suggested solutions to solve the problems are also identified. The major findings are given below:

5.1.1 Livelihood improvement considering five capitals

Human capital: The highest proportion (47.0 percent) of the respondents had high status of improvement of human capital followed by 33.9 percent had medium and 19.1 percent had low improvement of human capital and the mean is 15.97 with the standard deviation of 6.81.

Social capital: The highest proportion (50.4 percent) of the respondents had high status of improvement of social capital followed by 31.3 percent had medium improvement and 18.3 percent had low improvement of social capital and the mean is 16.77 with the standard deviation of 6.80.

Financial capital: The highest proportion (47.8 percent) of the respondents had high status of livelihood improvement of financial capital followed by 36.5 percent had high improvement and 15.7 percent had low improvement of financial capital and the mean is 15.91 with the standard deviation of 6.98.

Physical capital: The highest proportion (51.3 percent) of the respondents had high improvement of physical capital followed by 30.4 percent had medium improvement and 18.3 percent had low improvement of physical capital and the mean of 16.80 with the standard deviation of 6.56.

Natural capital: The highest proportion (52.2 percent) of the respondents had high improvement of natural capital followed by 27.8 percent had medium improvement and 20.0 percent had low improvement of natural capital and the mean of 16.71 with the standard deviation of 6.54.

5.1.2 Overall livelihood improvement status

The observed score of livelihood improvement status of the respondents ranged from 25 to 120 while the possible range was 25 to 125. The average livelihood improvement mean was 82.17 with a standard deviation of 33.19. Among the respondents about 50.4 percent had high livelihood improvement while 31.3 percent had medium livelihood improvement and 18.3 percent had high livelihood improvement.

5.1.3 Selected characteristics of the *EBEK* project Farm families

Age: Age of the Farm families was found to vary from 21 to 61 with an average of 38.68 and a standard deviation of 10.66. Considering age it was found that 53.0 percent of the respondents belonged under young aged category while 37.4 percent under medium aged and 9.6 percent under old aged category.

Education: The education scores of the Farm families ranged from 0.5 to 16, the mean being 6.90 and standard deviation is 3.97. Considering education, 15.7 percent respondents can sign their name only, 27.8 had education of primary level, 40.9 percent had secondary education and 15.7 percent respondents had higher secondary education and above education.

Family size: The family size of the respondents ranged from 2 to 11 with an average of 4.96 and a standard deviation of 2.07. Considering family size, the percentage of the respondents belonging to medium family category was 32.2 percent, 51.3 percent under small family and 16.5 percent under large family category.

Farm size: Farm size of the respondents of the study area ranged from 0.02 to 0.51. The mean of farm size was 0.12 with standard deviation of 0.11. It was found that 83.2 percent of the Farm families belonging to marginal farm size category compared to 16.5 percent had small farm.

Annual income: The annual income of the beneficiaries ranged from 36 to 480 thousand with a mean of 195.77 thousand and standard deviation of 120.06. Considering annual income 11.3 percent of the respondent Farm families had low income followed by 72.2 percent had medium income and 16.5 percent had high annual income.

Training experience: The training experience score of the respondents ranged from 5 to 90 with a mean of 22.42 and standard deviation of 16.60. It was found that the highest proportion (44.3 percent) of the respondents had long training experience while 39.1 percent had medium training experience, 10.4 percent had very long training experience and 6.1 percent had low training experience.

Agricultural knowledge: The agricultural knowledge scores of the respondents ranged from 5 to 30 with the mean of 15.49 and standard deviation is 6.37. The highest proportion (52.2 percent) of the respondents had medium agricultural knowledge while 25.2 percent having high agricultural knowledge and 22.6 percent had low agricultural knowledge.

Organizational participation: The observed scores of organizational participation of the respondent Farm families ranged from 1 to 21. The average scores are 7.10 and standard deviation is 5.23. It was revealed that the highest proportion (61.7 percent) of the respondents had low organizational participation followed by 25.2 percent had medium and 13.0 percent had high organizational participation.

Use of information sources: The use of information sources scores ranged from 5 to 49 with average scores of 24.43 and standard deviation of 8.53. The results indicated that highest proportion (58.3 percent) of the respondents had medium use of information sources while 21.7 percent had high use and 20.0 percent had low use of information sources.

Preference of information sources: The preference of information sources scores ranged from 14 to 48 with the average scores of 24.33 and standard deviation of 6.52. The results indicated that highest proportion (77.4 percent) of the respondents had medium preference of information sources while 12.2 percent had low preference and 10.4 percent had high preference of information sources.

5.1.4 Relationships between the selected characteristics of the *EBEK* project Farm families and their livelihood improvement

To find out the relationship between the selected characteristics of the respondents and their livelihood improvement status, Pearson's Product Moment Coefficient of Correlation was computed. It was found that six out of ten selected characteristics of the farmer's viz. age, education, training experience, agricultural knowledge, use of information sources and preference of information sources had significant positive relationships with their livelihood improvement. family size, farm size, annual income and organizational participation had non-significant relationship with the livelihood improvement.

5.1.5 Problems faced by the *EBEK* project Farm families in agricultural activities

Based on PCIs the first major problem is 'lack of quality seeds and seedlings' (PCI 237.6), the second major problem is 'low training facilities' (PCI 215.6) and the third priority problem of the famers is 'lack of knowledge on storage, processing and preservation' (PCI 186.0).

5.1.6 Suggested solutions of the problems

The *EBEK* project Farm families' top most three suggested solutions for solving the problems related to agricultural activities are 'necessary credit support should be provided as and when necessary', 'arrangement of organized marketing system with reasonable price of the produces' and 'timely and demand led advice by the extension personnel at Farm families doorstep', respectively.

5.2 Conclusions

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

i)   The variation regarding different assets of livelihood was minimum, highest status of livelihood improvement was observed in case of physical capital and that was the lowest in case of financial capital. The overall livelihood improvement is a bit promising and satisfactory as the project is in operation for last few years and it might have a high satisfactory performance at long run. Findings indicate that the Farm families ' knowledge and skill on agricultural practices, working ability in adverse condition, top down agricultural technology dissemination had been improved by activities of *EBEK*.

ii) The findings indicate that 40.9 percent respondents belonged to secondary level of education and it may be concluded that education of the study area provides a unique opportunity which is essential for greater livelihood improvement practices in *EBEK*.

iii) The findings indicate that 44.3 percent of the respondents had long training experience. So, the manifesto of the *EBEK* project of technology integrated with training approach is performing well at field level.

iv) The findings also indicate that 52.2 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 agriculture through *EBEK*.

v)   The findings indicate that 61.7 percent of the respondents had low organizational participation. So, it could be concluded that the respondents had not enough organizational participation.

vi) The findings also indicate that 58.3 percent of the respondents had medium use of information sources. This may be concluded that an individual farmer becomes aware of the recent information through using different information sources.

vii) The respondents preference of different information sources is high enough (77.4 percent of the respondents had medium preference of information sources) indicating their willingness to use information sources. So, availability of information sources as well as required information through these sources need to be emphasized in different project/program in the study area.

viii) Among the ten selected characteristics of *EBEK* participants, six characteristics namely; age, education, training experience, agricultural knowledge, use of information sources and preference of information sources of the respondents had positive significant relationship with their livelihood improvement. So, these are the important indicators for

increasing livelihood improvement status. On the other hand, family size, farm size, annual income and organizational participation of the respondents had no significant relationship with the livelihood improvement through participation in *EBEK* project.

ix) Lack of quality seed and seedling is the top most problem identified by the *EBEK* project Farm families and they suggested necessary credit support should be provided as and when necessary in the study area.

5.3 Recommendations

5.3.1 Recommendations for policy makers

Based on the findings and conclusions of the study, the following recommendations could be made:

i) Proper motivational programs might be provided by the Upazila Shomajsheba Office and DAE for involving more Farm families in *EBEK* project activities. The selection of the participants should be made following the guideline of participant selection of *EBEK* project.

ii) Agricultural technologies through *EBEK* need to be made available and accessible form by supplying sufficient equipment, balanced provision of credit and need-based training for the rural farmer to improve their capacity.

iii) Farmer having small farm size and less or no organizational participation should be the focused as target population for providing agricultural interventions through *EBEK* project. Because, they felt the need for building their capacity in different agricultural activities but cannot develop them by themselves.

iv) Credit facilities, marketing facilities should be improved and sales centers, and processing centers should be established in the rural areas through *EBEK* project. This will be more influential for livelihood improvement through participation in *EBEK* project.

v) Need based training programs and training facilities though *EBEK* project should be developed and implemented extensively for increasing the knowledge, management skill and operational ability in practicing agricultural activities.

vi) Department of Social Welfare and Agricultural Extension and other concerned organizations should realize the existing problems of the Farm families and necessary steps should be taken to minimize those problems like, necessary credit support, arrangement of organized marketing system, timely and demand led advice to the Farm families etc.

5.3.2 Recommendations for further study

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

i) 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.

ii) This study investigated the relationship of ten characteristics of the Farm families with their livelihood improvement status. Therefore, further research could be conducted to assess the relationships of other characteristics of the Farm families with the same.

iii) In this study livelihood improvement of *EBEK* participants have been investigated. But there are so many programs and projects of NGOs as well as GOs which are working for agricultural development in the other community of this country. Those programs and projects should be included in future for similar study.

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

v) It is also necessary to study the problems on agricultural practices. Immediate efforts should be taken to solve the problems to enable the Farm families to undertake agricultural activities in a manner so that they can drive the livelihood improvement from *EBEK* project.

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English Version of the Interview Schedule

Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University

Livelihood Improvement of the Farm families through Participation in *Ektee Bari Ektee Khamar* Project

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

Village…..Union…………………..…................

(Please provide necessary information for the following issues/questions)

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
A.	Homestead area		
B.	Own land under own cultivation		
C.	Land taken from others as lease		
D.	Land taken from others as *borga*		
E.	Land given to others as *borga*		
Total farm size = {A+B+C+(D×½)+(E×½)}			

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

Sl.	Source of income	Production (Kg)	Market price (Tk.)	Total price (Taka)
A.	Crop and forestry			
B.	Fisheries			
C.	Livestock and poultry			
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
1.	State two criteria of good seeds.	2	
2.	Name any four winter vegetable.	2	
3.	Mention two nitrogen deficiency symptoms of crops.	2	
4.	Name any two organic manure.	2	
5.	Mention two benefits of using organic manure in field.	2	
6.	What are main objectives of leaf color chart?	3	
7.	State two benefits of using lime in soil.	2	
8.	How adulterated Urea can be tested at field level?	3	
9.	What is Vermi-compost?	3	
10.	Name two harmful insects of vegetable.	2	
11.	What is pheromone trap?	2	
12.	Why perching used in crop field?	2	
13.	Briefly describe AWD method.	3	
	Total =	**30**	

8. Use of information sources: Please mention about your extent of contact with the following extension media

Sl. No.	Information source	Extent of use			
		Frequently	**Occasionally**	**Rarely**	**Not at all**
Individual contact					
1.	Upazila Agriculture Officer (UAO)				
2.	Agriculture Extension Officer (AEO)				
3.	Sub Assistant Agricultural Officer (SAAO)				
4.	Upazila Fisheries Officer (UFO)				
5.	Upazila Livestock Officer (ULO)				
6.	Upazila Shomajsheba Officer (USO)				
7.	Inputs dealers				
8.	NGO workers				
Group contact					
9.	Group discussion with SAAO				
10.	Participation in method demonstration				
11.	Participation in result demonstration				
12.	Training				
Mass contact					
13.	Poster/Leaflet/Folder				
14.	Receiving information by social media				
15.	Watching TV for agricultural Programs				
16.	Reading newspaper for agricultural information				
17	Fair and exhibition				

9. Preference of information sources: Please mention about your extent of contact with the following extension media

Sl. No.	Information source	Extent of preference			
		Highly	Moderate	Low	Not at all
Individual contact					
1.	Upazila Agriculture Officer (UAO)				
2.	Agriculture Extension Officer (AEO)				
3.	Sub Assistant Agricultural Officer (SAAO)				
4.	Upazila Fisheries Officer (UFO)				
5.	Upazila Livestock Officer (ULO)				
6.	Upazila Shomajsheba Officer (USO)				
7.	Inputs dealers				
8.	NGO workers				
Group contact					
9.	Group discussion with SAAO				
10.	Participation in method demonstration				
11.	Participation in result demonstration				
12.	Training				
Mass contact					
13.	Poster/Leaflet/Folder				
14.	Receiving information by social media				
15.	Watching TV for agricultural Programs				
16.	Reading newspaper for agricultural information				
17	Fair and exhibition				

10. Livelihood improvement

Please express your opinion about the following statements:
(SA= Strongly Agree, A= Agree, N= Neutral, DA= Disagree, SDA= Strongly Disagree)

Sl.	Statements	SA	A	N	DA	SDA
A. Human capital						
1(+)	**EBEK** improves technical knowledge on agricultural activities through increase the opportunity of training program(s)					
2(-)	Lack of skill and knowledge on improved varieties, production and preservation and marketing still persisting					
3(+)	**EBEK** creates an opportunity for exchanging ideas from visiting others' field					
4(-)	Insufficient awareness on health and nutrition still persisting in my household					
5(+)	Increased skill on different crop (rice/fish) harvesting, storage/ preservation and other post-harvest operations					
B. Social capital						
6(+)	**EBEK** creates an opportunity for getting help from relatives, friends, and other peers					
7(-)	Participation in **EBEK** is not easy due to different social constraints					
8(+)	Through participation in **EBEK** activities social status, security and trust increased					
9(-)	**EBEK** did not change the poor linkage scenario with the extension service providers in our community					
10(+)	Due to participation in **EBEK** access to different social groups/ activities also increased in our community					
C. Financial capital						
11(+)	Earning money by alternate agricultural activities improves through participation in **EBEK**					
12(-)	Lack of savings or investment capitals still persisting					
13(+)	Borrowing credit from NGOs, local money lender during financial crisis improves through participation in **EBEK**					

14(+)	Receiving monetary support increased due to participation in ***EBEK***				
15(-)	Fluctuation of the seasonal market price of crops affecting income still persisting				
D. Physical capital					
16(+)	Participation in ***EBEK*** program helps to increased access to quality seed, fertilizer insecticides and irrigation facilities				
17(-)	***EBEK*** program did not improve the storage facilities in our community				
18(+)	***EBEK*** program ensure the improved environment for poultry and livestock production				
19(-)	***EBEK*** don't have any impact on the improvement of living and sanitation facilities				
20(+)	***EBEK*** program helps to improved the landscape planning of the homestead				
E. Natural capital					
21(-)	Participation in ***EBEK*** program did not change the regular crop damage due to natural calamities				
22(-)	***EBEK*** has no influence on preservation of natural water bodies				
23(+)	***EBEK*** program helps to grow natural vegetation around homestead and unused lands				
24(-)	***EBEK*** has no especial strategy for conservation of land fertility for assurance of good production				
25(+)	***EBEK*** program helps to increase intensive cropping for more production				

11. Problem confrontation in agricultural activities

Sl.	Problems	High	Medium	Low	Not at all
Extension-service related problem					
1.	Insufficient quality to provide extension services by extension agents				
2.	Only resource-rich Farm families can get the benefit of extension services				
3.	Less reliability of the agents				
4.	Teaching methods are not time demanding				
5.	Low training facilities				
Input related problem					
6.	Lack of quality seeds and seedlings				
7.	High price of pesticides, insecticides for disease control				
8.	Lack of water exchange capacity				
9.	High price of farm workers				
10.	Lack of knowledge on storage, processing and preservation				
11.	Trouble of production gears maintenance				
Socio-economic problem					
12.	Lack of security in farm				
13.	Lack of investment for production				
Marketing problem					
14.	Lack of marketing facilities				
15.	Not get proper price from the middlemen				

12. Suggested solutions of the problems

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Thank you for kind co-operations.

Signature of the interviewer
Date:

i) Correlation Matrix between Focus and Explanatory Variable

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	Y
X1	1										0.204^*
X2	-0.004	1									0.193^*
X3	0.142	0.022	1								0.017
X4	-0.069	0.165	0.317^{**}	1							0.002
X5	-0.048	0.203^*	0.371^{**}	0.816^{**}	1						-0.037
X6	0.146	0.299^{**}	0.262^{**}	0.184^*	0.246^{**}	1					0.332^{**}
X7	0.216^*	0.109	0.012	-0.043	-0.020	0.370^{**}	1				0.246^{**}
X8	-0.036	0.102	-0.219^*	-0.225^*	-0.096	-0.168	-0.051	1			0.073
X9	0.029	0.251^{**}	0.139	0.012	0.124	0.237^*	0.202^*	0.068	1		0.276^{**}
X10	0.008	0.238^*	0.069	-0.047	0.051	0.196^*	0.095	0.119	0.771^{**}	1	0.187^*

ii) ** Correlation is significant at the 0.01 level (2-tailed) and * Correlation is significant at the 0.05 level (2-tailed).

X1 =	Age	X6 =	Training experience
X2 =	Education	X7 =	Agricultural knowledge
X3 =	Family size	X8 =	Organizational participation
X4 =	Farm size	X9 =	Use of information sources
X5 =	Annual income	X10 =	Preference of information sources
		Y=	Livelihood improvement