VEGETABLE FARMERS ATTITUDE TOWARDS FOOD SAFETY

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CERTIFICATE

This is to certify that the thesis entitled "**VEGETABLE FARMERS' ATTITUDE TOWARDS FOOD SAFETY**" submitted to the **Department of Agricultural Extension and Information System,** Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfilment of the requirements for the degree of **MASTERS OF SCIENCE (M.S.) in AGRICULTURAL EXTENSION AND INFORMATION SYSTEM,** embodies the result of a piece of bonafide research work carried out by **NAYEEM AHMED, Registration No. 13-05365** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

June, 2020

Dhaka, Bangladesh

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Dedicated to
My
Beloved Parents

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The Author

VEGETABLE FARMERS' ATTITUDE TOWARDS FOOD SAFETY

ABSTRACT

The main purpose of this study was to determine the Vegetable Farmers' Attitude Towards Food Safety and explore the contribution of the selected characteristics of the growers on their Attitude Towards Food Safety. The selected characteristics were age, education, family size, farm size, annual family income, training exposure, extension contact, time spent in vegetable farming and cosmopoliteness. Data were gathered from proportionally and randomly selected 107 respondents (vegetable farmers) of three villages of Mirzapur union of Shailokupa upazila under Jhenaidah district by using a pretested interview schedule during the period of 1st October to 30 December, 2019. Apart from descriptive statistical methods, multiple regressions analysis was used in order to analyze the data. Findings indicated that the majority (48.59%) of the respondents had favorable attitude towards food safety, 31.78% had unfavorable attitude towards food safety and 19.63% had neutral attitude towards food safety. Out of nine selected characteristics of the respondents, education, training exposure, extension contact and cosmopoliteness had positive significant contribution with their attitude towards food safety. The rest of the variables namely: age, family size, farm size, annual family income and time spent in vegetable farming did not show any significant contribution with their attitude towards food safety.

ABBREVIATIONS AND ACRONYMS

BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BBS	Bangladesh Bureau of Statistics
BINA	Bangladesh Institute of Nuclear Agriculture
BRRI	Bangladesh Rice Research Institute
CDP	Crop Diversification Program
DAE	Department of Agricultural Extension
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GO	Government Organization
HYV	High Yielding Variety
IPM	Integrated Pest Management
CIMMYT	International Maize and Wheat Improvement Centre
IMPP	International Maize Promotion Project
MS	Master of Science
MOA	Ministry of Agriculture
NGO	Non Government Organization
No.	Number
'R'	Multiple regression
RDRS	Rajshahi Dinajpur Rural Service
SD	Standard Deviation
UNDP	United Nations Development Program
USAID	United States Agency for International Development

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CHAPTER I

INTRODUCTION

1.1. General Background

Food safety is defined as the degree of confidence that food will not cause sickness or harm to the consumer when it is prepared, served and eaten according to its intended use. It is an international concern. WHO reported that unsafe food was found to affect more than 30% of the population in developed countries. The problem is expected to be even more severe in developing countries. Great academic interest has been given to investigate the knowledge and self reported practices of food safety overall the world (WHO, 2010).

In Bangladesh, chemical management has been the primary technique of pest control. Pesticides may supply short-term relief from pest problems; long-standing dependency on pesticides is not popular. Pesticide utilization increased to 9.8 kg per ha in 2009 in Bangladesh which is 0.7 kg per ha in the year 2000 (SAC, 2012). In the year of 2007 37,712.20 tons of pesticide sold in Bangladesh at different trade name and 22,118 tons which is practically 86.81% is used in rice (Pesticide information of SAARC Countries, SAARC Agricultural centre).

Agriculture is the most important employment sector in Bangladesh. Safe foods, as frequently understood are those fit for human consumption items that do not cause or bear any threat of any health hazards for the consumers. Food safety in food production may be achieved by natural or organic farming and even in agriculture by using chemicals with a recommended dose and practices with recommended inputs. The main consideration is that the total process in the food chain should not involve any practice or material that directly or indirectly results in hazards to consumer health. unsafe foods are as explained as (1) foods that contain microbes in enough quantities to lead to short term illness or death, (2) foods that contain substances that are supposed to pose potential long term health problems such as pesticide residues or bovine

spongiform encephalopathy, (3) foods that have unknown, but suspected, health consequences such as foods that have been genetically modified or irradiated, and (4) foods that contain ingredients that when consumed in excess quantities lead to continual diseases such as diabetes, cancer and cardiovascular disease (Kinsey, 2003).

Moreover, the critical weather (such as low temperature, dew drops stored on the leaf, continuous fog etc.) prevailing in this period causes various kind of diseases of vegetables. Pests, inclusive insects, mites, pathogens (disease-causing organisms), weeds, nematodes, rodents and others significantly contribute to high farm production costs and decrease quality and yields (Henneberry *et al*., 1991). The use of insecticides, however, carries several dangers. The yield failure varies in different environmental conditions but can exceed 65% in Bangladesh (BARI, 1999). Non-optimal and non-judicious apply of insecticides may result in severe problems connected to crop production and certain externalities like pollution and health hazards. Inappropriate selection of insecticides and doses, improper spray scheduling and inadequate spray coverage (Abolhasan *et al*., 2010) may lead to the loss in managing insect pests. For vegetables in general, Sabur and Mollah (2000) viewed enhance in the use of pesticides by farmers in combating pests throughout Bangladesh.

The concept of safe food production through organic farming has been adopted in Bangladesh in many years ago. Farmers are practicing safe food production at individual level. PROSHIKA a renowned NGO in Bangladesh is promoting safe food production through organic agriculture as a part of its mission to develop a sustainable alternative agro-system and popularize organic agricultural practices. Rahman and Mikuni (1999) showed that farmers possessed favorable attitudes towards sustainable agriculture issues in Bangladesh. Vegetable is one of the most important and popular products in agriculture sector of Bangladesh. It is an important source of vitamins, minerals and plant proteins in human diets (Slavin and Lloyd, 2012). Vegetable

cultivation and its marketing in rural and urban areas are also a source of income for the upland rural community. Side by side, vegetable cultivation is becoming more costly due to increased price of different inputs like pesticides, fertilizers, etc. In Bangladesh, farmers are cultivating large amount of vegetables like eggplant, cucurbits, carrot, country bean, bottle gourd, cabbage, cauliflower, radish, tomato, etc. in 989 thousand acre of land and produce 3729 thousand Metric tons vegetables in the year 2014-2015 (BBS, 2015). Safe food production in an organic farming is an approach for maintaining sustainable production through balanced utilization of natural resources. The farmers of Bangladesh are mostly dependent on pesticides in the endeavor to control the pests. Use of pesticides is not only expensive but also leads to a number of consequences like elimination of natural defenders, pesticides resistant pests out break so that crop loses increase (Saha *et al.* 1997; Rola and Pingali, 1993).

Department of Agricultural Extension (DAE) as the largest extension organization in Bangladesh is responsible for promoting the farming community in order to ensure sustainable agricultural growth (National IPM Policy 2002). To fulfill this goal DAE adopted the New Agricultural Extension Policy (NAEP) in 1999. NAEP targeted 11 key components among which Integrated Environmental Support was one of the major components. This initiative was taken by DAE due to the accountability of the Government of Bangladesh to protect environmental degradation caused by agrochemicals used in the field of agriculture.

Vegetable production has increased five times in the past 40 years. Bangladesh has scored 3rd in global vegetable production, next to China and India (FAO, 2017). The farmers are getting large amount of money from vegetable production which is changing their life (Hossain, 2017).

Vegetables are also good source of vitamins and minerals. Nutrition survey of Bangladesh (INFS, 2013) reported that average intake meets only 80% of Calorie, 58% of Vitamin A, 50% of Riboflavin and 51% of Vitamin C requirements. The Production of vegetables in Bangladesh is not sufficient that

per capita/day available is hardly 32 gm whereas the requirement is estimated to 220 gm. This gap is probably one of the main reasons for widespread malnutrition in the country (HRDP, 2013).

In Bangladesh, chemical control has been the principal method of pest control. Although pesticides may provide temporary relief from pest problems, long-term dependency on pesticides is not desirable. Pesticide consumption increased to 9.8 kg per ha in 2009 in Bangladesh which is 0.7 kg per ha in the year 2000 (Statistical Data Book for Agricultural Research and Development in SAARC Countries 2012).

IPM is a broad ecological approach to pest control using various pest control methods in a compatible manner; that is why IPM is a holistic approach to pest control keeping sound environment. To maintain ecological balance, sound human and animal health, increasing farm output and farmers' income on a sustainable basis, IPM is considered as good practices. IPM is better than conventional method in social and environmental aspect but what about economic aspect is not known. Therefore, there is a need to conduct a study on Profitability of vegetable cultivation by the IPM farmers.

IPM technique is another process of safe food production. Integrated pest management is a systems approach to pest control that combines biological, cultural, and other alternatives to chemical control with the judicious use of pesticides. The objective of IPM is to maintain pest levels below economically damaging levels while minimizing harmful effects of pest control on human health and environmental resources. IPM is a dynamic and constantly evolving system in which all the suitable control tactics and available surveillance and forecasting information are combined into a holistic management program delivered to the farmer at requisite interval as part of the sustainable crop production technologies. In another words, IPM aims at combining all available methods or tools of insect pest control in a judicious manner that minimizes insecticide use and disturbance to the ecosystem but becomes a multidisciplinary one.

IPM technology manages the pest population in such a manner that economic loss is avoided and adverse side effects of chemical pesticides are minimized. The IPM packages encompass various management strategies for containing the pest and disease problems. Pest monitoring is one of the important components of IPM to take proper decision to manage pest problem well in time.

Understanding the existing eco-system and their relationship in an environment is the fundamental aspects in IPM program. Although continuous flowering not only encourages but also conserve the natural enemies fauna in short duration vegetable crop. Shennan (2008) discussed the biotic interactions in agro-ecosystems and how they may be manipulated to support crop productivity and environmental health by provision of ecosystem services such as weed, pest and disease management, nutrient cycling and biodiversity conservation. Important elements for understanding biotic interactions include consideration of the effects of diversity, species composition and food web structure on ecosystem processes; the impacts of timing, frequency and intensity of disturbance; and the importance of multitrophic interactions.

1.2. Statement of the problem

In Bangladesh, a large number of the producers (farmers) be produced or processed, are insecure for consumption or adulterated in varying degrees. This problem persists at every level of food production to consumption. Foods are added by using different harmful chemicals and toxic non-natural colors on the one hand; and rotten perishables turning to be toxic foods are stored, sold and served to consumers in an unhygienic environment on the other. This unsafe of food is contributing to the public health dangerously with numerous chronic and non-chronic diseases. In spite of different reasons for this unsafely and adulterations of foodstuffs in Bangladesh, this study will concentrate on the regulatory failures to combat the present food safety problems persisting in Bangladesh.

If the credits of pesticides include enhanced economic potential in terms of increased production of food and fibre, and amelioration of vector-borne diseases, then their debits have resulted in serious health implications to man and his environment. There is now overwhelming evidence that some of these chemicals do pose a potential risk to humans and other life forms and unwanted side effects to the environment (Forget, 1993; Igbedioh, 1991). No segment of the population is completely protected against exposure to pesticides and the potentially serious health effects, though a disproportionate burden, is shouldered by the people of developing countries and by high risk groups in each country (WHO, 1990). The world-wide deaths and chronic diseases due to pesticide poisoning number was about 1 million per year (Environews Forum, 1999).

On the basis of the above discussion, the researcher undertook an investigation entitled "**Vegetable farmers' attitude towards food safety**". The study attempts to find out the answers to the following questions:

1. What is the farmers' attitude on food safety?
2. What are the selected characteristics of the vegetable growers?
3. To what extent the selected characteristics of the farmers contributed on their attitude towards food safety?

1.3. Specific objectives of the study

In order to give proper direction to the study the following specific objectives are formulated:

1. To assess the vegetable farmers' attitude towards food safety,
2. To describe following selected characteristics of the respondents:
   a) Age
   b) Education
   c) Family size
   d) Farm size
   e) Annual family income

f) Training exposure
g) Extension contact
h) Time spent in vegetable farming
i) Cosmopoliteness

3. To determine the contribution of the selected characteristics of the respondents on their attitude towards food safety

1.4. Justification of the study

The use of synthetic fertilizers and pesticides has been appreciated by the farmers. Sometimes, synthetic chemicals are applied in undesirable amount. All these chemicals and salts present in the soil are washed by rain water and discharged into nearby water bodies. Thus, water is polluted by the agricultural waste materials and the aquatic life is affected. Finally, those toxic chemicals travel in the food chain from lower to higher form of life, *viz.* from zooplankton through fish to human being and they may get concentrated (Clayden *et al.,* 2005 and Vanloon *et al,* 2011). If the food available is not safe or its consumption does not improve health, it does not contribute to food security. Food safety mainly aimed to guide an appropriate farming and post-harvest methods not only for farmers but also for any intermediaries who are engaged in trading, processing and consuming.

A group of poisonous organic compounds which are used to increase the production of crops by killing and controlling the growth of unwanted living beings are called pesticides. Unwanted living beings refer to insects which act as carrier for germs having harmful effect on man, cattle, valuable plants and crops. It also includes insects, rodents, fungus and bacteria which destroy crops, fruits and other food materials. Pesticides may be of various types. Some important types of pesticides may be noted as below to describe their nature and harmful effect on the environment (Vanloon *et al.,* 2011; Krieger, 2009; Dutta and De, 2013). It is very harmful to human. It can damage heart, liver, eye and kidney etc. Higher concentration of parathion can damage central nervous system permanently.

As such, food safety has been considered as a worldwide indicator of households and individuals personal well being. The consequences of appetite and malnutrition are adversely affecting the livelihood and well being of a huge number of people and inhibiting the development of many poor countries (Gebremedhin, 2000). This is why it is urgently needed to reduce and/or remove harmful chemicals from food production and consumption chain to ensure safe food. Very few organized investigations on accessible food safety faced by rural people has been under taken in the past either by private or government organizations to fulfill the needs of extension workers, researchers and the farmers. Therefore, the finding of the study are expected to be of great value of researchers, extension service provider, students and particularly planners in formulating and designing extension approach for maintaining the natural balance. The finding of the study will be particularly applicable to the rural poor people of Mirzapur union of Shailokupa upazila, Jhenaidah District. The judgment of the study will show an ample picture as to how the rural people are far away from safe food production.

1.5. Scope of the study

The study will assess the level of farmers' attitude on food safety. The relationship between farmers selected characteristics and their attitude on food safety will also be explored. The finding of the study will be particularly applicable to the rural poor people of Mirzapur Union under Shailokupa Upazila of Jhenaidah District. However, the findings are also applicable for other areas of Bangladesh where the socio-economic and geographical condition is major or less same with study areas.

The findings of the study were expected to be helpful for planning and implementation of various programs in connection with the rural food safety of the country. The findings will help concerned bodies in their effort to formulate policies and develop intervention mechanisms that are modified to the specific need of the study area. Furthermore, this study will attempt to make further

contribution to the previous studies and can be used as a source material for further studies.

1.6. Assumptions of the study

An assumption is the idea that an apparent fact or principle is correct in light of the available evidence (Goode and Hatt, 1952). The following assumptions were made by the researcher while undertaking the present study:

1. The subjects selected for the study were able to reply sufficiently to queries designed by the researcher.
2. The responses furnished by the respondents were applicable and dependable.
3. Information given by the selected respondents was representative of the study area.
4. The researcher who took action as interviewer was well adjusted to the social and cultural environment of the study area.
5. The respondents include in the sample were competent proper responses to the items included in the interview schedule.
6. The data collected by the investigator were free from bias and prejudice.
7. The characteristics of the rural people as well as the indicator of the food safety were normally and independently distributed with their respective means and standard deviation.
8. The environment conditions of the rural people were more or less similar throughout the study area.

1.7. Limitations of the study

Considering the time and other necessary resources and also to make the study convenient and significant, it became essential to impose certain limitations as mention below:

1. The study was confined to a selected area *i.e.* Mirzapur Union of Shailokupa Upazila under the district of Jhenaidah.
2. The study focused on safe food faced by the rural people.
3. There were many respondents in the study area but only selected numbers of respondents were considered for this study.
4. There were many characteristics of the rural people who are concerned about food safety but only ten characteristics of them were selected for the study.
5. The researcher relies on the information furnished by the respondents while interviewing.
6. All data and other information were collected within short possible time.

1.8. Definition of the important terms

Age

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

Education

Refer to the completed years of schooling by the respondents at the time of interview.

Family size

Family size was defined as the numeral of individual in the family including family chief and other trustful members who lived and ate together.

Farm size

Farm size of a respondent refers to the area of homestead, cultivated land, fruit land, area of pond, area of poultry rearing, cattle husbandry and others land their family owned or obtained.

Annual family income

It was defined as the total earning of the respondent from agricultural, non agricultural and other sources during the previous year.

Training exposure

It referred to the total number of days that a respondent had received training in his/her entire life from PROSHIKA or other organizations under different training programs.

Extension contact

It is referred to the respondents becoming accessible to the influence of diverse information media through different extension schooling methods.

Time spent in vegetable farming

Time spent in refers that the family members who are directly or indirectly related to his/her own agricultural production and how many times they spent in their agricultural activities.

Cosmopoliteness

The term cosmopoliteness referred to the secure food grower's mobility from their own village to another village, upazila and district.

Food safety

Food safety is defined as the degree of confidence that food will not cause sickness or harm to the consumer when it is prepared, served and eaten according to its intended use.

Attitude towards food safety

The farmers may be aware or intended to the benefits of going organic but what matters most is the attitude and preparedness of farmers to convert to safe food production through organic farming. The nature of the attitude depends upon the cognitive component which is largely dependent upon the information, beliefs and facts associated with the attitudinal object.

Assumption

An assumption is "the supposition that an obvious fact or principle is the true in glow of the accessible evidence" (Goode and Hatt, 1952).

Hypothesis

A research hypothesis is a predictive statement capable of being tested by scientific methods that related independent variables and dependent variables. As definite by Goode and Hatt (1952), "A hypothesis is a proposal which can be place to a trial to find out its validity. It may seem opposite to or in accord with common sense. It may provide evidence to be correct or incorrect. In any occurrence, it leads to an empirical test".

Null hypothesis

A null hypothesis posture is that there is no relationship linking the concerned variables. If a null hypothesis is discarded on the basis of a statistical test, it is implicit that there is a relationship between the concerned variables. Variable A general indication in statistical research characteristics that occur in a number of individuals, objects, groups etc. and that can take on various values for example the age of an individual.

CHAPTER II

REVIEW OF LITERATURE

Attitude towards food safety is relatively a new aspect of study in Bangladesh. But a good number of studies were taken on attitude towards different aspects both in home and abroad. The findings of the related research works are incorporated in this chapter. The findings are collected from different journals, bulletins, internet and related studies. The chapter is divided into three sections and described accordingly. The first section focused on concept on attitude. The second section focused farmers' attitude towards food safety. The third section provided information on relationship between farmers' characteristics and attitude towards food safety. At last conceptual framework of the study is presented in the last sections of the study.

2.1 Concept, Components and Formation of Attitude

2.1.1 Concept of attitude

Attitude is personal view of something, an opinion or general feeling about something. Attitude can be inferred from human behavior. Attitude is relatively enduring belief or opinion that predisposes people to respond in a positive, negative, or ambivalent way to a person, object, or idea (Microsoft Encarta, 2006).

Attitude is a predisposition to classify objects and events and to react to them with some degree of evaluative consistency. Attitudes logically are hypothetical constructs (i.e., they are inferred but not objectively observable), they are manifested in conscious experience, verbal reports, gross behavior, and physiological symptoms (Encyclopedia Britannica, 2005).

Rogers and Shoemaker (1971) defined attitude as a relatively enduring organization of an individual's beliefs about an object that predisposes his actions. In developing a favorable or unfavorable attitude toward the innovation, the individual may mentally apply the new idea to his present or

anticipated future situation before deciding whether or not to try it and this might be thought of as a vicarious trial.

2.1.2 Behavior

Behavior is the way in which a person, organism, or group responds to a specific set of conditions (Microsoft Encarta, 2006).

Behavior is anything that an organism does involving action and response to stimulation. The response of an individual, group or species to its environment (Encyclopedia Britannica, 2005).

2.1.3 Opinion

Opinion is the view somebody takes about an issue, especially when it is based solely on personal judgment (Microsoft Encarta, 2006).

Opinion is a view, judgment, or appraisal formed in the mind about a particular matter. It is a belief stronger than impression and less strong than positive knowledge a generally held view (Encyclopedia Britannica, 2005)

2.1.4 Components of attitude

According to Islam ***et al.*** (2000) person's attitude towards some object, event, person, situation, policy or action has three distinct components:

1. Cognitive component,
2. Feeling component,
3. Action component.

2.1.5 Formation of attitude

According to Samoff (1962) attitudes are formed in the process of making tension- reducing responses to various classes of objects. In other words, an individual's attitude towards a class of objects is determined by the particular role to those objects have come to play in facilitating responses that reduce

tension of particular motives and the resolve particular conflicts among motives.

Doob's (1948) analysis of attitude formation takes into account the following factors:

1. Goal response - the response pattern or patterns which one anticipates.
2. Perception - the drive orienting the individual to pay attention of the stimulus pattern evoking the attitude.
3. Afferent - habit strength - the strength of the bond between the existing attitudes and the evoking stimulus patterns, including the gradients of generalization and discrimination.
4. Efferent - habit strength - the strength of the bond between the existing attitudes and the evoked responses including overt ones.
5. Dive strength of the stimuli.
6. Interaction - the strength of the other attitudes, drives etc.
7. Social significance - the evaluation in the society of the attitude along with its direction (e.g. positive, negative, neutral, etc.)

2.2 Farmers Attitude towards Different Aspects including safe food production

Ahmed (2006) observed that he overwhelming majority (87%) of the shrimp *farmers had* favorable attitude towards shrimp farming compared to 7% having *neutral* and only 6% had unfavorable attitude.

Chowdhury (2003) reported that majority of the farmers in progressive village held moderately favorable attitude compared to farmers of traditional village of whom 43% held moderately favorable and 29% held moderately unfavorable attitude towards crop diversification. Overall, 61% of the farmers of the study area had moderately favorable to highly favorable attitude towards crop diversification.

Haque (2003) observed that majority (41.88%) of the farmers possessed moderately favorable attitude towards extension activities of DAE while 32.48% of them had moderately unfavorable attitude towards the some. Again, 14.53% farmers were found to possess strongly unfavorable attitude towards extension activities of DAE while 6.84% respondents possessed strongly favorable attitude towards the same. Only 42.7% of the farmers had neutral attitude towards extension activities of DAE. The mean value indicated that overall attitude of the farmers was slightly favorable towards DAE.

Afrad (2002) study revealed that majority (59.1%) of the farmers had favorable attitude towards vegetable cultivation while 40.9% had moderately favorable attitude towards vegetable cultivation.

Ali (2002) conducted a study on attitude of Block Supervisors (BSs) towards the activities of Non-Government Organizations (NGOs) and found that a vast majority (82%) of the BSs had moderately unfavorable attitude towards the NGO activities at the grassroots level. While 13% of the respondents had highly unfavorable, 3% were moderately favorable and only 1% had neutral attitude towards the activities of NGOs. The important finding of the study was only 1% of the BSs had highly favorable attitude towards the NGO activities.

Haque (2002) study on attitude of rural women towards homestead agriculture in a selected area of Panchagarh district found that the highest % age of the rural women had moderately favorable attitude in each of the five selected activities. These were 85% in poultry raising, 83% in goat rearing, 78% in fish cultivation, 72% in tree plantation and 70% in vegetable cultivation.

Khan (2002) found that more than half (58%) of PROSHIKA beneficiaries had moderately favorable attitude, while about 20% had highly favorable attitude towards its social forestry program. The proportion of the beneficiaries having moderately unfavorable attitude was 19%. The attitude of 4% of the beneficiaries was neutral. Thus, a great majority, about 77.5% of the

beneficiaries possessed favorable attitude towards social forestry program of PROSHIKA.

Sarker (2002) study revealed that 62.37% of rice growers had moderately unfavorable attitude towards the use of Diammonium phosphate (DAP) while 26.73% having moderately favorable attitude and 5.94% fell in highly favorable and only 4.95% fell in highly unfavorable attitude towards the use of DAP.

Sadat (2002) in his research found that majority (72%) of the PROSHIKA beneficiaries possessed a highly favorable attitude towards PROSHIKA, while 20 % of them possessed a moderately favorable attitude and only few beneficiaries had unfavorable attitude towards PROSHIKA. For the non-beneficiaries of PROSHIKA the majority (32%) possessed moderately favorable attitude towards PROSHIKA which was followed by 26.67% had moderately unfavorable attitude, 21.33% had highly attitude, 13.33% had highly unfavorable attitude and 6.67% had neutral attitude.

Siddique (2002) in his study on attitude of farmers towards improved winter vegetable production found that majority (64.35%) of the vegetables growers had moderately favorable attitude towards improved winter vegetable production while 25.74% had slightly favorable attitude and only 9.90% fell in the highly favorable attitude category. He also found that the majority (about 74%) of the vegetable growers showed medium to high favorable attitude.

Akanda (2001) found in his study that 66% and 22% of farmers had moderate and slightly favorable attitude towards rice fish program of CARE. On the other hand, only 12% farmers had slightly favorable attitude towards rice- fish program.

Islam (1998) studied the attitude of farmers towards Binashail-a rice variety developed by BINA. The study revealed that 35% farmers held medium attitude and the rest 65% held high level of attitude towards Binashail.

Parveen (1993) studied the attitude of rural women towards homestead agricultural production. The result of the study showed that more than 50% women of modem village had highly favorable attitude while the 14% in case of traditional village. Further two third (66%) of respondents of traditional village had moderately favorable attitude and 20% had less favorable attitude where the proportion was 42% and 1% in case of modem village.

2.3 Review of literature on selected characteristics of the farmers and their attitude

2.3.1 Age and attitude

Ahmed (2006) observed that the age of the shrimp farmers in Khulna district had no significant relationship with the attitude towards shrimp farming.

Chowdhury (2003) conducted a study on farmer's attitude towards crop diversification. The study revealed that age of the farmers had no significant relationship with farmer's attitude towards crop diversification.

Mannan (2001) found that the age of beneficiaries of the PROSHIKA had positive relationship with the attitude towards ecological agriculture.

Sarker (2001) reported that the age of the world vision farmers had no significant relationship with their attitude towards organic homestead gardening program. Similar results were obtained by Bari (2000), Nurzaman (2000), Islam and Kashem (1997), Noor (1995) in their research works.

Parveen (1993) found that the age of the modem village women had positive relationship with their attitude towards homestead agricultural production. He found no significant relationship with the age of women of traditional village and their attitude towards homestead agricultural production.

Verma and Kumar (1991) found that there was positive relationship between age and attitude of the farmers towards buffalo management in case of adopted village and no significant relationship between age and attitude of the farmers in the non-adopted village.

Kaur and Singh (1991) conducted a research on attitude towards smokeless '"chula" that revealed no relationship between the age and the attitude of the respondents.

Kashem (1987) conducted a research on attitude towards community of the farmers that revealed there is no relationship with age and attitude of the farmers towards community of the farmers.

Singh and Kunzroo (1985) found that there was negative relationship with the age of the farmers had negative relationship with attitude towards goat and sheep farming.

Chowdhury (2003) found that age of farmers' had no significant relationship with their attitude towards crop diversification.

Mannan (2001) found that age of PROSHIKA farmers had no significant relationship with their attitude towards the Ecological Agricultural Programs.

Habib (2000) found that age of the BSs had no significant relationship with their attitude towards the use of agro-chemicals.

Nurzaman (2000) observed in his study that age of the FFS and non-FFS farmers had no significant relationship with their attitude towards IPM.

2.3.2 Education and attitude

Ahmed (2006) observed that educational level of the farmers had non-significant and positive relationship with attitude of the farmers towards shrimp cultivation.

Chowdhury (2003) conducted a study on farmer's attitude towards crop diversification. The study revealed that educational level of the farmers had significant positive relationship with farmer's attitude towards crop diversification.

Khan (2002) reported that education of PROSHIKA beneficiaries had positive significant relationship with their attitude towards Social Forestry Programs of the same. Sadat (2002), Haque (2002), Mannan (2001), Paul (2000), Kashem (1987), Singh and Kunzroo (1985) also found similar results in their respective studies.

Sarker (2001) reported that educational level of the farmers had significant positive relationship with their attitude towards organic homestead gardening program.

Parveen (1993) conducted a study on attitude towards homestead agricultural production. The study discovered that education had no relationship with the attitude of the women towards homestead agricultural production. Similar results were obtained by Rahman (2001) Rashid (2001) Islam (1993) in their respective studies.

Verma and Kumar (1991) found that there was a positive and significant relation between education and attitude of the farmers towards buffalo management in nonadopted village but the relation was found non-significant in adopted village.

Rani (1979) conducted a study that revealed the respondents had a favorable attitude towards National Adult Education Program. It also revealed that participants and non-participants did not differ in their attitude towards the program and education had no influence on attitude.

Wahab (1975) reported that there was positive and significant relationship between education and attitude towards the use of Phosphorus and Potash fertilizers while the relationship was insignificant in case of attitude towards the use of urea and their education.

Ali (2002) found that educational qualification of Block supervisors had negative relationship with their attitude towards activities of NGO.

Khan (2002) in a study revealed that education of PROSHIKA beneficiaries

hold positive significant relationship with their attitude towards in Social Forestry Programs.

Shehrawat (2002) reported in his article a significant and positive relationship between education and attitude of farmers towards diversification of farming.

Kashem (1987) found that attitude towards community of the small farmers had significant positive correlation with their education level.

2.3.3 Family size and attitude

Ahmed (2006) reported that family size of the farmers had non-significant and positive relationship with the attitude towards shrimp farming.

Mahiuddin (2004) found that family size of fanners had significant relationship with their attitude towards the adverse effect of using agrochemicals in rice cultivation.

Chowdhury (2003) conducted a study on farmer's attitude towards crop diversification. The study revealed that family size of the farmers had non-significant and negative relationship with farmer's attitude towards crop diversification.

Haque (2002) conducted a study on attitude of rural women towards homestead agriculture which revealed that there no significant relationship between the attitude of rural women towards homestead agriculture and family size. Similar results were obtained by Khan (2002), Siddique (2002), Ali (2002), Sarker (2001) in their respective studies.

Paul (2000) found no relationship between family size and attitude towards use of Urea Super Granule. Similar results were also found by Bari (2000), Habib (2000), Noor (1995) in their respective studies.

Karim *et al.* (1987) carried out a study on attitude of farmers towards use of urea in jute cultivation and found that family size of the farmers had significant and positive relationship with their attitude towards the use of urea.

2.3.4 Farm size and attitude

Ahmed (2006) reported that farm size had no significant and negative relationship with their attitude towards shrimp cultivation. Sarker (2001) had observed the same result in his study.

Chowdhury (2003) had conducted a study on farmer's attitude towards crop diversification. The study revealed that farm size of the farmers had significant and positive relationship with farmer's attitude towards crop diversification.

Haque (2003) found that farm size of the farmers had positive relationship with their attitude towards extension activities of the DAE.

Sadat (2002) found in his study that farm size had positive significant relationship with attitude of both PROSHIKA beneficiaries and non beneficiaries towards PROSHIKA. Afrad (2002), Siddique (2002), Mannan (2001) found similar results in their respective studies.

Noor (1995) reported that there was no significant relationship between the farm size and attitude of the farmers towards the cultivation of HYV potato. Similar findings were obtained by Rahman (2001), Habib (2000), Nurzaman (2000) in their respective studies.

Parveen (1993) carried out a research work on attitude of rural women towards homestead agricultural production. The study established no relationship between farm size and attitude towards homestead agricultural production in modem village and while found significant relationship in case of traditional villages.

Verma and Kumar (1991) reported farm size and attitude of farmers towards buffalo management had showed a positive and significant relationship in non-adopted village while it showed non-significant relationship in case of adopted village.

Chowdhury (2003) found that there was a positive and significant relationship between farm size and attitude of farmers towards crop diversification.

Sadat (2002) found in his study that farm size had positive significant relationship with attitude of both PROSHIKA beneficiaries and non-beneficiaries towards PROSHIKA.

Ali (2002) revealed in his study that farm size had no significant relationship with the attitude of BS towards the activities of NGO.

The study of Khan (2002) and Sarker (2002) also revealed similar kind of relationship in their respective studies. Afrad (2002) also found similar kind of result in their respective studies.

Paul (2000), Mannan (2001) and Karim *et al.* (1987) obtained similar findings in their respective studies.

Shehrawat (2002) reported in his article a significant and positive relationship between land holding and attitude of farmers towards diversification of farming.

Rahman (2001) found in his study that farm size of the farmers had no significant relationship with their attitude towards the cultivation of Binadhan-6. Similar findings were obtained Noor (1995), Habib (2000), Nuruzzaman (2001) and Sarker (2001) in their respective studies.

2.3.5 Annual income and attitude

Ahmed (2006) conducted a study on attitude of the farmers towards shrimp farming that revealed that annual income had no significant and negative

relationship with their attitude towards shrimp farming.

Chowdhury (2003) found that annual farm income had positive and significant relationship with attitude of the farmers towards crop diversification.

Siddique (2002) conducted a study on attitude of farmers towards the improved winter vegetable cultivation. He found that annual income had no significant relationship with the attitude of farmers towards improved winter vegetable cultivation. Nurzaman (2000), Kashem (1987) found the same results in their respective studies.

Paul (2000) found that annual family income had positive relationship with attitude of farmers towards the Urea Super Granule. Similar results were obtained by Haque (2002), Mannan (2001), Ali (1995) in their respective studies.

Habib (2000) conducted a study on attitude towards use of agro-chemicals that showed annual income had a negative relationship with attitude towards use of agrochemicals. Bari (2000) got a similar result.

Parveen (1993) reported that annual income had no relationship with the attitude of women towards homestead agricultural production in case of modem village while annual income in traditional villages showed significant positive relationship.

Tarannum (2013) reported that annual income had no significant relationship with the attitude of farmers towards improved agricultural implements. Bhuiyan (2008) and Siddique (2002) also found similar result in their study.

Noor-E-Alam (2010) found that family income of farmers had positive significant relationship with their attitude towards modern jute cultivation. Chowdhury (2003) and Zahan (2008) also found similar result in their study.

Shehrawat (2002) reported a significant and positive relationship between income of family and attitude of farmers towards diversification of farming.

Habib (2000) observed in his study that income of the BSs has significant negative relationship with their attitude towards agro-chemicals.

Nuruzzaman (2001) observed in his study that there was no significant relationship between family income of the FFS and non-FFS farmers with their attitude on IPM.

2.3.6 Training exposure and attitude

Sarker (2001) conducted a study that revealed training exposure of farmers had no significant and negative relationship with attitude towards organic homestead gardening program.

Habib (2000) conducted a study on attitude towards the use of agro-chemicals that revealed training exposure had no relationship with attitude towards the use of agro-chemicals.

Nurzaman (2000) conducted a study on attitude on 1PM that revealed training exposure had positive relationship with attitude on IPM.

Islam and Kashem (1997) reported that training exposure had negative relationship with attitude towards agro-chemicals.

Noor (1995) found that annual income had positive relationship with attitude towards the cultivation of HYV potato.

Bhuiyan (2008) found in his study that farmers' training experience had positive significant relationship with their attitude towards farmers' information need assessment.

Islam (2007) found a significant positive relationship between training received by the farmers' and their attitude towards modern jute cultivation. Chowdhury (2003) revealed in his study that training exposure had no relationship with attitude towards crop diversification. Sadat (2002) revealed in his study that training exposure had no relationship with the attitude of both PROSHIKA beneficiaries and non-beneficiaries towards PROSHIKA.

Sarker (2002) reported that training experience of farmers had a positive significant relationship with their attitude towards the activities of BAUEC.

Habib (2000) also revealed in his study that training experience of the BSs had a positive significant relationship with their attitude towards agro-chemicals.

2.3.7 Extension media contact and attitude

Ahmed (2006) found that extension media contact had positive and significant relationship with farmers' attitude towards shrimp farming.

Chowdhury (2003) conducted a study on farmers' attitude towards crop diversification and found that extension media contact had no significant relationship with farmers' attitude towards crop diversification.

Siddique (2002) reported that extension media contact had significant positive relationship with the attitude of farmers towards winter vegetables production. Similar results were obtained by Ali (2002), Khan (2002), Paul (2000), Noor (1995). Verma and Kumar (1991) in their respective studies.

Nurzaman (2000) observed extension media contact of the FFS farmers was positive with their attitude towards 1PM while it showed no significant relationship with their attitude towards IPM in case of non-FFS farmers.

Bari (2000) found no significant relationship between extension media contact and attitude towards hybrid rice ALOK 6201. Similar result was found by Habib (2000) in his study.

Parveen (1993) reported that individual contact of women was positively related with their attitude towards homestead agricultural production in modem village while women in traditional village didn't hold such relationship. The researcher also found that mass contact of women farmers had significant relationship with their attitude towards homestead agricultural production.

Noor-E-Alam (2010) observed in his study that extension contact had no relationship with attitude towards modern Jute cultivation. Similar findings were obtained by Zahan (2008), Bari (2000) and Habib (2000) in their study.

Bhuiyan (2008) and Bhuiyan (2008) reported a significant and positive relationship between extension contact and attitude.

Shehrawat (2002) also found similar result in his study. Islam (2007) found in the study of attitude of farmers' towards modern jute cultivation that there was negative significant relationship between extension media contact and attitude.

Chowdhury (2003) observed no relationship between extension media contact and attitude of farmers towards crop diversification.

Sadat (2002) reported in his study that extension media contact had significant relationship with PROSHIKA-beneficiaries attitude towards PROSHIKA.

Nuruzzaman (2001) revealed that extension contact of the FFS farmers was positively significant with their attitude on IPM but in case of non-FFS farmers, there was no significant relationship with their attitude on IPM.

2.3.8 Times spent in vegetable farming and attitude

Islam (1993) found a significant relationship between time spent in farming of the farmers and their attitude towards recommended doses of fertilizer and plant protection measures in potato cultivation.

Kashem and Halim (1991) repotted that time spent of the farmers had significant positive correlation with their attitude towards modern rice technology use of communication media in live stock production.

2.3.9 Cosmopoliteness and attitude

Hussen (2001) conducted an investigation on adoption of modem sugarcane cultivation practices by the farmers of Dewangonj upazila in Jamalpur district. He observed that there was a significant positive relationship between cosmopoliteness of the farmers and their adoption of modem cultivation practices.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that cosmopoliteness of the respondents had a significant positive relationship with their adoption of integrated homestead farming technologies.

2.4. Conceptual framework of the study

Variables together are the cause effect and thus, there is cause-effect relationship everywhere in the universe. The conceptual framework of Rosenberg and Hovland (1960) was kept in mind while framing the structural arrangement for the dependent and independent variables of the study. The hypothesis of a research while constructed properly contains at least two important elements i.e. a dependent variable and independent variables. A dependent variable is that factor which appears, disappears or varies as the research introduces, removes or varies the independent variables (Townsend, 1953). Here, vegetable farmers attitude towards food safety has been selected as dependent variable and the characteristics of the rural people were considered as the independent variables. It is not possible to deal with all characteristics in a single study. It was therefore, necessary to limit the characteristics, which include age, education, family size, farm size, annual family income, Extension contact, time spent in vegetable farming, Cosmopoliteness. Attitude towards food safety is dependent variable. In view about discussion and prime findings of review of literature, the researcher constructed a conceptual framework of the study which is self explanatory and is presented in figure 2.1.

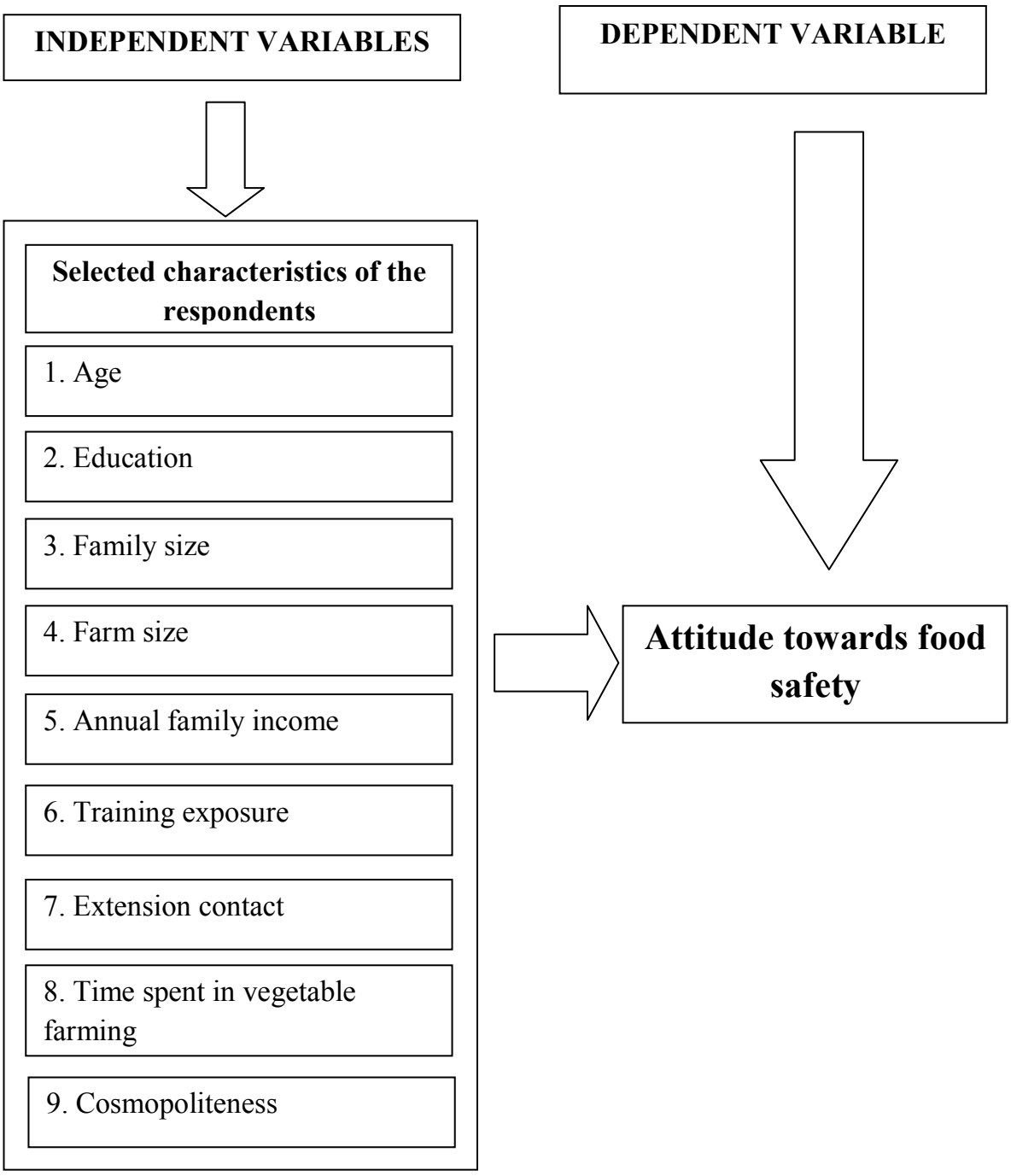

Figure 2.1. Conceptual framework of the study

CHAPTER III

MATERIALS AND METHODS

Methodology deserves a very careful consideration in scientific research. The methods and procedures followed in conducting this study has been described in this chapter. The methods and operational procedures followed in conducting the study. The methods used and a chronological description of the methodology followed in conducting this research work has been described under the following headings:

3.1. Locale of the study

Shailokupa upazila of Jhenaidah district was selected purposely as the locale of the study. The study area was located in Shailokupa upazila situated in 14 kilometers to the north-east corner of Jhenaidah district. Three villages namely, Anipur, Bordah and Shripur of Mirzapur union under Shailokupa upazila were selected randomly. Agriculture was the major occupation in the study area and the area has well accessibility through road and highways. The soil of this area is clay loam and silty loam textured capable of producing three crops per year. The soil of this area was fertile and suitable for paddy, jute, spices, sugarcane, turmeric, pulses and vegetables etc. However, Shailokupa upazila consists of fourteen union among which Union number one (Mirzapur union) has comparatively more number of farmers. Besides, local communication system in this union is satisfactory. Considering the above facts, time and budget, the present study was conducted in three villages of Mirzapur union.

Figure 3.1. Map of Jhenaidah district showing different upazila

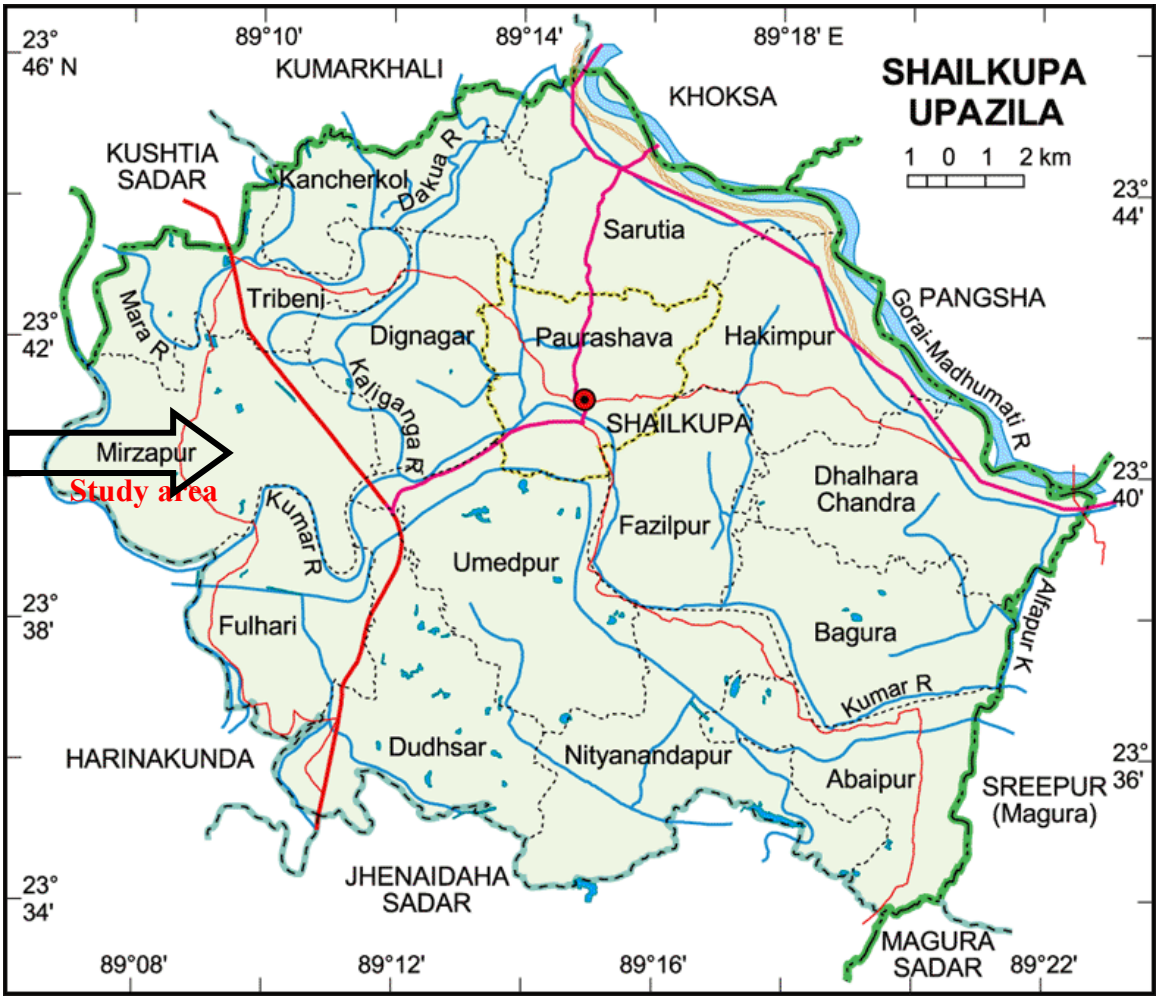

Figure 3.2. Map of Mirzapur union showing study area

3.2. Population and sample

People who permanently reside in the selected villages and cultivate vegetable constituted the population of this study. Head of the farm families of three villages under Mirzapur union was the population of the present study. However, representative sample from the population were taken for collection of data. Mirzapur union consists of eleven villages among which three villages namely Anipur, Bordah and Shripur were randomly selected. One farmer (who mainly operated the vegetable farming activities of the family) from each of the farm families was considered as the respondent. An updated list of all farm family heads of the selected villages was prepared with the help of SAAO and local leader. The list comprised of a total 715 vegetable farm families in the study area. These rural families constituted the population of this study. Fifteen percent (15%) of the farm families of these villages were randomly selected as representative sample by using a Table of Random Numbers (Kerlinger, 1973). Thus, 107 farm family head constituted the sample of the study. Further fifteen respondents were selected randomly from the population except the sample included in the reserved list, which were interviewed when the respondent in the original sample list were not available at the time of interview. A detailed structure of population and sample has been presented in the Table 3.1.

Table 3.1: Distribution of population and sample of the selected villages

Village	Population (Families)	Sample size	Reserved list
Anipur	207	32	4
Bordah	315	47	7
Shripur	193	28	4
Total	715	107	15

3.3 Instrument for data collection

In a social research, interview schedule is the instrument for data collection. For social research study, preparation of interview schedule for collection of information requires a very careful consideration. So, a structured interview schedule was prepared for collection of relevant data for the study. Both closed and open form questions were included in the schedule. Simple and direct questions were also included to ascertain the opinion of the farmers regarding a number of aspects. The draft interview schedule was prepared in accordance with the objectives of the study. The interview schedule was pre-tested with 10 farmers from the study area excluded from the sample. Necessary corrections, additions and modification were made in the interview schedule based on the pretest results. The modified and corrected interview schedule was then printed in final form and multiplied as required. An English version of this interview schedule is presented in Appendix-A.

3.4 Variables and their measurement techniques

In a descriptive social research, selection and measurement of the variable is an important task. A variable is any characteristics which can assume varying or different values are successive individual's cases (Ezekiel and Fox, 1959). An organized research usually contains at least two identical elements i.e. Independent and dependent variable. An independent variable is the factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. A dependent variable is the factor, which appears, disappears or varies as the experimenter introduces, removes or varies the independent variables (Townsend, 1953). According to the relevance of the research area, the researcher selected 9 characteristics of the respondents as the independent variables (e.g. age, education, family size, farm size, annual family income, training exposure, extension contact, time spent in vegetable farming and cosmopoliteness). On the other hand 'vegetable farmers' attitude towards food safety' was the dependent variable. The following sections contain procedures of measurement of dependent and independent variables of the study.

3.4.1. Measurement of independent variables

The independent variables of the study were age, education, family size, farm size, annual family income, training exposure, extension contact, time spent in farming and cosmopoliteness. The procedure followed in measuring the independent variables have been discussed in the subsequent sections.

3.4.1.1. Age

Age of the respondents was measured in terms of actual years from their birth to the time of interview, which was found on the basis of verbal response of the rural people (Azad, 2003). A score of one (1) was assigned for each year of one's age. This variable appears in item number one (1) in the interview schedule as presented in Appendix-A.

3.4.1.2. Education

Education was measured by assigning score against successful years of schooling by a respondent. One score was given for passing each level in an educational institution (Amin, 2004). For example, if a respondent passed the final examination of class five or equivalent examination, his education score was given five (5). Each illiterate respondent was given a score of zero (0). A person not knowing reading or writing but being able to sign only was given a score of 0.5. This variable appears in item number two (2) in the interview schedule as presented in Appendix-A.

3.4.1.3. Family size

The family size was measured by the total number of members in the family of a respondent. The family members included family head and other dependent members like husband/wife, brother and sister, parents, children etc. who lived and ate together. The total number of family members was considered as his family size score. If a respondent had five members in his/her family, his/her family size score was given as five (5) (Khan, 2004). This variable appears in item number three (3) in the interview schedule as presented in Appendix-A.

3.4.1.4. Farm size

Farm size of a respondent referred to the total area of land on which his family carried out farming operation, the area being in terms of full benefit to the family. The term refers to the cultivated area either owned by the respondent or cultivated on share cropping, lease or taking from other including homestead area. It was measured in hectares for each respondent using the following formula (Khan, 2004):

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

Where,

FS = Farm size

A = Homestead area including garden and pond

B = Own land under own cultivation

C = Land taken from others as Borga

D = Land given to other as Borga

E = Land taken from others on lease

The data was first recorded in terms of local measurement unit i.e. bigha and then converted into hectare. The total area, thus, obtained is considered as his farm size score (assigning a score of one for each hectare of land). This variable appears in item number four (4) in the interview schedule as presented in Appendix-A.

3.4.1.5. Annual family income

Annual income referred to the total financial return of a household from farm (Crops, livestock, poultry and fish) and nonfarm sources (business, job, remittance and others) in one year. It was expressed in Taka. In measuring this variable, total earning in Taka of a respondent was converted into score. A score of one was given for every 1000 Taka (Waheduzzaman, 2004). This variable appears in item number five (5) in the interview schedule as presented in Appendix-A

3.4.1.6. Training exposure

Training experience of a respondent was measured by the total number of days he/she attended in different training programs in his life. A score of one (1) was assigned for each day of training attended. Data obtained in response to item number six (6) of the interview schedule as presented in Appendix-A.

3.4.1.7. Time spent in vegetable farming

Time spent in vegetable farming was measured by computing on working time in the vegetable farm per week basis. It was measured on the basis of how many hours. This variable appears in item number seven (7) in the interview schedule as presented in Appendix-A.

3.4.1.8. Extension contact

It was defined as one's extent of exposure to different communication media related to farming activities. Extension media contact of a respondent was measured by computing extension media contact score on the basis of their nature of contact with eleven extension media. Each respondent was asked to indicate his nature of contact with five alternative responses, like regularly, often, occasionally, rarely and never basis to each of the eleven media and score of 4, 3, 2, 1 and 0 were assigned for those alternative responses, respectively (Hasan, 2006). These five options for each medium were defined specially to each medium considering the situation, rationality and result of pre-test. Logical frequencies were assigned for each of the five-alternative nature of contact is presented in item number eight (8), Appendix-A.

Extension media contact of the respondent was measured by adding the scores of eleven selected extension media. Thus, extension media contact score of a respondent could range from 0 to 44, where zero indicated no extension media contact and forty-four indicated highest level of extension media contact. This variable appears in item number eight (8) in the interview schedule as presented in Appendix-A.

3.4.1.9. Cosmopoliteness

Cosmopoliteness of a respondent was measured by computing a cosmopoliteness score based on his frequency of visit to selected seven (7) different places outside his own social environment. Each respondent was asked to indicate the number of times he visited to each of the seven different places. Scores were assigned to his response following the item nine in questionnaire presented in Appendix A.

Scoring was done by 3, 2, 1 and 0 to the number of times he visited to each of seven different places. The score of a respondent could range from 0 to 21, where 0 indicating no cosmopoliteness and 21 highest cosmopoliteness. This variable appears in item nine (9) in the interview schedule as presented in Appendix-A.

3.4.2. Measurement of Dependent Variable

The dependent variables in this study, was vegetable farmers' attitude towards food safety. Attitude of a respondent towards food safety was measured by five-point Likert method of summated ratings. The points are strongly agreed, agreed, no opinion, disagreed and strongly disagreed. Twelve statements out of which six are positive and six are negative regarding safe food production were constructed. A statement was considered positive if it indicated a favorable attitude towards food safety. If the case was reverse, it was considered as a negative statement. Scoring was done by assigning 5, 4, 3, 2 and 1 scores to the five alternative responses in case of a positive statement. Reverse score was assigned for a negative statement. However, attitude towards food safety of a farmer was obtained by summing up his/her scores for all the twelve statements in item no. 10 in the interview schedule. Attitude score, thus, obtained for a respondent could range from 12 to 60, where 12 indicated very unfavorable attitude and 60 indicated highest level of favorable attitude. This variable appears in item ten (10) in the interview schedule as presented in Appendix A.

3.5 Hypothesis

A null hypothesis states that there is no relationship between the concerned variable. If a null hypothesis is rejected on the basis of statistical test, it is concluded that there is a relationship between the concerned variables. However, following null hypotheses was formulated for the present study:

- There was no relationship between the selected characteristics of the vegetable farmers and their attitude towards food safety.

The selected characteristics are: age, education, family size, farm size, annual family income, training exposure, extension contact, time spent in farming and cosmopoliteness.

3.6 Collection of Data

Data were collected by the researcher himself during 1st October to 30 December 2019. To get valid pertinent information, the researcher made all possible efforts to explain the purpose of the study to the respondents. Interviews were conducted with the respondents in their homes and farms. While staring interview with respondent, the researcher looks all possible care lo establish rapport with him/her so that she/he did not feel hesitant or hesitate to furnish proper response to the questions and statements in the schedule. The questions were clearly explained wherever any respondent felt difficulty in understanding properly. The Sub-Assistant Agricultural Officer (SAAO), Agricultural officer, DAE rendered good cooperation in arranging appointments with the respondents.

3.7 Compilation of Data

After completion of field survey data from all the interview schedules were compiled, tabulated and analyzed according to the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units. The responses to the questions in the interview schedules were transferred to a master sheet to

facilitate tabulation. Tabulations and cross tabulations were done on the basis of categories developed by the investigator himself.

3.8 Categorization of the respondents

It was necessary to develop suitable categories to determine the attitude towards food safety among the respondents in selected aspects. For the purpose, the respondents were classified into categories on the basis of obtained scores of attitude towards food safety. Categories were also developed for describing each of the selected characteristics of the rural people. Nature of the data and mode of the categorization prevailing on the social system guided the researcher in developing categories in respect of selected characteristics.

3.9 Statistical analysis

Data collected from the respondents were analyzed and interpreted in accordance with the objectives of the study. The analysis of data was performed using statistical treatment with SPSS (Statistical Package for Social Sciences) computer program. Statistical measures as number, range, mean, standard deviation and rank order were used in describing the variables whenever applicable. To find out the contribution of selected characteristics of the vegetable farmers to their attitude towards food safety, multiple regressions was used. Five% (0.05) level of probability was used as the basis for rejection of a null hypothesis throughout the study.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter deals with the result and discussion of present research work. Necessary enlightenment and appropriate interpretations have also been made showing possible and logical basis of the findings. However, for convenience of the discussions, the findings are systematically presented in the following sections.

4.1 Selected characteristics of the respondents

This section deals with the classification of the farmers according to their various characteristics. In this section the findings on the farmer's selected nine characteristics have been discussed. The selected characteristics are age, education, family size, farm size, annual family income, training exposure, extension contact, time spent in vegetable farming and cosmopoliteness.

Therefore, the major hypothesis of the study was that there was no relationship between the selected characteristics of the farmers and their attitude on food safety. Range, mean and standard deviations of these characteristics of the selected farmers are described in this section. A summary profile of the farmer's characteristics has been given in Table 4.1.

Table 4.1 Summary profile of the selected characteristics of the respondents

Sl. No.	Characteristics (with measuring unit)	Range		Mean	Standard deviation
		Possible	Observed		
1.	Age (years)	--	20-75	45.4486	12.29146
2.	Education (schooling years)	--	0-18	7.0561	4.41071
3.	Family size (number of members)	--	4-14	8.6729	2.21817
4.	Farm size (hectare)	--	0.32-4.01	1.0712	.64543
5.	Annual family-income (‘000’Taka)	--	100-600	302.5234	114.90844
6.	Training exposure (number of days)	--	0-7	1.7570	1.43694
7.	Time spent in farming (hours/week)	--	16-52	35.4019	4.64161
8.	Extension contact (score)	0-44	6-39	18.3458	6.73221
9.	Cosmopoliteness (score)	0-21	4-19	7.8037	3.85697

4.1.1 Age

Age of the respondents varied from 20 to 75 years, the average being 45.44 years with the standard deviation of 12.29 (Table 4.1). According to their age, the respondents were classified into three categories as “young aged” (up to 35 years), “middle aged” (36- 50 years) and “old aged” (above 50 years). The distribution of the farmers according to their age is shown in Table 4.2.

Table 4.2 Distribution of the farmers according to their age

Categories	Years	Respondents	
		Numbers	Percent
Young age	Up to 35	29	27.10
Middle age	36 to 50	40	37.38
Old age	Above 50	38	35.52
Total		107	100

Data represented in Table 4.2 indicate that the highest proportion 37.38% of the farmers were middle aged compare to 35.52% of them being old and only 27.10% young. The overwhelming majority 72.90% of the farmers were

middle to old aged. This means that cultivation in the study area is being managed by comparatively middle-aged farmers.

4.1.2 Education

The education score of the farmers ranged from 0-18, with an average of 7.05 and standard deviation 4.41. Based on their education scores, the farmers were classified into four categories namely illiterate (0-0.5), primary education (1-5), secondary education (6-10) and above secondary (above 10). The distribution of the farmers according to their education is shown in Table 4.3.

Table 4.3 Distribution of the farmers according to their level of education

Categories	Basis of Categorization (schooling years)	Respondents	
		Numbers	Percent
Illiterate	0-0.5	20	18.69
Primary	1-5	25	23.37
Secondary	6-10	49	45.79
Above secondary	Above 10	13	12.15
Total		107	100

It is evident from the Table 4.3 that the highest proportion (45.79%) of the vegetable farmers had education up to secondary level compared to 23.37% of them having primary level of education. About 18.69% of them were illiterate. The proportion of vegetable farmers having above secondary level of education was 12.15%. Thus, the overwhelming majority (69.16%) of the vegetable farmers had education ranging from primary to secondary level of education. The findings thus, indicate that the current literacy rate in the study area is higher than that of the national average of 74.7% (BBS, 2020).

4.1.3 Family Size

The number of family members of the respondents ranged from 4 to 14 with an average of 8.67 and standard deviation of 2.21 (Table 4.1). Based on the family size, the respondents were classified into three categories as small, medium and large family as shown in Table 4.4.

Table 4.4 Distribution of the farmers according to their family size

Categories	Basis of categorization (No. of family member)	Respondents	
		Numbers	Percent
Small family	Up to 4	2	1.87
Medium family	5-6	24	22.42
Large family	Above 6	81	75.71
Total		107	100

Data furnished in the Table 4.4 indicated that the highest proportion (75.71%) of the respondents had large family size consisting of above 6 members, while 22.42% of the respondents belonged to the category of medium family compared to 1.87% of them having small family size. Data indicated that the average family size (8.67) of the respondents in the study area is higher than the national average of 4.4 (BBS, 2019).

4.1.4 Farm Size

Farm size of the respondents ranged from 0.32 hectare to 4.01 hectares with the mean of 1.07 hectare and standard deviation of 0.64 (Table 4.1). On the basis of their farm size, the farmers were classified into three categories followed by DAE (1999) as shown in Table 4.5.

Table 4.5 Distribution of farmers according to their farm size

Categories	Basis of categorization (ha)	Respondents	
		Numbers	Percent
Marginal farmer	Up to 0.40	7	6.54
Small farmer	0.41 to 1.00	48	44.86
Medium farmer	1.01 to 3	38	35.51
Large	Above 3	14	13.09
Total		107	100

Data presented in the Table 4.5 demonstrated that highest proportion (44.86%) of the farmers had small farm compared to 6.54% having marginal farm and only 35.51% had medium farm and 13.09% had large farm. The findings indicated that overwhelming majority of the farmers had small to medium farm size.

4.1.5 Family income

The observed ranged of the annual family income of the respondents varied from 100 to 600 thousand taka with a mean of 302.52 thousand taka and standard deviation of 114.90 (Table 4.1). On the basis of annual family income, the respondents were categorized into three classes namely low, medium and high-income categories shown in Table 4.6.

Table 4.6 Distribution of farmers regarding annual family income

Categories	Basis of categorization (‘000’ taka)	Respondents	
		Numbers	Percent
Low income	Up to 200	30	28.04
Medium income	201 to 400	62	57.94
High income	Above 400	15	14.02
Total		107	100

Data shown in Table 4.6 presented that the highest proportion of the respondents (57.94%) had medium annual family income while 28.04% and 14.01% of them had low and high annual family income, respectively. Findings

reveal that the most (85.98%) of the respondents had low to medium annual family income in the selected study area.

4.1.6 Training exposure

The score of training exposure on safe food production and processing of the farmers ranged from only 0-7 days. The mean was 1.75 days and standard deviation was 1.43 (Table 4.1). On the basis of training exposure on food safety, the respondents were categorized into three groups as shown in Table 4.7.

Table 4.7 Distribution of the farmers according to their training exposure

Categories	Basis of categorization (Days)	Respondents	
		Numbers	Percent
No training	0	35	32.71
Low training	1-3	54	50.47
Medium training	Above 3	18	16.82
Total		107	100

Data presented in the Table 4.7 showed that about one third of the total respondents (32.71%) had no training on food safety while 50.47% of the farmers had low training exposure and only 16.82% had medium exposure. It means that an overwhelming majority (83.18%) of the farmers had no or low training exposure.

It is logical that there is always a relationship between training exposure and attitude on safe food production practices because training develops the farmers' attitude in production and processing of crops safely. The findings suggest that training experience might be the most important factor for the respondents to change their attitude on food safety.

4.1.7 Times spent in vegetable farming

The observed times spent in farming of the respondents ranged from 16 to 52 hours per week (Table 4.1). However, the average was 35.40 and the standard

deviation was 4.64. Based on their times spent in farming, the respondents were classified into three categories: “Less”, “Moderate” and “High”. The distribution of the respondents according to their times spent in farming/week is shown in Table 4.8.

Table 4.8 Distribution of the farmers according to their time spent in farming

Categories	Basis of categorization (score)	Respondents	
		Numbers	Percent
Low	Up to 30	15	14.02
Medium	31-40	89	83.18
High	Above 40	3	2.80
Total		107	100

The finding shows that majority (83.18%) of the farmers spent their time in farming in moderate level where 14.02% farmers spent less time in their farm. Rest of the farmers (2.80%) spent their times in high level in their farm. From the finding it can be said that perhaps maximum respondents do not have outward exposure in terms of times spent in farming/week which might have a positive attitude towards food safety.

4.1.8 Extension contact

The score of extension contact on attitude towards food safety practice ranged from 6-39 with possible score range of 0-44. The mean was 18.34 and standard deviation was 6.73 (Table 4.1). On the basis of extension contact, the respondents were categorized into three groups as shown in Table 4.9.

Table 4.9 Distribution of the farmers according to their extension contact

Categories	Basis of categorization (score)	Respondents	
		Numbers	Percent
Very low contact	Up to 11	18	16.82
Low contact	12 – 22	68	63.55
Medium contact	Above 22	21	19.63
Total		107	100

Data presented in Table 4.8 indicate that more than fifty percent the respondents (63.55%) had low extension contact while 16.82% had very low and only 19.63% had medium extension contact. No respondents were found to high extension contact. Thus, overwhelming majority 83.18% of the vegetable farmers had low to medium extension contact. Extension contact is a very effective and powerful source of receiving information about various new and modern technologies. The status of having low and medium contacts might have significant impacts on the attitude towards food safety.

4.1.9 Cosmopoliteness

Cosmopoliteness of the respondents ranged from 4 to 19 with an average of 7.80 and a standard deviation of 3.85 against the possible range of 0 to 21. On the basis of their cosmopoliteness scores, the farmers were classified into three categories: "low cosmopoliteness", "medium cosmopoliteness" and "high cosmopoliteness". The distribution of the respondents according to their cosmopoliteness is shown in Table 4.10.

Table 4.10 Distribution of the farmers according to their cosmopoliteness

Categories	Basis of categorization (score)	Respondents	
		Numbers	Percent
Low	0-7	65	60.75
Medium	8-15	35	32.71
High	Above 15	7	6.54
Total		107	100

The finding shows that majority (60.75%) of the farmers had low cosmopoliteness compared to 32.71% and 6.54% of them having medium and high cosmopoliteness respectively. The finding reveals that maximum respondents do not have outward exposure in terms of cosmopoliteness which has a positive relationship with acceptance on new technology.

4.2 Attitude towards food safety

Attitude on food safety score of the respondents ranged from 26 to 42 against the possible range of 12-60 having an average of 31.21 and standard deviation of 3.51 (Table 4.11). On the basis of attitude scores, the respondents were classified into three categories namely, unfavorable attitude, neutral attitude and favorable attitude. The distribution of the respondents according to their attitude towards food safety is given in Table 4.11.

Table 4.11 Distribution of the farmers according to their attitude towards food safety

Categories	Basis of categorization (score)	Respondents	
		Numbers	Percent
Unfavorable	Up to 35	34	31.78
Neutral	36	21	19.63
Favorable	Above 36	52	48.59
Total		107	100

Data presented in Table 4.11 shows that 31.77% of the respondents showed unfavorable attitude towards food safety followed by 19.62% in neutral category and the highest percentage (48.59%) respondents were in favorable attitude category.

The vegetable farmers had showed unfavorable attitude probably because they thought that safe food production is related with low yield. They also thought that application of chemical fertilizer and pesticide is not harmful for safe food production. Also, some farmers showed neutral attitude because they were confused about out of conventional method and safe food production practices which one is good.

4.3 Contributing factors attitude towards food safety of vegetable farmers

In order to estimate the attitude towards food safety of the respondents from the independent variables, multiple regression analysis was used which is shown in the Table 4.12

Table 4.12. Multiple regressions co-efficient showing contribution with selected characteristics of the farmers on their attitude towards food safety

Dependent variable	Independent variables	B	P	R^2	Adjusted R^2	F-value
Attitude towards food safety	Age	.021	$.389^{NS}$	0.552	0.510	13.277
	Education	.192	.015*			
	Family size	.036	$.772^{NS}$			
	Farm size	.232	$.708^{NS}$			
	Annual family income	.003	$.339^{NS}$			
	Training exposure	.423	.011*			
	Extension contact	.106	.037*			
	Time spent in vegetable farming	.020	$.731^{NS}$			
	Cosmopoliteness	.276	.001**			

NS-Not significant
*Significant at 0.05 level of probability
**Significant at 0.01 level of probability

Table 4.12 shows that level of education, training exposure, extension contact and cosmopoliteness of the respondents had significant positive contribution to attitude towards food safety.

Of these, cosmopolieness was the most important contributing factors (significant at the 1% level of significance) and education, training exposure and extension contact were less important contributing factors (significant at 5% level of significance). Coefficients of other selected variables don't have any contribution on attitude towards food safety. The value of R^2 is an

expression of how the variability in the dependent variable is accounted by the independent variables. So, the value of R^2 = 0.552 means that independent variables account for 55% of the variation with their attitude towards food safety. The F ratio is 13.277 which is highly significant (p<0).

4.3.1 Contribution of cosmopoliteness towards food safety

From the multiple regression, it was concluded that the contribution of cosmopoliteness to the farmers' attitude towards food safety in vegetable cultivation was measured by the testing the following null hypothesis;
There is no contribution of cosmopoliteness to the farmers' attitude towards food safety in vegetable cultivation.

The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of cosmopoliteness was significant at 1% level (0.001).
b. So, the null hypothesis could be rejected.
c. The b-value of cosmopoliteness was 0.276. So, it can be stated that as cosmopoliteness increased by one unit, farmers' attitude towards food safety in vegetable cultivation increased by 0.276 units. Considering the effects of all other predictors are held constant.

From the multiple regressions, it was concluded that cosmopoliteness of the farmers had highest positive contribution to their attitude towards food safety in vegetable cultivation. This implies that with the increase of cosmopoliteness of the farmers will increase their attitude towards food safety in vegetable cultivation. The findings is supported by Aurangozeb (2002).

4.3.2 Contribution of training exposure towards food safety

From the multiple regression, it was concluded that the contribution of training on food safety to the farmers' attitude in vegetable cultivation was measured by the testing the following null hypothesis;

There is no contribution of training on pest control to the farmers' attitude towards food safety in vegetable cultivation.

The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the training on food safety was significant at 5% level (0.011).
b. So, the null hypothesis could be rejected.
c. The b-value of training on pest control was (0.423). So, it can be stated that as training on food safety increased by one unit, farmers' attitude in vegetable cultivation increased by 0.423 units. Considering the effects of all other predictors are held constant.

Multiple regressions showed that training on food safety was second highest positive contribution to their attitude in vegetable cultivation. Islam (2007) and Bhuiyan (2208) found similar findings. This implies that with the increase of training on food safety of the farmers will also increase their attitude in vegetable cultivation. Training on food safety helps farmers to make favorable attitude which ultimately help them to take adaptation.

4.3.3 Contribution of education towards food safety

The contribution of education to farmers' attitude towards food safety in vegetable cultivation was measured by the testing the following null hypothesis;

There is no contribution of education to the farmers' attitude towards food safety in vegetable cultivation.

The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the education was at 5% significance level (0.015).

b. So, the null hypothesis could be rejected.
c. The b-value of level education was (0.192). So, it can be stated that as education increased by one unit, farmers' attitude towards food safety in vegetable cultivation increased by 0.192 units. Considering the effects of all other predictors are held constant.

Based on the above finding, it can be said that farmers' have more education increased the farmers' attitude towards food safety in vegetable cultivation. Ahmed (2006) and Chowdhury (2003) found similar findings. This implies that with the increase of education of the farmers will increase their attitude on food safety in vegetable cultivation.

4.3.4 Contribution of extension contact towards food safety

From the multiple regression, it was concluded that the contribution of extension contact to the farmers' attitude towards food safety in vegetable cultivation was measured by the testing the following null hypothesis;

There is no contribution of extension contact to the farmers' attitude towards food safety in vegetable cultivation.

The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of extension contact was significant at 5% level (0.037).
b. So, the null hypothesis could be rejected.
c. The b-value of extension contact was 0.106. So, it can be stated that as extension contact increased by one unit, farmers' attitude towards food safety in vegetable cultivation increased by 0.106 units. Considering the effects of all other predictors are held constant.

From the multiple regressions, it was concluded that extension contact of the farmers had fourth highest positive contribution to their attitude towards food safety in vegetable cultivation. This implies that with the increase of extension contact of the farmers will increase their attitude towards food safety in vegetable cultivation. Siddique (2002) and Ali (2002) found similar results.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the findings

5.1.1 Attitude towards food safety

Attitude towards food safety in vegetable farming of the study areas, the farmers ranged from 26 to 42 with a mean and standard deviation of 31.21 and 3.51, respectively. The highest proportion (48.59%) of the respondents showed favorable attitude towards food safety. 19.63% of the respondents showed neutral attitude towards food safety and 31.78% of the respondents showed unfavorable attitude towards food safety.

5.1.2 Selected characteristics of the vegetable farmers

Age

Age of the farmers ranged from 20 to 75 years with a mean and standard deviation of 45.44 and 12.29 respectively. The middle-aged and old aged vegetable farmers comprised the highest proportion (37.38%) and the lowest proportion was made by young aged category (27.10%).

Education

The level of educational scores of the vegetable farmers ranged from 0 to 18 with a mean and standard deviation of 7.05 and 4.41 respectively. Respondents under secondary education category constitute the highest proportion which is 45.79%. About 18.69% were in illiterate category, 23.37% respondents in primary level of education and above secondary level of education consist of 12.15% respondents.

Family size

Family size scores of the vegetable farmers ranged from 4 to 14 with a mean and standard deviation of 8.67 and 2.21, respectively. The highest proportion (75.71%) of the farmers had large family size, while 22.42% and 1.87% belonged to the medium family size and small family size, respectively

Farm size

The farm size of the vegetable farmers ranged from 0.32 ha to 4.01 ha with a mean and standard deviation of 1.07 and 0.64, respectively. The highest proportion (44.86%) was small farmer whereas only 13.09% were large farm holder and 35.51% had medium size farm.

Annual family income

Annual family income of the vegetable farmers ranged from 100 to 600 thousand taka with a mean and standard deviation of 302.52 and 114.90, respectively. The highest portion of vegetable farmers (57.94%) had medium annual income, while the lowest proportion (14.02%) was in high annual family income.

Training exposure

Training exposure of the vegetable farmers ranged from 0 to 7 with a mean and standard deviation of 1.75 and 1.43, respectively. Most of the respondents (50.47%) of the respondents had low training compared to 32.71% and 16.82% having no training and medium training, respectively. It means overwhelming majority (83.18%) of the vegetable farmers had no to low training on food safety.

Extension contact

Extension contact of the vegetable farmers ranged from 0 to 44 with a mean and standard deviation of 18.34 and 6.73, respectively. Most of the respondents (63.55%) had low extension contact compared to 16.82% and 19.63% having

very low and medium extension contact, respectively. It means more than 50% of the respondents had low extension contact.

Time spent in vegetable farming

Time spent in vegetable farming of the farmers ranged from 16 to 52 with a mean and standard deviation of 35.40 and 4.64, respectively. The highest proportion (83.18%) of the farmers had moderate time spending in vegetable cultivation, while 14.02% had less time spending in vegetable cultivation and 2.80% had high time spending in vegetable cultivation.

Cosmopoliteness

Cosmopoliteness of the vegetable farmers ranged from 4 to 19 with a mean and standard deviation of 7.80 and 3.85, respectively. Most of the respondents (60.75%) had low cosmopoliteness followed by 32.71% and 6.54% had medium and high cosmopoliteness, respectively.

5.1.3 Relationship between selected characteristics of the respondents on their attitude towards food safety

Regression analysis indicates that age, family size, firm size, annual family income and time spent in vegetable farming of the respondent had no significant relationship on their attitude towards food safety. However, education, training exposure, extension contacts were positively related at 0.05% level of significance on their extent of attitude towards food safety.

Cosmopoliteness was positively related at 0.01% level of significance on their extent of attitude towards food safety.

5.1.4 Conclusion

Findings of the study and the logical interpretations in the light of relevant facts prompted the researcher to draw the following conclusions:

1. The findings of the study revealed that the majority of the farmers' (48.59%) had favorable attitude towards food safety in vegetable cultivation. Therefore, it may be concluded that it would be wise thinking to improve the overall situation of vegetable farmers' attitude by taking care of the factors related to the increase of favorable attitude among them.

2. Majority (83.46%) of the vegetable farmers' had low to medium cosmopoliteness. Multiple regression revealed that cosmopoliteness of the respondents had the 1st highest contribution to their attitude towards food safety in vegetable cultivation. Therefore, it may be concluded that individuals having more cosmopoliteness in vegetable cultivation had more favorable attitude towards food safety in vegetable cultivation.

3. Overwhelming majority (83.18%) of the vegetable farmers' had no to low training on food safety. Multiple regression revealed that training on food safety of the respondent had the 2nd highest contribution to their attitude. Therefore, it may be concluded that individuals having more training exposure had more favorable attitude towards food safety in vegetable cultivation.

4. Education of the vegetable farmers' had significant positive contribution with their attitude towards food safety in vegetable cultivation. It was thus proved that farmers' attitude is dependent with their education.

5. Extension contact of the farmers' had significant positive contribution with their attitude towards food safety in vegetable cultivation. It was thus proved that vegetable farmers' attitude is dependent with their extension contact.

5.2 Recommendations

5.2.1 Recommendations for policy implications

On the basis of findings and conclusions following recommendations were drawn:

1. Bangladesh government through Bureau of Non-formal Education (BNFE) and Non-government Organizations (NGOs) can take necessary steps to increase vegetable farmers' primary level of education through non-formal education (adult education).
2. The Department of Agricultural Extension (DAE) and other related Non-government Organizations (NGOs) should take initiative to arrange more training on safe food production.
3. The Sub-Assistant Agricultural Officers (SAAO) should motivate the farmers' to produce safe vegetables highlighting the advantages of food safety.
4. Cosmopoliteness had a very strong impact to form favorable attitude towards food safety. The Sub-Assistant Agricultural Officers (SAAO) should contact more with the vegetable farmers having less cosmopoliteness to form a favorable attitude towards food safety.

5.2.2 Recommendations for the future study

1. The study was conducted Shailokupa Upazila under Jhenaidah District. Similar studies might be carried out in other area of Bangladesh.
2. This study investigated the relationship and contributions of 10 characteristics of the farmers' attitude towards food safety. Further research is needed to explore the effects of other characteristics of the farmers.
3. Similar research should be conducted on different crops of the country

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APPENDICES

Appendix A. Questionnaire of the study

(English version of the interview schedule)

Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University, Dhaka-1207

Interview schedule
On
VEGETABLE FARMERS' ATTITUDE TOWARDS FOOD SAFETY

Sl. No. : ----------

Name of the respondent : ----------

Father's Name : ----------

Mobile No : ----------

Village : Upazila :

Union : District :

(Please answer the following questions)

1. **Age**
   What is your present Age?
   Ans: ---------- Years.
2. **Education**
   What is the level of your education?
   a) Can't read and write: ----------
   b) Can sign only: ----------
   c) I read up to class: ----------
   d) I passed ---------- class

3. **Family size**

   Please mention the number of your family members in the following groups:

   a) Male member …….. Person (s)

   b) Female member ……. Person (s)

   c) Total member ……. Person (s)

4. Farm size

Please indicate the land area

SL. No.	Nature of the land	Amount of land	
		Local unit	Hectare
1.	Homestead		
2.	Own cultivable land		
3.	Land taken from others on lease		
4.	Land given to others on borga system		
5.	Land taken from others on borga system		
	Total land		

5. Annual family income

Please mention the total income of your family last year

SL. No.	Sources of income	Income (TK)
A	**Agriculture**	
1.	Rice	
2.	Jute	
3.	Wheat	
4.	Pulse	
5.	Vegetables	
6.	Poultry & Livestock	
7.	Fisheries	
B	Business	
C	Service	
D	Labor	
E	Others	
Total annual income = A + B + C + D + E = ……		

6. Training exposure

Have you participated in any training program related to agriculture & food safety?

a) Yes…….

b) No……..

If yes, then please furnish the following information:

SL. No.	Name of the training course	Concerned organization	Duration of training (days)
1.			
2.			
3.			

7. Time Spent in Vegetable Farming

How many hours do you spent in vegetable farming?

Ans: …… hours/week

8. Extension contact

Please mention the extent of your contact with the following sources:

Sl. No	Sources	Extent of contact				
		Regularly (4)	**Often (3)**	**Occasionally (2)**	**Rarely (1)**	**Never (0)**
1.	Local leader/Ideal farmer					
2.	NGO worker					
3.	Sub-Assistant Agriculture Officer					
4.	Upazila Agriculture Officer					
5.	AEO					
6.	Agricultural input dealers					
7.	Agricultural fair					
8.	Field days					
9.	Radio					
10.	Television					
11.	Newspaper					

9. Cosmopoliteness

Please indicate how frequently you visit the following places within a specific period.

SL. No	Places of visit	Degree of Visit			
		Regularly (3)	**Occasionally (2)**	**Rarely (1)**	**Not at All (0)**
1.	Local Market	7 or more times/month	3-6 times/ month	1-2 times/ month	No Visit
2.	Visit to other union	6 or more times/month	4-5 times/ month	1-3times/ month	No Visit
3.	Visit to own thana headquarter	6 or more times/month	4-5 times/ month	1-3times/ month	No Visit
4.	Visit to other Thana headquarter	4 or more times/year	3-4 times/ year	once/ year	No Visit
5.	Visit to own district/head quarter	4 or more times/year	3-4 times/ year	once/ year	No Visit
6.	Visit to other District town/headquarter	4 or more times/year	2-3times/ year	once/ year	No Visit
7.	Visit to Capital City or other Metropolitan City	4 or more times/year	2-3times/ year	once/ year	No Visit

10. Attitude towards food safety

Please indicate the degree of your agreement or disagreement with the following statements

Sl. No.	Statements	Extent of opinion				
		Strongly agree (5)	**Agree (4)**	**No opinion (3)**	**Dis-agree (2)**	**Strongly disagree (1)**
(+)1.	Demands of safe foods are increasing.					
(-)2.	Maintaining of food safety is very difficult.					
(+)3.	Safe vegetables contain more nutrients.					
(-)4.	High cost is needed to maintain food safety.					
(+)5.	We should use clean water for irrigation in safe food cultivation.					
(-)6.	Safe food production activities sometimes fail to achieve desired production.					
(+)7.	We should rely less on chemical pesticide for safe food cultivation.					
(-)8.	Safe food can not store long					
(+)9.	Disease resistant variety should be cultivated for safe production.					
(-)10.	Unsafe food is the cause of many illnesses.					
(+)11.	One should give more emphasize on IPM for safe food cultivation.					
(-) 12.	Pesticide decrease food test and quality					

Thanks for your co-operation.

.....

Signature of the interviewer

Date: .....