

**FARMERS' ATTITUDE TOWARDS INDUSTRIALIZATION IN
NARAYANGANJ DISTRICT**

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JUNE, 2016

**FARMERS' ATTITUDE TOWARDS INDUSTRIALIZATION IN
NARAYANGANJ DISTRICT**

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REG. NO. : 10-03945

A Thesis

*Submitted to the Department of Agricultural Extension and Information
System*

*Sher-e-Bangla Agricultural University, Dhaka,
in partial fulfillment of the requirements
for the degree of*

MASTER OF SCIENCE (MS)

IN

AGRICULTURAL EXTENSION

SEMESTER: JANUARY- JUNE, 2016

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CERTIFICATE

*This is to certify that the thesis entitled 'FARMERS' ATTITUDE TOWARDS INDUSTRIALIZATION IN NARAYANGANJ DISTRICT' submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension & Information system**, embodies the result of a piece of bonafide research work carried out by **DEWAN MAHMUDUL HOQUE**, Registration No.: 10-03945 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 duly been acknowledged.

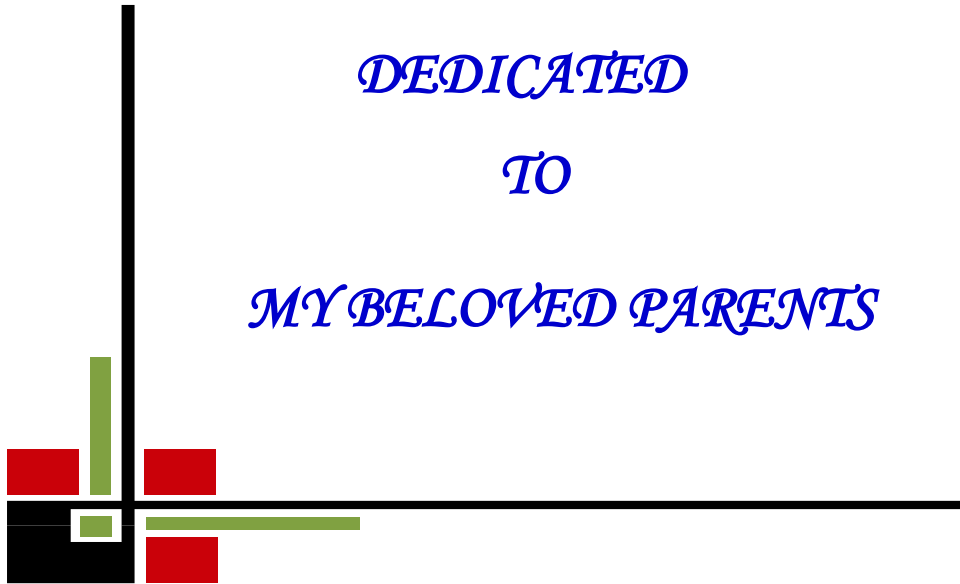
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*DEDICATED
TO
MY BELOVED PARENTS*



ACKNOWLEDGEMENT

All praises to Almighty Allah, the Supreme Ruler of the universe who enables the author to complete this research work successfully.

*The author would like to express his heartfelt gratitude to his research supervisor, **Dr. M. M. Shofi Ullah**, Dept. of Agricultural Extension & Information System, Sher-e-Bangla Agricultural University, Dhaka, for his constant supervision and encouragement during research work and guidance in preparation of manuscript of the thesis.*

*The author sincerely expresses his heartiest thanks to his co-supervisor, **Dr. Md. Sekender Ali**, Professor, Dept. of Agricultural Extension & Information System, Sher-e-Bangla Agricultural University, Dhaka, for constant encouragement, cordial suggestions, constructive criticisms and valuable advice during the research period and preparation of this thesis.*

The author would like to express his deepest respect and boundless gratitude to all the respected teachers of the Dept. of Agricultural Extension & Information System, Sher-e-Bangla Agricultural University, Dhaka for the valuable teaching, sympathetic co-operation and inspirations throughout the course of this study and suggestions and encouragement to research work.

The author would like to express his heartfelt gratitude and special thanks to UAO and AEO of rupganj upazila along with all personnel and SAAOs' for their significant cooperation during data collection period.

The author deems it a great pleasure to express his profound thankfulness to his respected parents, who entailed much hardship inspiring for prosecuting his studies and receiving proper education.

Last but not the least, author is also grateful to Dewan Mahbub Hoque for his help and inspiration during the period of the study. Author also grateful to Rashel, Masud, Jalal and

Raja Md. Masum for their sacrifices, encouragement and blessing to carry out his higher study.

The Author

June, 2016

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ABBREVIATIONS

BBS	Bangladesh Bureau of Statistics
BADC	Bangladesh Agriculture Development Corporation
DAE	Department of Agriculture Extension
Et al	All others
etc.	et cetera
UAO	Upazilla Agriculture Officer
AEO	Agriculture Extension Officer
SAAO	Sub- Assistant Agriculture Officer
SPSS	Statistical Package for Social Science
GDP	Gross Domestic Product
Ha	Hectare
SD	Standard Deviation
CV	Co-Efficient of Variation

**FARMERS' ATTITUDE TOWARDS INDUSTRIALIZATION IN
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DEWAN MAHMUDUL HOQUE

ABSTRACT

The main focus of the study was to describe the socio-economic profile of the farmers in the study area, to determine the extent of attitude towards industrialization and to explore the contribution of the selected characteristics of the farmers on their attitude towards industrialization. The study was undertaken purposively in rupganj upazilla under narayanganj district. Well-structured interview schedule (questionnaire) was used to collect data. Data analysis was done using simple and inferential statistical tools such as frequency counts, mean, standard deviation, co-efficient of variation and linear multiple regression. The findings showed that majority of the respondents (65.83 percent) in this study area showed moderate favorable attitude. 30 percent of the respondents showed low favorable attitude, while only 4.17 percent of the respondents showed high favorable attitude towards industrialization. The result also showed that farmer's age, education, family size and level of contact within the agricultural community were significant factors for farmers attitude towards industrialization and within this, level of contact within the agricultural community were the most significant contributing factors. On the other hand, farming areas, annual family income, level of contact within the industrial sector farmers' innovativeness and farmers' knowledge showed non-significant relationship towards industrialization.

CHAPTER 1

INTRODUCTION

1.1 General Background

Bangladesh is a predominantly an agriculture based country. Most of the people of Bangladesh are more or less depends on agriculture. But last decades the dependency on agriculture is reduced due to the rapid development of industrialization. The economy of Bangladesh is expanding with 5.0-6.0 per cent annual growth during last one decade. Contribution of agriculture to gross domestic product (GDP) is decreasing whereas that of industry has been increasing over the last two decades. In 1991, contribution of agriculture and industry in GDP were 30.4 per cent and 21.7 per cent respectively. In 2001, a remarkable change has been occurred where contribution of agriculture to GDP decreased to 24.1 per cent whereas that of industry rose to 25.9 per cent. (Bangladesh bureau of statistics, 2007). Recently, contribution of agriculture to GDP is much lower than that of the industry. The present government has envisioned that the contribution of industry to GDP will increase to 40 per cent by year 2021. So it is clear that the Bangladesh economy is being transformed from agriculture to industry-driven one.

Industrialization is a process that happens in countries when they start to use machines to do work that was once done by people. Industrialization changes the society as it happens. During the industrialization of a country people leave farming work to take higher paid jobs in factory in towns. Industrialization is part of a process where people adopt easier and cheaper ways to make things. Using better technology, it becomes possible to produce more goods in a shorter of time. Narayanganj is one of the industrial district in Bangladesh. Many industries are located in this area. Narayanganj was a sub-division of former Dhaka district. It is located on the bank of meghna and shytolokha. It is also the center of business

and industry, especially for jute trade and processing plants and the textile sector of the country. Narayanganj is often called “Dundee” of Bangladesh due to the presence of many jute mills. Narayanganj district is bounded on the north by Gazipur and Narsingdi districts, on the east by Brahmanbaria and Comilla districts, on the south by Munshiganj district and on the west by Dhaka district. The total area of the district is 684.37 sq. km. It lies between $23^{\circ} 33'$ and $23^{\circ} 57'$ north latitudes and between $90^{\circ} 26'$ and $90^{\circ} 45'$ east longitudes. Narayanganj subdivision was established in 1882 and was turned into a district in 1984. Narayanganj municipality was established in 1876. The area of the town is 18.7 sq. km. The district consists of 5 upazila, 41 union, 619 mauza, 1204 village, 6 paurashava, 54 ward and 282 mahalla. The upazilas are Araihsazar, Bandar, Narayanganj Sadar, Rupganj and Sonargaon. The source of income in this district is mainly industrialization, agriculture, and other non- farm activities. Percentage of source of income of agriculture is 22.72%, Industry and commerce is 30.19%, non- agricultural laborer is 3.14%, Transport and communication 6.58%, service 19.75%, Construction 1.98%, Rent and remittance 3%, Religious service 0.18% and others 12.96%. Ownership of agricultural land owner 44.07%, landless 55.93%; agricultural landowner: urban 46.97% and rural 43.44 %. (Sources: Bangladesh Bureau of Statistics, 2007; Cultural survey report of Rupganj upazila, 2007). The district is pioneer in merchandising and manufacturing of jute, yarn and dyeing items. Cottage industry like weaving abounds in this district. International trading, import and export business, garments industries, knitwear garments, shipyard, brickfield etc. create employment opportunities to the people facilitating additional income to the household population. Out of total 532,415 holdings of the district 22.44% holdings are farms that HYV paddy, vegetables, spices, cash crops, pulses and others. Various fruits like banana, guava are grown and fish of different varieties abound in this district. Varieties of fishes are caught from rivers, channels, creeks and from paddy fields during rainy season. The

major income generating activities of the people in this district is business and working in the mill and factories. The status of non-farm activities in the district is increasing. The scenario of non-farm economic activities under this district are shown in table 1.

Table-1: Number of Establishments and Persons Engaged by Activity

Activity	Establishment			Persons engaged		
	Total	Urban	Rural	Total	Male	Female
Mining, quarrying	5	4	1	213	206	7
Manufacturing	12805	7452	5353	208074	172734	35340
Constructions	37	37	0	1641	1451	190
Hotels and restaurants	4808	3333	1475	13543	12974	569
Bank, insurance and financial institutions	281	255	26	3743	2729	1014
Real estate and renting	862	669	193	2910	2850	60
Transport, storage and communication	1389	850	539	5780	5177	603

Source: Census of non-farm economic activities 2006-2007

The people of narayanganj district are changing their profession from agricultural practices to non-farm activities. Additionally agricultural practices are always with uncertainty due to several natural calamities and disasters are occurring in Bangladesh on regular basis. On the other hand, industrialization is free from several natural calamities. So people of this district prefers industrialization over agricultural practices.

Due to the industrialization the farm land of the farmers are decreased. In araihajar upazilla the total agricultural farm holding is 32844 acres. In bondor upazilla the amount of

agricultural firm holding is 11303 acres. In narayanganj sadar, rupganj and sonargaon the total firm holdings are 12501, 32977 and 29854 acres respectively and the homestead area of araihazar, bondor, narayanganj sadar, rupganj and sonargaon is 4784, 2560, 9225, 6112 and 4452 acres respectively. (Agriculture census, 2008).

Many industries has established in narayanganj district due to the industrialization. There are several types of industries like as textile mills, garments factory, rice mill, match factory, steel and engineering, aluminum, jute mills, sugar mills etc. established. Among them textile mills and garments factories are dominant over others factories. Highest number of textile mills are presents in araihajar upazilla, the number is 1127. Garments factories number is highest in narayanganj sadar, the number is 8299.

Industrialization creates a fabulous job opportunities for the farmers who left agricultural works. Most of the people works in textile industries, about 71012. In jute mills 2590 people's works. In handloom industry and cottage industry 11215 and 6450 peoples work. (District statistics, 2011).

1.2 Statement of the problem

Agricultural land is decreasing day by day. During last two decades a remarkable change has already been observed. The researcher undertook the investigation entitled "Farmers attitude towards industrialization in narayanganj district" in order to have an understanding of the attitude of rural farmers' towards industrialization at agricultural land. The purposes of the study was to investigate the attitude of farmers towards industrialization and to explore the contributing relationship between the selected characteristics of the farmers and their attitudes towards industrialization. In order to make the study manageable, the following research questions were taken into consideration.

1. What are the socio-economic profile of the rural farmer?

2. What is the attitude of farmers' towards industrialization?

3. What is the contribution of the selected characteristics of the farmers on their attitudes towards industrialization?

4. What are the problem faced by the farmers due to industrialization?

1.3 Specific objectives of the study

1. To describe the socio-economic profile of the farmers;

2. To determine the extent of attitude of farmers' towards industrialization;

3. To explore the contribution of the selected characteristics of the farmers on their attitudes towards industrialization; and

4. To determine the problem faced by the farmers' due to industrialization.

1.4 Justification of the study

The main purpose of this research study was to determine the extent of farmer's attitude towards industrialization. It is recognized that industrialization, intended as the shift from agriculture to manufacturing, is key to development. During the industrialization of a country people leave farming work to take higher paid jobs in factories in towns. Small and marginal farmer moved to the industry, because they feel secured in this sector. On the other hand, agricultural practices are always in uncertainty due to several natural calamities. So the farmers prefer industrialization over agricultural practices day by day for their secured and safe lifestyle. Considering this facts and findings the researcher became interested to undertake a study to determine their attitudes towards industrialization. As there is a limited research in this field, the researcher deemed it a timely necessity to undertake the study entitled "Farmers Attitude towards Industrialization in Narayanganj District".

1.5 Assumption of the Study

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

1. The respondents was included in the sample had the potentials of furnishing proper responses to queries in the interview schedule as needed by the interviewer.
2. The researcher was well adjusted to the environment of the study area since he hails from the same community. Hence the data collected by him may be reliable.
3. The responses furnished by the respondents were reliable and they expressed the truth about their convictions and opinions.
4. The views and opinions furnished by the respondent's includes in the sample were representative views and opinions of the whole population of the study area.

1.6 Limitations of the Study

Considering the time, money and other necessary resources available to make the study manageable and meaningful, it was necessary to consider the following limitations:

1. The study was confined bulta union of Rupganj upazilla of Narayanganj District. The bulta union consisted of eight villages. Among eight villages, only four villages were selected purposefully for this study.
2. Characteristics of the farmers were many and varied but only nine (9) characteristics were selected for investigation in this study.
3. During data collection the researcher had to depend on data furnished by the respondents. As none of the farmers kept records of their farming activities, they furnished information to the different questions by recall.

4. Conceptually, extents of attitudes of the farmers were determined from their statements.
5. Attitude of the farmer could be measured in various ways. However in this study these were measured by using some specific point rating scale.
6. The present study highlights a new dimension of research in the field of agricultural extension in Bangladesh and so the researcher could not provide sufficient evidence in equipping his study report with relevant literature reviews.

1.7 Definition of Related Terms

The terms which have been frequently used throughout the thesis are defined and interpreted below:

Age: Age of a respondent defined as the span of his/her life and is operationally measured by the number of years from his/her birth to the time of interviewing.

Education: It was defined to the development of desirable changes in knowledge, skill and attitudes in an individual through reading, writing, working, observations and others activities. It was measured on the basis of class passed from a formal educational institution by the respondents.

Family Size: It referred to actual number of permanent members in a subject's family who live in a fixed dwelling unit and eat from the same cooking arrangement.

Farming areas: Farming areas referred to the total area on which a farmer's family carries on farming operations, the area being estimated in terms of full benefits to the farmer's family. A farmers was considered to have full benefits from cultivated area either owned by her/him or got lease from others and obtain half benefit from the area which was either cultivated by him on barga or given to others for cultivation on barga basis. The

respondents given information for their farm size is in local measurement. Finally, it will be converted into hectare and will be considered as the farm size score of a respondent.

Annual Income: Annual income referred to the total annual earnings of all the family members of a respondents from agriculture, livestock and fisheries and other accessible sources (business, services, daily working etc.)

Farmer's category: Farmer's category is the classification of farmers based on different views. For example, based on innovativeness farmers are categorized into Innovator, Early adopter, Early majority, Late majority and Laggards.

Innovativeness: Rogers (1983), defined innovativeness as 'the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of the social system'.

Variables: Variable is a general indication in statistical research of the characteristics that occurs in number of individuals, objectives, groups etc., and that can take on various values. For example, age of an individual is the variable.

Knowledge: Literally knowledge means knowing or what are known about subjects, facts, person etc. Knowledge, however, refers to the extent of facts or information about an idea, object or persons knows. Regarding technological aspect, knowledge occurs when an individual is exposed to technology's existence and gain some understanding of how it functions. (Rogers, 1995)

Problem faced: Problem means any difficult situation which requires some actions to minimize the gap between "what ought to be" and "what exists". The term problem faced referred to different problem faced by farmers due to the industrialization.

Industrialization: Industrialization is the period of social and economic change that transforms a human group from an agrarian society (agricultural society) into an industrial one, involving the extensive re organization of an economy for the purpose of manufacturing.

CHAPTER 2

REVIEW OF LITERATURE

An exertion was made in this chapter to represent a brief review of related research information which gives a very clear direction to the researcher for selection research issue by identifying research gap. Review of literature forms a linkage between a past and present research works that helps an investigator to draw a satisfactory conclusion. However, no study was found systematic and directly related to the present study. Therefore, an attempt has been made to review and document closely related literatures in this chapter available from books, journals, review papers, concept note, daily newspapers, magazines, etc. Relevant literatures have been reviewed and illustrated in different sections as stated below:

2.1 General concepts of industrialization

Industrialization is a process that happens in countries when they start to use machines to do work that was once done by people. It increase the socio economic condition of the rural people. Industrialization is the period of social and economic change that transforms a human group from an agrarian society (agricultural society) into an industrial one, involving the extensive re organization of an economy for the purpose of manufacturing. First transformation to an industrial economy from an agricultural one, known as the industrial revolution, took place from the mid- 18th to early 19th century in certain area in Europe and North America. A study was conducted by Gillis et al. (2010) that the relationship between agricultural and industrial sectors assumed that the agriculture sector is subjected to diminishing returns and that surplus agricultural labor can be drawn to the industrial sector without causing a rise in wages. According to Johnson (2001) most of the world's poor live in rural areas and are engaged to conclude that agricultural development

is essential in helping the poor not only by directing increasing the incomes of the poor but also by releasing labor and capital that can be used in industrial goods and by stimulating the demand for industrial goods. Timmer et al. (2009) says that there is a little doubt that the expansion of industrial activities and their services characterizes sustained episodes of economic growth in developing countries, but the initial stages of industrialization almost invariably impinge on society where agriculture accounts for a large share of output and employment. There are some key indicator by which a country need to be industrialized. Kuznets (1973) says that population growth, urbanization and infrastructure- these are some of the indicators that a country is expecting industrialization.

Industrialization returns to the structural change, that backward countries experiences in their development process from an agricultural to an industrial economy. Due to the industrial revolution peoples work is shifted from farm land to industry. Robin (2006) stated that after the industrial revolution a period from the 18th to 21th century has made major changes in agriculture. Many people moved to industrial areas to find work. This moving motion became to squat together in their areas. However industrialization created class separating between the peoples. This class separating made a group of people that they wanted to earn lot of money to gain high status in society. Industrialization is an essential pre-requisite for rapid and sustained development and social progress. According to Sardar (2010) It is a process in which a society or country transforms itself from a primarily agriculture society into an industrial one based on the manufacturing of goods and services. Sarker (2010) reported that Industrialization is an essential pre-requisite for rapid and sustained development and social progress.

The Bangladesh economy is expanding with 5.0-6.0 percent annual growth during last decades. Contribution of agriculture to gross domestic product is decreasing whereas that

of industry has been increasing over the last two decades. Dutta (2005) says that economic growth has been based on rapid industrialization, increased trade openness and exports, and gradual liberalization of financial markets. According to Chen & Ravallion (2004) informed that one third of the population of the world lived in poverty in 1981, whereas the share was 18 percent in 2001. This decline is largely due to rapid economic growth in population-rich countries, and industrial development has had an important role in the economic growth of population rich countries. It is widely recognized that industrialization, intended as the shift from agriculture to manufacturing, is key to development: hardly any countries have developed without industrializing. Kaldor (1967) thinks that this phenomenon has been so striking to induce some economists to hypothesize that the manufacturing sector is the engine of economic growth, the so called “engine of growth argument”.

Due to industrialization GDP of any countries is increased. According to the statistics of Szirmai, (2011) services have increased their shares in GDP in both developed and developing countries and are increasingly seen as the new engine of growth. In developing countries, the share of services in GDP was already 40% in the 1950s that is higher than the one of manufacturing, 11% and increased up to 51% in 2005. In advanced economies, the share of services increased even more from the 50s to 2005, going from 43% to 70%. The recent economic crisis coupled with the considerable expansion of the financial services sector, and the difficulties that many developing countries still encounter to industrialize, brought manufacturing back in the spotlight. Policy makers in both developed and developing countries are reconsidering the virtues of manufacturing. Rodrick *et al.* (2008) implies that empirical work applied cross country and panel data analysis and found general support to the hypothesis of manufacturing as an engine of growth. It has been

argued by Hazel, (2001) agricultural development is unnecessary in a globalized world with increasing mobile capital, and that policies that encourages investment in the rural, non-farm sector that is industrialization may be the best means of reducing poverty. The economic condition of the poor people in global population has declined during recent decades. According to Chen *et al.* (2004) industrial development has had an important role in the economic growth of countries like china, Korea, Taiwan and Indonesia. Along with accelerated growth poverty rates have declined in many countries. As novel laureate F.A. Hayek (1954) pointedly argues, the industrial revolution portrayed by the pessimists is the “One supreme myth which more than any other has served to discredit the economic system to which we owe our modern day civilization.

2.2 Problems due to the industrialization

Although increasing GDP of the poor people there is still some problem. The policy maker are sometimes getting confused that which policy can match to increase industrial activities. However Radon *et al.* (2000) says that it is unclear which policies lead to increased industrial activities in the absences of dynamic agriculture, especially in the presence of credit constrains, labor rigidities and inadequate schooling that is emphasized in the vast theoretical literature on the rural people and in discussions of the relationship between the industrial or non- farm sector and rural inequality.

Main problem of industrialization is agricultural land conversion. Malik (2015) says that land conversion is a process by process by which lands is converted from agricultural to urban uses. Due to the industrialization agricultural land is decreasing Land conversion has negative impacts. The loss of prime agricultural land reduced agricultural jobs and divested investment in irrigation infrastructure. Consequently it could be affect agricultural production and intimidate the food security. Some pro-ruralist conclude that agricultural

land should be reserved to maintain food production. On the other hand the pro-urbanites argues that land conversion is a logical outcome of urban growth. The decrease of agricultural production, they suggest, can be resolved by intensification and technological development. Tan *et al.* (2009) states that land conversion is a phenomenon that is almost inevitable during economic development and population growth periods. However uncontrolled land conversion has greater impact on environment in general and agricultural yield in particular. Lichtenberg & Ding (2008) asserted that subsequently some countries such as china, japan and the USA have tried to conserve agricultural land from being transformed to industrializing. Ho *et al.* (2004) found that in china, since 1980 the transfer of agricultural land to non-agricultural land has been extensive and intense. Higher population density, rapid economic development and the industrialization process are assumed to be the main factors of resulting agricultural land conversion in china.

Agus & Irawan, (2006) showed that in 1995, agricultural land conversion accounts for more than two third of the loss of cultivated land in several areas. During 1996-2000 the rate of agricultural land conversion was only 17 ha per day In Netherlands while in Germany 2006, the role was 114 ha per day. Such rates are lower than china and Indonesia. The above report makes it clear that the rate of agricultural land conversion is different in both developed and developing countries. Han *et al.* (1999) studied the distribution pattern of farm land loss in numerous cities in china and also examined the relationship between industrialization and farm land transformation in the cities. There is a positive relationship between the urban population growth and farm land conversion. Ho *et al.* (2004) also study that industrialization cause's farmland conversion. They concluded that the industrialization process is regularly synchronized with urbanization and therefore causes farmland conversion. Fazal (2001) describes how industrialization influences agricultural

land conversion. He argued that the urbanization patterns and high population growth in developing and underdeveloped countries leads to pressure on land. However Lichtenberg & Ding, (2008) showed that as the industry grown rapidly the agricultural sector becomes commercialized. People's income grows, and the number of commuting people increases. There is no further study about industrial agriculture.

2.3 Research Gap

There are lots of researches on industrialization but very few researches has so far been conducted to measure farmers' attitude towards industrialization. Only a few researchers keep maintain the proper methods and materials to determine the famers' attitude towards industrialization. This was a research gap of the study. Hence the researcher carried out the present study to determine Farmers' Attitude towards Industrialization in Narayanganj District. Very few researcher carried out their study to explore the contribution of the selected characteristics of the farmers on their attitude towards industrialization. This was another research gap of this study. The researcher carried out the study to explore the contribution of the selected characteristics of the farmers on their attitude towards industrialization. Many researcher identifying the problem due to the industrialization. First problem is reducing agricultural land. As a results productivity of agriculture is decreasing day by day. Lack of government attention is one of the major problems of agricultural growth of the area. Some researcher things, main problem of agriculture is industrialization and they suggested that this problem can be resolved by intensification and technological development of agriculture. Some researcher things, environmental pollution is the main problem for agriculture. But very few researcher identified the problem faced by the farmers due to the industrialization. This was a research gap. In this study the researcher identify the problem faced by the farmers due to the industrialization.

2.4 Conceptual framework of the study

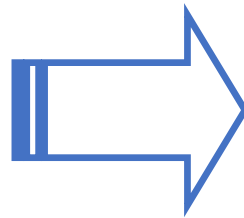
Conceptual framework is the representation of the study variables. Properly constructed hypothesis of any research contain at least two variables namely, “dependent variable” and “independent variable”. A dependent variable is that which appears, disappears or varies as the researcher introduces, remove or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon.

In view of the prime theme of the study, the researcher constructed a Conceptual framework which is self-explanatory and is presented in Figure 2.

Selected characteristics of farmers

Dependent variable

1. Age
2. Education
3. Family size
4. Annual family income
5. Farming areas
6. Level of contact within agricultural community
7. Level of contact within the industrial sector
8. Farmers category based on their innovativeness
9. Knowledge on industrialization



Farmers' attitude towards industrialization

Figure 2: Conceptual Framework of the study

CHAPTER 3

MATERIALS AND METHOD

Methods and procedures used for collection and analysis of data are very important in any scientific research. It requires a careful consideration before conducting a study. The researcher has great responsibilities to clearly describe as to what sorts of research design, methods and procedures he would follow in collecting valid and reliable data and to analyze and interpret those to arrive at correct conclusions. The methods and procedures followed in conducting this study have been discussed in this chapter. Further, the chapter includes the operational format and comparative reflection of some variables used in study. Statistical methods and their use have been mentioned in the later section of this chapter.

3.1 Locale of the Study

The study was conducted at bulta union under Rupganj upazilla of Narayanganj district. Four village in bulta union out of eight villages were considered as the locale of the study. A map of Narayanganj district showing Rupganj upazilla and a map of Rupganj upazilla showing the study area presented in below figure 3.1 and 3.2 respectively.

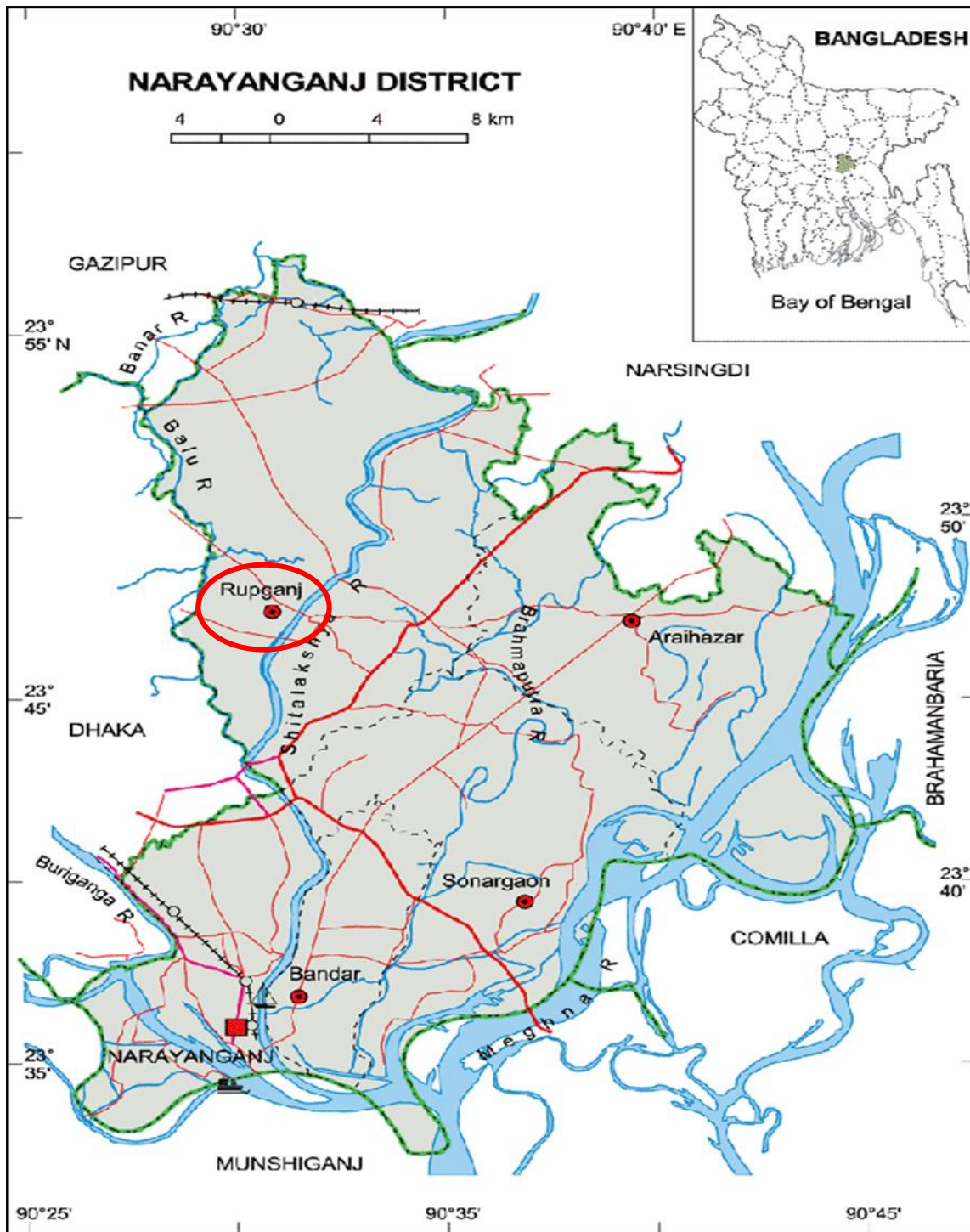


Figure 3.1: A map of Narayanganj district showing Rupganj upazilla



Figure 3.2 A map of Rupganj Upazilla showing study area

3.2 Population and Sampling

The researcher himself prepared an update list of the farmers of the selected four villages by taking help from AEO and SAAO which considered as the population of the study and the size of the population was 450. According to Yamane's (1967) formula, sample size was determined as 120. A reserve list of 19 farmers was prepared in case of their absence for any case. In calculating sample size 10% precision level, 50% degree of variability and Value of $Z= 2.57$ at 99% confidence level were chosen from the following formula:

$$n = \frac{Z^2 P(1 - P)N}{Z^2 P(1 - P) + Ne^2}$$

Where;

n = Sample size

N = Population size

e = the level of precision

Z = the value of the standard normal variable at the chosen confidence level

P = the proportion or degree of variability

Proportionate random sampling technique was used to select sample from four village of study area. According the appropriate proportion of sample size data were collected from each village of bulta union of Rupganj upazilla of Narayanganj district. A reserve list of 19 farmers (about 15% of the sample) was kept purposively if any respondents was unavailable at the time of data collection. The distribution of population and sample was shown in Table 3.1

Table 3.1 Distribution of the sample of farmers in the study area

Study area (villages)	Population size	Number of Sample	No of Respondents in reserve list
Hatabo	110	30	5
Mithabo	95	25	4
Atlashpur	125	33	5
Brahmongaon	120	32	5
Total	450	120	19

3.3 Data collecting Instrument

In order to collect valid and reliable information an interview schedule was prepared. Interview schedule was used as the research instrument. It was carefully designed keeping the objectives of the study in mind. Both open and closed form of question was used to collect information. Simple, direct question and scales were included in the interview schedule for collecting Information regarding the focus of farmers' attitude towards industrialization in narayanganj district. Interview schedules were pre-tested in actual field situations before using it for final data collection among 15 respondents of the study area. Necessary corrections, modifications and additions were made in the interview schedule on the basis of results of pre-test. The interview schedule was then printed in its final forms. Necessary photocopies were then made. A copy of the interview schedule in english version has been furnished in Appendix-A.

3.4 Collection of data

Before data collection, the researcher met the Agriculture Extension Officer (AEO) and one of the Sub-Assistant Agriculture Officer (SAAO) of that block for necessary help and cooperation. Data were collected personally by the researcher himself through face to face interview. Interviews were usually conducted in respondents' house during their leisure period. While starting interview with any respondent, at first the researcher took all possible care to establish rapport so that he/she did not hesitate to furnish proper responses to the questions and statements included in the interview schedule. However, if any respondent felt difficulty in understanding any question, the researcher took utmost care to explain and clarify the question. Data were collected from 17 October to 5 November, 2016.

3.5 Variables of the Study

In a social research, the selection and measurement of variables constitute an important task. In this connection, the researcher looked into the literature to widen his understanding about the nature and scope of the variables involved in research studies. Ezekiel and fox (1959) defined a variable as any measurable characteristics which can assume varying of different successive individual cases. The hypothesis of a research, while constructed properly, contains at least two important elements, an independent variables and a dependent variables.

An independent variables is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon (Townsend, 1959). A dependent variables is that factor which appears, disappears or varies as the experimenter introduces, removes or varies in the independent variables. The dependent variables is

often called the criterion or predicted variable, whereas the independent variable is called the treatment, experimental and antecedent variables (Dalen, 1977).

Variables are very important for social research on which the statistical analysis was done by obtained score on these variables. The following nine characteristics of farmers were considered as independent variables in this study and these are:

1. Age
2. Education
3. Family members
4. Farming areas
5. Annual family income
6. Level of contact within the agricultural community
7. Level of contact within the industrial sector
8. Farmers category based on their innovativeness and
9. Knowledge on industrialization

In the study the dependent variable was Farmers' attitude towards industrialization in narayananj district.

3.6 Measurement of independent variables

Measurement of all the factors of the rural farmers are discussed in the following subsection:

3.6.1 Age:

Age of a respondent was measured in terms of actual years from his birth to the time of interview. It was measured in terms of actual year(s) on the basis of their response. A score of one (01) was assigned for each year. For example, if a farmers age was 50 year then his/her age score was assigned as 50.

3.6.2 Education:

Level of education was measured in terms of class passed by respondent. If a respondent received education in the school, their education was assessed in terms of year of schooling, i.e. one (1) score was given for one year of schooling. For example, if the respondent passed the final examination of class III, their education score was taken as 3. If the respondent had education outside school and the level of education was equivalent to that of class III of the school than his/her education score was taken as 3. Each illiterate person was given a score of zero. The respondent who did not know how to read or write but able to sign only was given a score of (0.5). The educational background was categorized into following level

Category	Score
illiterate	0
Can sign only	0.5
Primary level	1-5
Secondary level	6-10
Higher Secondary level	11-12
Above Higher Secondary level	Above 12

3.6.3 Family size:

The family size of a respondent was measured in terms of actual number of members in his/her family including himself/herself, spouse, children, brothers, sisters, parents and other person who jointly live and take meals together during the period of interviewing.

3.6.4 Farming areas:

Farming areas refers to the total cultivated area either owned by a farmer or obtained from other on share cropping system or taken from others as mortgage which was used to his/her farming operation during the period of this study. The farm size of the respondent was computed by using the following formula. The measurement unit was in hectare (ha).

$$\text{Farming areas} = A_1 + A_2 + A_3 + \frac{1}{2}(A_4 + A_5),$$

Where;

A_1 = Homestead area (including pond & vegetables)

A_2 = Own land under own cultivation

A_3 = Land taken on lease from others

A_4 = Land given to others as borga

A_5 = Land taken from others as borga

3.6.5 Annual family income:

Annual family income was measured considering last year total earnings of all the family members of a respondent from agriculture, services, business, labor and other sources. It was expressed in Taka. The total earnings were measured in thousand taka and a score of 1 was assigned for each one thousand taka.

3.6.6 Level of contact within the agricultural community:

Level of contact within the agricultural community was computed for each respondent to determine his/her degree of contact on the basis of his/her visits to 11 selected places external to his/her own social system. The scale use for computing the level of contact scores is presented below

Nature of contact	Scores
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Logical frequencies of visits were considered for each response. Scores obtained for visits to each of the above eleven selected of places were added together to get the contact score of a respondent. Thus, contact score of the respondents could range from 0-44, while (0) indicated no contact and (44) indicated highest contact within agricultural community.

3.6.7 Level of contact within the industrial sector:

Level of contact within the industrial sector was computed for each respondent to determine his/her degree of contact on the basis of his/her visits to six (6) selected places external to his/her own industrial system. The scale use for computing the contact scores is presented below:

Nature of contact	Scores
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Scores obtained for visits to each of the above six (6) selected of places were added together to get the contact score of a respondent. Thus, contact score of the respondents could range

from 0-24, while (0) indicated no contact and (24) indicated highest contact within the industrial sector.

3.6.8 Farmer's category based on their innovativeness:

Rogers (1983), defined innovativeness as 'the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of the social system'. It was measured on the basis of some criteria of a farmers and categorized as follows:

Innovator (Have interest to take risk, have the highest social status, have financial liquidity, adopt an innovation within 1 year of hearing);

Early adopter (Highest degree of opinion leadership, higher social status, financial liquidity, advanced education, adopt an innovation within >1 to 2 years of hearing);

Early majority (Adopt an innovation after innovator and early adopter, have above average social status, seldom hold position of opinion leadership, adopt an innovation within > 2 to 3 years of hearing);

Late majority (Have below average social status, little financial liquidity, little opinion leadership, adopt an innovation within > 3 to 4 years of hearing);

Laggards (Show little to no opinion leadership, tend to be concentrated on tradition, lowest social status, and lowest financial liquidity, adopt an innovation > 4 years of hearing). Scores assigned for a respondent farmers in respect of innovativeness are given below

Category	Scores
Innovator	5
Early adopter	4
Early majority	3
Late majority	2
Laggards	1

3.6.9 Knowledge on industrialization:

Knowledge on industrialization of a respondent was measured by using twelve (12) different kinds of questions in relation to various aspect of industrialization. The score was assigned as 2 for full correct answer. However, partial score was given for partially correct response and a zero (0) score was given for a wrong or no answer. The summation of score obtained by a respondent was the industrialization knowledge score of the respondent. The industrialization knowledge score could range from 0 to 24 where '0' indicated very low knowledge and '24' indicating very high knowledge on industrialization.

3.7 Problem faced by the farmers due to industrialization:

14 problem were selected through validity and reliability test to measure the extent of problem faced by the respondents on industrialization. Five point rating scale was used for each problem. Five alternative responses were no, low, moderate and high problem. The weights were assigned to these responses as 0, 1, 2 and 3 respectively. Extent of problem faced score of a respondents was measured by the summing of all the responses to all the problems. Thus extent of problem faced score range from 0 to 42, while (0) indicating no problem and (42) indicating very high problem.

3.8 Measurement of dependent variable:

Farmers' attitude towards industrialization was the dependent variable of the study. For measuring the attitude of farmers a 5 point Likert scale with 12 statements (6 positive and 6 negative) were used. The statements were chosen from literatures, and the concerned farmers. All the statements were arranged in a sequence of positive and negative basis to help avoiding subject bias in expressing their opinion. Each respondent was asked to indicate his extent of agreement or disagreement against each of the statements along a 5 point scale: 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. Score assigned to these responses was 2, 1, 0, -1, and -2 respectively for positive statements. Reverse scoring was used for negative statements. The total score of a respondent was determined by summing up the scores against all the 12 statements. The possible attitude of a farmers towards industrialization could range from -24 to +24.

3.9 Statement of hypothesis:

According to Kerlinger (1973), a hypothesis is a conjectural statement of the relation between 2 or more variables. Hypothesis is always declarative sentence form and relate either generally of specifically variables to sentences form and relate either generally or specifically variables to variables. Hypothesis may be broadly divided into two categories, namely research hypothesis and null hypothesis. To find out the contribution of the independent variables on dependent variable, a researcher first formulates research hypothesis.

3.9.1 Research hypothesis:

Each of the 9 (nine) selected characteristics (Age, education, family size, farming areas, annual family income, level of contact within the agricultural community, level of contact within the industrial sector, farmers category based on their innovativeness and knowledge

on industrialization) of the farmers have contribution on their attitude towards industrialization.

3.9.2 Null hypothesis:

Each of the 9 (nine) selected characteristics (Age, education, family size, farming areas, annual family income, level of contact within the agricultural community, level of contact within the industrial sector, farmers category based on their innovativeness and knowledge on industrialization) of the farmers have no contribution on their attitude towards industrialization.

3.10 Data processing

3.10.1 Editing:

The collected raw data were examined thoroughly to detect errors and omissions. As a matter of fact the researcher made a careful scrutiny of the completed interview schedule to make sure that necessary data were entered as complete as possible and well arranged to facilitate coding and tabulation. Very minor mistakes were detected by doing this, which were corrected promptly.

3.10.2 Coding and Tabulation:

After completion of field survey, all the data were coded, compiled and tabulated according to the objectives of the study. Local units were converted into standard units. All the individual responses to questions of the interview schedule were transferred into a master sheet to facilitate tabulation, categorization and organization. In case of qualitative data into quantitative form.

3.10.3 Categorization of data:

The collected raw data as well as the respondents were classified into various categories to facilitate the description of the independent and dependent variables. These categories were

developed for each of the variable by considering the nature of distribution of the data and extensive literature review. The procedure for categorization have been discussed while describing the variables under consideration in chapter 4.

3.11 Statistical Procedures:

The data were analyzed in accordance with the objectives of the study. Qualitative data were converted into quantitative data by means of suitable scoring techniques wherever necessary. The statistical measures such as range, means, standard deviation, co-efficient of variation, number and percentage distribution were used to describe the variables. Linear multiple regression were used in order to explore the level of contribution of each variables for the farmers' attitude towards industrialization. Five percent (0.05) level of probability was the basis for rejecting any null hypothesis throughout the study. The SPSS computer package was used to perform all these process.

CHAPTER 4

RESULTS AND DISCUSSIONS

The findings of the study and interpretations of the results have been presented in this Chapter. These are presented in four sub-sections according to the objectives of the study. The first sub-section deals with the selected characteristics of the farmers, while the second sub-section deals with the extent of attitude of farmers toward industrialization. The third sub-section deals with to explore the contribution of the selected characteristics of the farmers' on their attitude towards industrialization. The fourth sub-section deals with the determination of problem faced by the farmers for industrialization.

4.1 Selected characteristics of farmers

Nine characteristics of the rural farmers were selected. The selected characteristics are age, education, family size, farming areas, annual family income, Level of contact within the agricultural community, level of contact within industrial community, farmers categories based on their innovativeness, and knowledge on industrialization. These characteristics of the farmers are described in this section. However, for ready reference, separate tables are provided while presenting categorizations, discussing and/or interpreting results concerning each of the characteristics in this chapter.

The salient features of the characteristics of farmers were shown in Table 4.1

Table 4.1 Salient features of the selected characteristics of the farmers

Sl no	Characteristics	Unit of measurement	Possible range	Observed range	Mean	Sd
1.	Age	Year	Unknown	35-61	49.9	6.12
2.	Education	Level of schooling	Unknown	0-9	3.73	2.73
3.	Family size	Number of person	Unknown	3-9	6.13	1.44
4.	Farming areas	Hectare	Unknown	0.17-3.20	0.51	0.43
5.	Annual family income	'000' Taka	Unknown	85-340	162.17	46.37
6.	Level of contact within agricultural community	Score	0-40	7-37	13.5	5.6
7.	Level of contact within industrial sector	Score	0-24	4-19	8.99	3.4
8.	Farmers category based on innovativeness	Score	1-5	1-5	1.77	0.84
9.	Knowledge on industrialization	Score	0-24	14-24	19.45	2.42

4.1.1 Age:

The age of the rural farmers ranged from 35 to 61 year, the mean is 49.9. The standard deviation is 6.12 and co-efficient of variation is 12.26 percent. The farmers were classified into three categories according to Ministry of Youth, Peoples Republic of Bangladesh, 2013 as “young aged” (18 to 35), “middle aged” (36 to 50) and “old aged” (above 50). 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	Mean	SD	CV
Young aged(18 to 35)	2	1.7	49.9	6.12	12.26
Middle aged (36-50)	55	45.8			
Old aged (Above 50)	63	52.5			
Total	120	100.0			

The highest proportion (52.5 percent) of the farmers were old aged compared to 45.8 percent of them being middle aged and only 1.7 percent were young aged. It might be due to the middle aged and old aged farmers comparatively give more preference to agricultural activities than the young aged farmers as young aged farmers were not interest in agriculture and may be they could not find prestige in this sector. Green, (2014) was found the similar findings.

4.1.2 Education:

The education score of the rural farmers ranged from 0-9 with mean 3.73, standard deviation 2.73, and co-efficient of variation was 73.2. Based on their educational scores, the rural farmers were classified into five categories namely illiterate (0), can sign only (0.5), primary educated (1-5), secondary educated (6-10) and above secondary educated (above 10). The distribution of the rural 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(Schooling years)	Respondents Numbers	Percent	Mean	SD	CV
Illiterate (0)	21	17.5	3.73	2.73	73.2
Can sign only (0.5)	12	10			
Primary educated (1-5)	62	51.7			
Secondary educated (6-10)	25	20.8			
Higher educated (above 10)	0	0			
Total	120	100			

It is evident from the Table 4.2 that the highest proportion (51.7 percent) of the rural farmers had primary level of education compared to 20.8 percent of them having secondary level of education. About 17.5 percent of them were illiterate while only 10 percent of the farmers can sign only. There were no farmers who had higher level of education. It seemed to be the majority of the farmers of the study area could not reach the above level from primary level due to various socio-economic problems. It should be enhance education at higher level among the farmers which helps them to change their outlook.

4.1.3 Family size:

Family size of the respondent ranged from 3 to 9 with the mean, standard deviation and coefficient of variation was 6.13, 1.44 and 23.49 respectively. According to the Family Planning Ministry of Bangladesh, family members of the respondents were classified into three categories viz. small family (up to 4), medium family (5-7), and large family (above 7). The distribution of the respondents according to their family size is presented in Table 4.4.

Table 4.4 Distribution of the farmers according to their family members

Categories (No of members)	Respondents Numbers	Percent	Mean	SD	CV
Small family (up to 4)	14	11.7	6.13	1.44	23.49
Medium family (5-7)	80	66.7			
Large family (above 7)	26	21.7			
Total	120	100			

Table 4.3 indicates that the medium size family constitute the highest proportion (66.7 percent) followed by the large size family (21.7 percent). Only 11.7 percent respondents had small family size. It also showed that average family size of the respondents was comparatively higher than that of national average which is 5.40. (BBS, 2012). It might be due to their superstition about family planning materials and the respondents did not follow the governmental and non-governmental family planning program.

4.1.4 Farming areas

The farm areas of the rural farmers ranged from 0.17 to 3.20 hectares and the mean was 0.43 hectares with standard deviation of 0.51 and co-efficient of variation was 118.60. According to the farming areas of the farmers, they were classified into five categories as suggested by DAE (1999) “landless (<0.02)”, “Marginal (up to 0.2)”, “Small (0.21-1)”, “Medium (1.1-3)” and “Large (>3)”. The distribution of the rural farmers according to their farming areas is shown in Table 4.5.

Table 4.5 Distribution of the farmers according to their farming areas

Categories(farming areas in ha)	Respondents number	percent	Mean	SD	CV
Landless (<0.02)	0	0	0.43	0.51	118.60
Marginal (up to 0.2)	10	8.33			
Small (0.21- 1)	100	83.3			
Medium (1.1- 3)	7	5.8			
Large(greater than 3)	3	2.5			
Total	120	100			

From the above table we saw that 83.3 percent of the rural farmers had small farm area compared to 8.33 percent of them having marginal farm area. 5.8 percent had medium farm area and only 2.5 percent had large farm area. There were no landless farmers. It might be due to the farmers in the study area were facing trouble from various developer company like as Asian city, purbachal city, etc. as they grasp their farming area day by day by paying a minimum amount of money.

4.1.5 Annual family income

The farmers were divided into three categories: low income group, medium income group and high income group. Annual family income ranged from Taka 85 thousand to Taka 340 thousand, the mean being 162.17, standard deviation 46.37 and co-efficient of variation 28.59. The distribution of the rural farmers according to their annual family income is shown in Table 4.6.

Table 4.6 Distribution of the farmers according to their annual income

Categories(000 taka)	Basis of categorization	Respondents number	percent	Mean	SD	CV
Low income	≤ 115 (Mean-1sd)	21	17.5	162.17	46.37	28.59
Medium income	116-208 (Mean \pm 1sd)	90	75			
High income	>208 (Mean+1sd)	9	7.5			
Total		120	100			

Table 4.6 shows that 17.5 percent of the farmers were in low income category while 7.5 percent were in high income category and 75 percent were in medium category. Highest portion of farmers (92.5 percent) were in low to medium income category. It might be due to their limited farming land occupancy and as they were live in industrial area, the production of agriculture might be reduced and restricted due to the industrial waste materials.

4.1.6 Level of contact within the agricultural community

The observed contact scores of the farmers ranged from 7 to 37. The mean, standard deviation and co-efficient of variation were 13.5, 5.6 and 41.5 respectively. The farmers were classified into three categories: low level of contact, medium level of contact and high level of contact as shown in Table 4.7.

Table 4.7 Distribution of the farmers according to their level of contact within the

Agricultural community						
Categories	Basis of categorization	Respondents numbers	Percent	Mean	SD	CV
Low contact	≤ 7 (Mean-1sd)	4	3.33	13.5	5.6	41.5
Medium contact	8-19 (Mean \pm 1sd)	103	85.83			
High contact	>19 (Mean+1sd)	13	10.83			
Total		120	100			

A proportion of 85.83 percent of the farmers had medium level contact within the agricultural community, compared to 10.8 percent of them having high level contact and 3.33 percent of the farmers had low level of contact. Thus, overwhelming majority (96.66 percent) of the farmers had medium to high level of contact within the agricultural community. It might be the due to appropriate communication with all kind of agricultural service provider officials and other relevant institutions.

4.1.7 Level of contact within the industrial sector

The observed industrial contact scores of the famers ranged from 4 to 19. The mean, standard deviation and co-efficient of variation were 8.99, 3.4 and 37.82 respectively. Farmers were classified into three categories: low level industrial contact, medium industrial contact and high level industrial contact as shown in Table 4.8

Table 4.8 Distribution of the farmers according to their level of industrial contact

Categories	Basis of categorization	Respondents number	Percent	Mean	SD	CV
Low contact	≤5 (Mean-1sd)	8	6.67	8.99	3.4	37.82
Medium contact	6-12 (Mean±1sd)	98	81.67			
High contact	>12 (Mean+1sd)	14	11.67			
Total		120	100			

A proportion of 81.67 percent of the farmers had medium industrial contact compared to 11.67 percent of them having high industrial contact. Only 6.67 percent of the farmers had low industrial contact. Thus, overwhelming majority (93.34 percent) of the farmers had medium to high industrial contact. It might be due to the appropriate communication with industrial personnel. It also may be due to the farmers could engaged in labor politics as well as with the labor union.

4.1.8 Farmers category based on their innovativeness

On the basis of their categorical score based on innovativeness, the respondents were classified into five categories: Innovator, early adopter, early majority, late majority, and Laggards. The observed range of farmers category was 1 to 5 with mean, standard deviation and co-efficient of variation 1.77, 0.84 and 47.46 respectively. The distribution of the respondents according to their innovativeness score is shown in Table 4.9.

Table 4.9 Distribution of the farmers according to their innovativeness

Categories	Respondents number	Percent	Mean	SD	CV
Innovator(5)	1	0.83	1.77	0.84	47.46
Early adopter(4)	4	3.33			
Early majority (3)	13	10.8			
Late majority(2)	50	41.7			
Laggard (1)	52	43.3			
Total	120	100			

From the above table, it indicate that the majority of the respondent (43.3 percent) were ‘laggards’ while 0.83 percent farmers were ‘innovator’, 3.33 percent were ‘early adopter’, 10.8 percent were ‘early majority’ and 41.7 percent were ‘late majority’ category. It seemed to be that the highest portion farmers were laggards and late majority for their below social status, illiteracy, little financial supports, etc. So it should be increased by offering adult education program by proper financial and technical support and by providing motivational training to them. The times report, (2016) was found the similar findings.

4.1.9 Knowledge of the farmers on industrialization

The observed knowledge scores ranged from 14 to 24, the mean being 19.45, standard deviation 2.42 and Co-efficient of variation is 12.44. The farmers were classified into three categories as: poor knowledge, moderate knowledge and good knowledge as shown in Table 4.10.

Table 4.10 Distribution of the rural farmers according to their level of knowledge

Category (score)	Basis of categorization	Respondents number	percent	Mean	SD	CV
Poor knowledge	≤ 17 (Mean-1sd)	25	20.83	19.45	2.42	12.44
Moderate knowledge	18-21 (Mean \pm 1sd)	57	47.5			
Good knowledge	>21 (Mean+1sd)	38	31.7			
Total		120	100			

Highest portion 47.5 percent has moderate knowledge compared to 31.7 percent having good knowledge, and only 20.83 percent had poor knowledge. So the overwhelming portion (79.2 percent) of the respondents had moderate knowledge to good knowledge on industrialization. It might be due to their interest on industrialization. It should be enhance knowledge at higher level. Because Farmers should have adequate knowledge on different aspects of industrialization so that their outlook towards industrialization can clear and understandable.

4.2 Attitude of the farmers towards industrialization

Attitude scores of the respondents towards industrialization against the possible range of -24 to +24, ranged from 4 to 13 with mean was 7.60, standard deviation was 1.55, and coefficient of variation was 20.39. The respondents were placed under three categories namely, low favorable attitude, moderate favorable attitude and high favorable attitude. All the respondents had favorable attitude towards industrialization and nobody had unfavorable attitude towards industrialization as the categories have been shown in Table 4.11.

Table 4.11 Distribution of the farmers according to their attitude

Categories	Basis of categorization	Respondents number	percent	Mean	SD	CV
Low favorable attitude	≤ 6 (Mean-1sd)	36	30	7.60	1.55	20.39
Moderate favorable attitude	7-9 (Mean \pm 1sd)	79	65.83			
High favorable attitude	>9 (Mean+1sd)	5	4.17			
Total		120	100			

Data presented in Table 4.11 reveal that about 65.83 percent of the respondents held moderate favorable attitude towards the industrialization, while the proportions of low favorable and high favorable attitudes were 30 and 4.17 percent respectively. It was assumed that maximum farmers in the study area showed favorable attitude towards industrialization.

From the above table 4.11 indicates that majority portion of the farmers had low to moderate favorable attitude towards industrialization. They had not showed any unfavorable attitude towards industrialization. It might be due to the farmers in the study area finds more profitability, scope and advantages from industry rather than agricultural farming. There may be a chances that the farmer himself done agricultural activities and his son or relatives worked in the industrial sector and keep contribution to their family. There may be another chances that, agricultural practices are always with uncertainty due to several natural calamities and disasters are occurring in Bangladesh on regular basis.

4.3 Contribution of the characteristics of the farmers on their attitude towards Industrialization

Regression co-efficient (b) was computed in order to find out the contribution of the selected characteristics of the farmers on their attitude towards industrialization. To reject or accept the null hypothesis, 5% level of probability was used. As mentioned earlier, nine selected characteristics of the farmers were the independent variables of the study. The independent variables were age, education, family size, farming areas, annual family income, level of contact within the agricultural community, level of contact within the industrial sector, farmers category based on their innovativeness, and knowledge on industrialization while the attitude towards industrialization was the dependent variable of the study. Results of regression have been shown in Table 4.12.

Table 4.12. Multiple linear regression analysis between dependent & independent

Variables							
Dependent variable	Independent variable	B	<i>p</i>	R-square	Adjusted R-square	F-Value	<i>P</i>
Farmers attitude	Age	-0.241	0.001**	0.540	0.503	14.37	.001**
	Education	-0.232	.001**				
	Family size	0.214	.002**				
	Farming areas	-0.40	0.695				
	Annual family income	0.084	0.426				
	Level of contact within agricultural community	0.534	.000**				
	Level of contact within industrial sector	0.081	0.264				
	Innovativeness	0.062	0.388				
	Knowledge	-0.108	0.145				

** Significant at $p < 0.01$

* Significant at $p < 0.05$

The null hypothesis was there is no contribution of selected characteristics of the farmers (age, education, family size, farming areas, annual family income, level of contact within the agricultural community, level of contact within the industrial sector, farmers categories based on their innovativeness, knowledge of the farmers on industrialization) on their attitude towards industrialization.

The findings of the study revealed that the observed R-value was significant at 1% level of significance. Which was an indication that the combination of the independent variables was effective. 54 percent (%) (R-square=0.540) of the variation in the respondents' attitude towards industrialization can be attributed to their age, education, family size and level of contact within the agricultural community.

However, each predictor may expound some of the variance in respondents' attitude towards industrialization simply by chance. The adjusted R- square value penalizes the addition of external predictors in the model, but values of 0.503 still show that the variance in attitude towards industrialization can be attributed to the predictor variables rather than by chance and the F-value of the model were 14.37 in case of attitude towards industrialization indicate that the model was significant at 1% level of significance.

From table 4.12 it was observed that age, education, family members and level of contact within the agricultural community had significant contribution on farmers' attitude towards industrialization. Data also showed that level of contact within agricultural community, had most significant contribution at 1% ($p < 0.01$) level of significance. It was also showed that farmers' age, education and family members had also significant contribution at 1% ($p < 0.01$) level of significance.

From the table 4.12, it was observed that farmers' age was negatively influenced on farmers' attitudes towards industrialization and it could be said that young aged farmers had favorable attitude towards industrialization. That is, younger the respondents more the

favorable attitude towards industrialization. The old and middle aged farmers were not interested on industrialization and they still depends on agricultural farming. It seemed to be that the old and middle aged farmers were more conscious about farming than the youngers. Magdalena et al, (2016) was found the similar findings.

From this table 4.12, it was also observed that farmers' education level was negatively influenced on farmers' attitude towards industrialization. Thus it can be said that as the education decrease, attitude towards industrialization is increased. Small educated farmers were more attached to the industrialization. It seemed to be that, they did not concerned about the harmful effects of industrialization on environment and human health. On the other hand, farmers, who were educated were not showed much interest about industrialization. It may be due to the educated farmers' had greater ability to understanding the harmful effects of industrialization than the others. They may be thought that, decreasing agricultural land day by day and creating industrial areas is not a good sign for a country or region. As a results of increasing industry, they are losing their homestead areas.

Family members was positively influenced on farmers' attitude towards industrialization. Thus it can be said that the large family size had greater attitudes towards industrialization. Small and medium family size has less tendency to show their attitude towards industrialization. It seemed to be that, the farmers' agricultural land is decreasing day by day, and their income from the agriculture were also being limited. Most of the farmers' in the selected locality had medium to large family members. A farmer is only the income source for his family members. But from the agriculture, a farmer could not meet his family demands. So he may show interest towards industrialization as a supplement source of income.

The above table 4.12 also showed that level of contact within agricultural community was positively influenced on farmers' attitude towards industrialization. Farmers who visits more in agricultural community and research sector such as upazilla agricultural officer, extension officer or BADC office, the positive attitudes towards industry had been increased. It may be due to the farmers were disappointed among agricultural sector. They found less technical support from the upazilla office. Some upazilla officer and SAAO were not honest and positive to the farmers to provide sharing knowledge about agricultural problem of a farmer's field. May be for this reason, farmers' attitude towards industrialization is increased among the farmers.

4.4 Problem faced by the rural farmers

The problem faced score of rural farmers ranged from 30 to 40 with a mean of 36.39, standard deviation 2.95 and co-efficient of variation was 8.10. Farmers were classified into three categories: minimum problem, moderate problem and serious problem as shown in Table 4.13.

Table 4.13 Distribution of the farmers according to their problem faced

Categories(scores)	Basis of categorization	Respondents numbers	percent	Mean	SD	CV
Minimum problem	≤ 33 (Mean-1sd)	21	17.5	36.39	2.95	8.10
Moderate problem	34-39 (Mean± 1sd)	80	66.67			
Serious problem	>39 (Mean+ 1sd)	19	15.83			
Total		120	100			

Data presented in Table 4.13 indicate that 66.67 percent of the farmers had moderate problem compared to 17.5 percent of them having minimum problem and 15.83 percent having serious problem. Thus, the vast majority (84.17 percent) of the farmers had

minimum to moderate problem. It might be due to the farmers feel uncertainty about agricultural practices due to several calamities. There may be another chances that the industrial authority and concerned personnel paid high wages and several kinds of facilities.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The study was undertaken with the objectives: 1) to describe the socio- economic profile of the farmers; 2) to determine the extent of attitude of the farmers' towards industrialization; 3) to explore contribution of the selected characteristics of the farmers on their attitudes towards industrialization; and 4) to determine the problem faced by the farmers for industrialization. In this chapter, the first section deals with summary of the findings; the second section deals with conclusions and the third section deals with recommendations.

5.1 Summary of findings

5.1.1 Socio-economic profile of the farmers

Age of the farmers ranged from 35 to 61 years, with an average being 49.9, standard deviation was 6.12 and co-efficient of variation was 12.26. It was found that 45.8 percent were middle aged, 52.5 percent were old aged and only 1.7 percent were young aged. Here data revealed that most of the farmers in the study area were middle aged to old aged.

Education of the farmers was ranged from 0 to 9 with an average being 3.73, standard deviation was 2.73 and co-efficient of variation was 73.2. It was found that 51.7 percent were in primary educated, 20.8 percent were in secondary educated, 17.5 percent were illiterate and only 10 percent were under can sign only. There were no higher educated farmers in this study area. Here data revealed that most of the farmers in this study area were primary educated. Highest portion 79.2 percent farmers in this study area had low to primary educated.

Family size of the farmers ranged 3 to 9, with an average being 6.13, standard deviation was 1.44 and co-efficient of variation was 23.49. It was found that 66.7 percent of the respondents had medium family size, 21.7 percent had large family size and only 11.7 percent had small family size. Here data revealed that the highest portion (88.4 percent) of the farmers in the study area had medium to large family size.

Farming areas of the farmers was ranged from 0.17 to 3.20 hectares, with an average being 0.43, standard deviation was 0.51 and co-efficient of variation was 118.60. It was found that 83.3 percent had small farming areas, 8.33 percent had marginal farming areas, 5.8 percent had medium farming areas and only 2.5 percent had large farming areas. There were no landless farmers in this study area. Here data revealed that most of the farmers in the study area had small farming areas.

Annual family income of the farmers ranged from 85000 taka to 340000 taka , with an average being 162.17, standard deviation was 46.37 and co-efficient of variation was 28.59. It was found that 75 percent of the respondents had medium income, 17.5 percent had low income and only 7.5 percent had high income. Here data revealed that highest portion of farmers (92.5 percent) had low income to medium income.

Level of contact within the agricultural community of the farmers ranged from 7 to 37, with an average being 13.5, standard deviation was 5.6 and co-efficient of variation was 41.5. It was found that 79.2 percent of the respondents had medium contact, 10.8 percent had high contact and only 10 percent had low contact within the agricultural community. Here data revealed that the overwhelming majority (90 percent) of the farmers in the study area had medium to high contact.

Level of contact within the industrial sector was ranged from 4 to 19, with an average being 8.99, standard deviation was 3.4 and co-efficient of variation was 37.82. It was found that 59.2 percent of the respondents had medium industrial contact, 29.2 percent had low industrial contact and only 11.7 percent had high industrial contact. Here data revealed that the overwhelming majority (88.4 percent) of the farmers in the study area had low to medium industrial contact.

Farmers category based on their innovativeness was ranged from 1 to 5, with an average being 1.77, standard deviation was 0.84 and co-efficient of variation was 47.46. It was found that 43.3 percent of the respondents were laggard, 41.7 percent were late majority, 10.8 percent were early majority category, 3.33 percent were early adopter category and only 0.83 percent were innovator. Here data revealed that the highest portion of the farmers (85 percent) in the study area were laggard to late majority category.

Knowledge of the farmers on industrialization was ranged from 14 to 24, with an average being 19.45, standard deviation was 2.42 and co-efficient of variation was 12.44. It was found that 75.83 percent of the respondents had moderate knowledge on industrialization, 20.83 percent had poor knowledge and only 3.33 had good knowledge on industrialization. Here data revealed that the highest portion (96.66 percent) of the farmers in the study area had poor to moderate knowledge on industrialization.

5.1.2 Farmers' extent of attitude towards industrialization

Farmers' extent of attitude towards industrialization were categorized into three categories: low favorable attitude, moderate favorable attitude and high favorable attitude. Data also showed that the highest portion of farmers 95.83 percent respondents had low to moderate

favorable attitude towards industrialization and nobody had unfavorable attitude towards industrialization. The extent of farmers' attitude towards industrialization ranged from 4 to 13 with mean being 7.60, standard deviation was 1.55 and co-efficient of variation was 20.39.

5.1.3 Significant factors on the extent of farmer's attitude towards industrialization

Farmers' age was negatively influenced and it had significant influence ($p < 0.01$) on their attitude towards industrialization

Farmers' education was negatively influenced and it had also significant influence ($p < 0.01$) on their attitude towards industrialization

Farmers' family size was positively influenced and significant influence ($p < 0.01$) on their attitude towards industrialization

Farmers' level of contact within the agricultural community was positively influenced and it had most significant influence ($p < 0.01$) on their attitude towards industrialization

5.1.4 Determination of the problem faced by the farmers due to industrialization

Farmers' problem faced due to industrialization were categorized into three categories: Minimum problem, Moderate problem and serious problem. Data also showed that the highest portion 84.17 percent had showed minimum to moderate problem towards industrialization. The problem faced due to industrialization ranged from 30-40 with mean being 36.39, standard deviation was 2.95 and co-efficient of variation was 8.10.

5.2 Conclusions

Age of the farmers had significant contribution on their attitude towards industrialization. So it could be concluded that age played important role to farmer's attitude towards industrialization

Education of the farmers had significant contribution on their attitude towards industrialization. So it could be concluded that education was enhanced knowledge and attitude of a farmers and it could make him/her more realistic to justify the harmful effect of industrialization on environment.

Family size of the farmers had also significant contribution on their attitude towards industrialization. So it could be concluded that farmer's family size could play a significant role to farmer's attitude towards industrialization.

Level of contact within the agricultural community had most significant contribution on their attitude towards industrialization. So it could be concluded that level of contact within the agricultural community were important factor but sometimes the management personnel of the agricultural community cannot help the farmers by providing latest information and technology so that the farmers were remain in traditional believes.

5.3 Recommendations

5.3.1 Recommendation for policy implications

1. Majority of the farmers of the study area were found to have positive to more positive attitude towards industrialization. It have been happening because of the farmers in this study area has more faith in industrialization rather than agricultural farming. Additionally

in agricultural practices, farmers should consider some uncertainty factor like as several natural calamities and disasters which harms their farm land. As a result, farmers are moved into industrialization. Bangladesh government can play a key role in this regard and can take some necessary steps like as, increase the facility in agriculture, provides subsidies in agricultural products, creating marketing facilities and proper transporting facilities, and make some rules and regulation about industry so that they cannot throws the industrial waste materials in the nearby river or ponds.

2. Age had significant negative relationship with attitude of the farmers towards industrialization. Therefore, it may be recommended that DAE and upazilla agriculture office should target young aged farmers to change their attitude towards industrialization.

3. Education is very much important for any profession. Low education status of farmers might make them unable to take necessary decision whether they prefer agriculture nor industrialization. Most of the low level educated farmers can not realize the harmful effect of industrialization and ultimately they gets sufferer. So adult educational program opportunity for the all aged farmers should be increased in different ways for make them enthusiastic.

4. Family size of the farmers had a significant positive influence on their attitude towards industrialization. Farmers who have high family size are more attached to the industrialization, because they cannot meet their family demand with agriculture along. There is need to create awareness about the family size among the farmers. In this regards, various family planning sector can play a vital role to change their outlook about their family size.

5. Upazilla agriculture officer and upazilla extension officer should provide proper information and useful technology related to agriculture to the farmers so that the farmers can be benefitted.

5.3.2 Recommendation for further research

1. In the present study only 9 (nine) selected characteristics were studied. There were some other important characteristics of the farmers' that could not be included in this study. So, opportunity will remain to study with other important variables.

2. The present study was conducted only in four villages of bulta union of Rupganj upazila under Narayanganj district. Findings of the study need further verification through similar research in other parts of the country.

3. It is difficult to determine the appropriate attitude of the farmers towards industrialization. Measurement of attitude of the farmers is not free from questions. More reliable measurement of the concerned variables is necessary for evaluating farmers' attitudes and opinions.

4. To measure the attitude towards industrialization, the researcher developed a scale and the validity of the scale may be verified by further studies. This would help for improvement and generalization of the scale.

5. An exhaustive study on problems faced by the farmers due to industrialization is taken. But there might be some other problem which is not included in this study. So there should be conduct further research about problem facing.

6. This study was conducted at 10% level of precision of the population. So, further research would be conducted at below 5% level of precision for more authentic findings.

CHAPTER 6

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APPENDIX-A

(English version of the interview schedule)

Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University

Dhaka-1207

An interview schedule for a research study entitle

**FARMERS’ ATTITUDES TOWARDS INDUSTRIALIZATION IN
NARAYANGANJ DISTRICT**

Serial no.....

Name of the respondent:

Village:

Union:

Upazilla:

District:

Mobile no:

(Please answer the following questions)

1. a. Age

What is your present age?

b. Education: what is your level of education?

- a) Illiterate.....
- b) Can sign only.....
- c) Have passed class.....
- d) I took non-formal education..... years

c. Family size:

Please mention the number of your family members

a) Male.....

b) Female.....

Total.....

d. Farming areas

Please mention your farming areas

Sl no	Land type	Land Ownership	
		Local unit	Hectare
1.	Homestead area including pond and vegetables		
2.	Own land under own cultivation		
3.	Land given to others as borga		
4.	Land taken from others as borga		
5.	Land taken from others as lease		
Total			

e. Annual family income: (Please state the income of your family during last year of industrialization and other sources)

a) Income from industrialization..... Taka

b) Income from other sources

1. Agriculture income..... Taka

2. Livestock and fisheries..... Taka

3. Non- agricultural sources..... Taka

Total income from other sources (1+2+3)Taka

f.level of contact within the agricultural community

Please mention the nature of agricultural contact with the following media

Source of contact	Nature of contact				
	Regularly	Often	Occasionally	Rarely	Not at all
Upazilla agricultural officer	>4 times/year ()	3 times/year ()	2 times/year ()	1 time/year ()	0 time/year ()
Upazilla Additional Agricultural officer	>4 times/year ()	3 times/year ()	2 times/year ()	1 time/year ()	0 time/year ()
Agricultural Extension officer	>6 times/year ()	4 times/year ()	3 times/year ()	2 times/year ()	0 time/year ()
Sub assistant Agricultural officer	>4 times/month ()	3 times/month ()	2 times/month ()	1 time/month ()	0 time/month ()
Agricultural research institute	>3 times/month ()	3 times/month ()	2 times/month ()	1 times/month ()	0 time/month ()
BADC office	>3 times/month ()	3 times/month ()	2 times/month ()	1 time/month ()	0 time/month ()
DAE head office	>3 times/month ()	3 times/month ()	2 times/month ()	1 time/month ()	0 time/month ()
Ideal farmers	>6 times/month ()	3 times/month ()	2 times/month ()	1 times/month ()	0 times/month ()
Listening agriculture program on radio	>4 times/week ()	3 times/week ()	2 times/week ()	1 time/week ()	0 time/week ()
Watching agricultural program on TV	>4 times/month ()	3 times/month ()	2 times/month ()	1 time/month ()	0 time/month ()
Reading agricultural news on newspaper/magazine	>4 times/month ()	3 times/month ()	2 times/month ()	1 time/month ()	0 time/month ()

g. Level of contact within the industrial sector

Please mention the nature of industrial contact with the following media

Source of contact	Nature of contact				
	Regularly	Often	Occasionally	Rarely	Not at all
Labor union club	>4 times/year ()	3 times/year ()	2 times/year ()	1 times/year ()	0 time/year ()
Contact with management personnel of industry	>4 times/year ()	3 times/year ()	2 times/year ()	1 time/year ()	0 times/year (0
Contact with labor leader	>3 times/month ()	3 times/month ()	2 times/month	1 times/month ()	0 time/month ()
Visit office of the industry	>4 times/year ()	3 times/year ()	2 times/year ()	1 times/year ()	0 time/year ()
Visit factory of the industry	4 times/year ()	3 times/year ()	2 times/year ()	1 time/year ()	0 time/year ()
Reading the articles against industrial issues	4 times/year ()	3 times/year ()	2 times/year ()	1 time/year ()	0 time/year ()

h. Farmer’s category based on their innovativeness

Please indicate your position under following farming category

- a) Innovator (willing to take risk, have the highest social status, financial liquidity, advanced education).....
- b) Early adopter (highest degree of opinion leadership, higher social status, financial liquidity, advanced education).....

- c) Early majority (Adopt an innovation after innovator and early adopter, have above average social status, seldom hold position of opinion leadership).....
- d) Late majority (Adopt an innovation after the average participant, have below average social status, little financial liquidity, and little opinion leadership).....
- e) Laggard (show little to no opinion leadership tend to be focused on tradition, lowest social status, lowest financial liquidity).....

I. Knowledge on industrialization

Please provide answer to the following questions

Sl no	Questions	Score	
		Full marks	Marks obtained
1.	What is the necessity of industrialization in your locality?	2	
2.	What is the reason of industrialization in your locality	2	
3.	Mention the benefit of the industrialization	2	
4.	Mention some limitation of industrialization	2	
5.	Mention names of two industries in your locality	2	
6.	How industrialization changes your social status?	2	
7.	How industrialization creates overcrowding of people to your locality?	2	
8.	What is the problem you face from industrial waste materials?	2	
9.	How firm land is decreasing due to industrialization?	2	
10.	What is the bad effects of industrial smoke on environment?	2	
11.	Which type of industry is more relax to work?	2	
12.	What do you think about labor strike?	2	

2. Attitudes towards industrialization

What is your degree of agreement with the following statement?

Sl no	Attitudinal statement	Frequency of agreement				
		SA	A	U	D	SD
1.(+)	Farmer's economic condition increase through industrialization					
2.(-)	Industrialization of an area is harmful for environment					
3.(+)	Industrialization creates job opportunity amongst the poor					
4.(-)	Agricultural land is decreasing day by day due to industrialization					
5.(+)	People are more relax in industry rather than agriculture farming					
6.(-)	Political instability is the problem in industrialization					
7.(+)	People may earn more money from industry rather than agricultural farm					
8.(-)	The owner of industry may take illegal opportunity					
9.(+)	GDP contribution is more from industrialization rather than agriculture					
10.(-)	The growth of population increase due to industrialization					
11.(+)	Industrialization is free from natural disaster affect					
12.(-)	Capitalists of industry cheated the poor and become more benefited					

SA= Strongly Agreed, A=agreed, U=undecided, D=Disagreed, SD=Strongly Disagreed

4. Problems: (Please mention the nature and level of problem faced by industrialization)

Sl no	Problems	Level of problems			
		High	Medium	Low	Not at all
1.	Unavailability of daily labor				
2.	Inadequate demand of products				
3.	Inadequate infrastructure and supported service				
4.	Inadequate Supply of raw materials				
5.	Insufficient loan facilities				
6.	Lack of backward linkage industries				
7.	Lack of capacity building				
8.	Lack of commitment of the government				
9.	Lack of adequate knowledge on industrialization				
10.	Lack of skilled labor force				
11.	Lack of communication facility				
12.	Lack of transportation facility				
13.	Lack of insurance facility				
14.	Complexity in receiving authorization for establishing industries				

Thanks for your co-operation

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Signature of the interviewer

Appendix- B
Correlation Matrix

Variables	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	Y
X ₁	1									
X ₂	-.246**	1								
X ₃	.171	-.094	1							
X ₄	-.008	.063	.032	1						
X ₅	-.019	.029	.107	.757**	1					
X ₆	.102	-.009	.202	.024	.146	1				
X ₇	.159	-.033	.059	-.119	-.189*	.133	1			
X ₈	.070	-.011	-.023	.019	.096	.156	.341**	1		
X ₉	.110	-.148	-.169	-.170	-.158	-.379**	.005	.065	1	
Y	-.089*	-.185**	.332	.040	.160	.628**	.144	.154	-.341**	1

X₁: Age

X₂: Education

X₃: Family size

X₄: Annual family income

X₅: Farming areas

X₆: Level of contact within agricultural community

X₇: Level of contact within the industrial sector

X₈: Farmers category based on their innovativeness

X₉: Knowledge on industrialization

Y: Farmers' attitude towards industrialization