

**ROLE OF OPINION LEADERS IN TECHNOLOGY TRANSFER
AMONG THE FARMERS**

A Thesis

By

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Student Id: MS- 200822



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**AGROTECHNOLOGY DISCIPLINE
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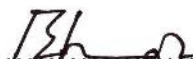
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MARCH 2022

**Dedicated
To
MY Beloved Parents**



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ABSTRACT

The objectives of the study were to determine the role of Opinion leaders (OLs) in technology transfer among farmers and explore the relationship between selected characteristics and extent of role played by the OLs regarding technology transfer. Different villages of Dumuria upazila under Khulna district were the locale of the study. Data were collected from 25 Opinion Leaders only. The statement of the Opinion Leaders was crosschecked by the same interview schedule from 70 farmers of the selected areas. The data was collected from October 20 of 2021 to January 5 of 2022. A number of 25 statements were related to role of OLs in technology transfer was incorporated in the interview schedule to measure their role as perceived by them as well as the farmers. Beside 10 problems were enlisted in the interview schedule that to justify the problem related to perform role by the OLs in technology transfer among farmers. A number of 15 statements were related to role of farmers as a recipient of service provided by the OLs was also included in the interview schedule to measure the role of OLs in technology transfer as perceived by OLs as well as the farmers. According to the OLs responses majority (60%) of the Opinion Leaders play important role in providing extension service to the farmers and majority (72%) of the OLs faced moderate problem. According to the OLs, majority (80%) farmers play important role as a recipient of extension services provided by the OLs. On the other hand, the farmer's perception revealed that majority (87.1%) OLs play important role, majority (65.7%) had moderate problem and highest (84.3%) proportion of farmers play important role as a recipient of extension services provided by the Opinion leaders. Among the selected eleven personal characteristics, family income, training received and extension media contact had positive significant relationship with the extent of role played by the opinion leaders in extension services. Thus it could be concluded necessary steps to involve, train and supervise the Opinion leaders, where OLs can learn and transmit their knowledge to the farmers according to the farmer's comfort will be able to make the farmers adopt newer technology as well as enriched our agriculture more and more.

Key words: Opinion leader, technology transfer, problem faced.

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LIST OF ACRONYMS AND ABBREVIATIONS USED

GDP	Gross Domestic Product
No.	Number
OLs	Opinion Leaders
REI	Role Extent Index
PSI	Problem Severity Index
Max.	Maximum
Min.	Minimum
DAE	Department of Agricultural Extension
%	Percentage

CHAPTER I

INTRODUCTION



1.1 General background

The economy of Bangladesh is predominantly agrarian, with the agriculture sector accounting for about 29 percent of Gross Domestic Product (GDP) (BBS, 2020). In the past decade, the agriculture sector contributed about three percent annum to the annual economic growth rate. Over 80 percent of the population of Bangladesh, or roughly 15 million households, live in rural areas, and the agriculture sector employ around 62 percent of the labor force. The crop sector alone accounts for 57 percent of employment in Bangladesh. The agriculture sector comprises crops, forests, fisheries and livestock of the agricultural GDP, the crop sub-sector contributes 71 percent, forests 10 percent, fisheries 10 percent, and livestock 9 percent (BBS,2014)

Agricultural sector is the largest sector of income generation and create employment opportunities with the challenge to achieve food sufficiency and resilience. The main focus of agricultural sector is to remove poverty from the rural areas through sustainable agriculture practices. The Government and the concerned authority has the responsibility to ensure the soundness of the agricultural practice and even distributions of benefits all over the country. It is therefore, necessary to organize and develop the agricultural production in to a commercially profitable sector. In this case the goal of the agricultural extension sector is to modernize the cultivation procedures and introduce the farmers with technology. The dissemination or transfer of technology among the farmers is the main focus. Transfer of technology depends on various factors specially in case of the farmers (Islam et.al. 2016).

Agricultural research in all over the world has invented useful technology which resulted in enormous production. In our country most of the farmers are illiterate and majority of the farmers believed in conventional and traditional cultivation. However, Morill (1968), reports that the farmers who are the backbone of the nation, are mostly illiterate and traditional, they are often skeptical towards new ideas and practices in agriculture, they often become frustrated with new practices in agriculture due to lack of proper understanding of the relevant factors. Therefore, the prerequisite for the agricultural development is the communication of the benefit and know-hows of improved agricultural practices among the farmers so that they can get the maximize opportunities to apply those in their own field.

Dennis and Andersson (1998) reported regardless of their source and sociometrist status, farmers will adopt new technologies and modify their resource use when they believe that a proposed change is relevant to their circumstances and can help them to achieve their objectives.

The task of educating the farmers about the improved agricultural practices, popularly known as agricultural extension. For carrying on the extension educational program, DAE has one Sub Assistant Agricultural Officer for a block and he has to look after on an average 1200 farm families. It is difficult for an extension worker alone to discharge their duties effectively among such a large number of farmers. On the other hand, there are some people in the rural areas with experience and leadership qualities. The model farmers, school teacher, imam of mosques, pesticide dealer, agent of company and the others whose opinions have effect on taking decisions of the farmers of their locality are considered as opinion leaders (OL). Farmers go to them for opinions and advice. Agricultural extension work in the rural areas will be greatly facilitated if the extension agents can utilize the opinion leaders. Moreover, extension programs will receive greater acceptance and participation of the people if their leaders are involved in those programs.

The Opinion leaders' role can play a significant change in adoption of technology regarding farmers. Opinion leaders are the members of the social system in which they exert their influence and when compared with their followers, Opinion leaders are more exposed to all form of external communication, are more cosmopolite and are more innovative. The farmers' attitude towards technology is also very important in dissemination of technology in agriculture. An opinion leader seeks out and encourages people to change their attitude toward technology adoption. Due to the less recognition and support of the Government Opinion leaders face various problem to play their role in technology transfer. The communication between extension agent with the local leaders are not also strong which hinders the role of an OL. The association between extension agent and OLs, large rural areas can be covered with the shortest possible time during technology transfer.

In order to effectively utilize the opinion leaders, it is necessary to have a clear understanding about the role of opinion leader in technology transfer among the farmers in the rural area. Extension workers need to know the extent of role played by the OLs. Since opinion leaders play a crucial role in the transformation of information, it is important to study their communication behavior (Rogers, 1983). Little research has been conducted regarding

the role of Opinion leaders in technology transfer among the farmer in the rural areas of Bangladesh.

1.2 Statement of the problem

In view of the above background and facts, the present study was undertaken with the title “Role of Opinion Leaders in Technology Transfer among the Farmers”. The study aimed at providing information regarding the following queries:

- i. What are the role being played by the opinion leaders in technology transfer among the farmers?
- ii. What are the relationships between the selected characteristics of the respondents with their extent of playing role?

1.3 Specific objectives of the study

In view of the statement as stated above, the following specific objectives were formulated for giving proper direction to the study:

- i. To describe the selected characteristics of the respondents.
- ii. To measure the extent of the role of opinion leaders in technology transfer among farmer.
- iii. To explore the relationship of the selected characteristics of the opinion leaders with their extent of the role in technology transfer among farmers.

1.4 Justification of the study

Agriculture is enriched with newer technology and invention. With this invention agriculture can reach its highest production with sustainable procedure. Only invention cannot make it possible to achieve the highest production rate. It also depends on transfer procedures of technology too. The adoption behavior of the farmers also plays important role in this case. The adoption behavior of the farmers can greatly be influenced by their local leaders known as Opinion leaders. The role of opinion leaders can be defined in various perspective and their effect on transmission procedure.

To identify the adoption category of the farmer different research has already made. The research on opinion leadership among the farmers are also made but number of research on role of Opinion leaders are a few. Besides with the time being the role played by the OLs in rural areas have been increased.

✓ This research is justified in order to increase knowledge and understanding of the role opinion leader play in technology transfer. It is with the aim of development of appropriate strategies in encouraging opinion leaders to get involved in extension work for make the extension program successful as well as changing the poor situations of the farmers. The results and discussions of the research can serve as a step for further research in what has not been seen as covered in this research on the role of opinion leaders in extension work. This research is helpful in the assessment of the role played by the Opinion leaders in technology transfer among the farmers.

Finally, this research is to add knowledge to the existing literature on opinion leaders with reference to agricultural development for food security and reduction of poverty.

1.5 Scope and limitations of the study

✓ The present study was design to have an understanding of the role extent played by the opinion leaders at field level of agricultural extension and to explore its relationship with their selected characteristics. In order to conduct the research in a meaningful manner considering the time, money and other resources available to the researcher the following limitations were made and strictly followed throughout the investigation:

- i. The study was conducted in one upazila named Dūmuria of Khulna district. The findings may also be applicable to other areas of Bangladesh where socio-cultural, psychological and economic situation do not differ much than those of the study area.
- ii. The study was kept limited among those whose profession was directly or indirectly related to agriculture and who has general influence on the rural folk.
- iii. Role of opinion leaders can be measured in a number of way; sociometrist technique was used in measuring the role of Opinion leader in technology transfer among farmers.
- iv. Role of Opinion leaders are many and varied. However, only 14 characteristics were selected for investigation in this study.
- v. There were many ways to justified the OLs responses on role playing but it was cross checked on the basis of the respondent responses both the farmer and OLs.

1.6 Assumption of the study

An assumption is the supposition that an apparent fact or principle is true in the light of available evidence. The researcher had the following assumption in mind while undertaking this study.

The respondents selected for the study were capable to provide proper responses to the questions included in the interview schedule.

- i. The responses furnished by the respondents were reliable. They expressed the truth about their convictions and awareness.
- ii. Views and opinions furnished by the respondents included in the sample were the representative views and opinions of the whole population of the study area.
- iii. The researcher who acted as interviewer was well adjusted to the social and cultural environment of the study area. Hence the respondents furnished their correct opinion without hesitation.

1.7 Definition of terms

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

Age

Age of a respondent is 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 interview.

Educational qualification

Education referred to the development of desirable knowledge, skill, attitudes etc. of an individual through the experience of reading, writing, observation and related matters respondents during data collection.

Family size

It referred to actual number of permanent members in a subject's family who lived in a fixed dwelling unit and ate from the same cooking arrangement.

Farming experience

It referred to the actual number of days that an individuals are involved with agricultural work or agricultural related profession, which measured by the number of years from his/her involvement with agricultural work to the time of interview.

Knowledge on agriculture

Knowledge on agriculture is the sum of the OLs and farmer body of information regarding agriculture which reflects their understanding, applying, analyzing, cultivation and creating in regards to agricultural works.

Farm size

Farm size referred to the total area on which a respondent's family carries on farming operations, the area being estimated in terms of full benefit to the farmer's family.

Monthly family income

Family income referred to the total earnings of all the family members of a respondent from agriculture/job, business, service and other accessible sources.

Training received

It referred to the total number of training and total days that a respondent received in his entire life from different organizations under different training programs.

Organizational participation

Organizational participation of an individual referred to his/her participation in various organizations as ordinary member, executive committee member and executive committee officer.

Cosmopolitanism

It referred to an individual's exposure outside his own social environment, his exposure to the nearest village, own union, own upazila, other upazilas, districts or places of social and agricultural important.

Extension media contact

It referred to an individual's exposure to or contact with different communication media and sources and personalities being used for discrimination of new technologies among the OLs and farmers related to agricultural extension.

Role regarding technology transfer

In this present study, role extent of OLs and farmers at field level of agricultural extension referred to the influence in dissemination of technology played by the Opinion leaders.

Problem regarding technology transfer

The barriers in technology transfer faced by the OLs at field level of agricultural extension referred as the problem extension.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to present the review of literature having relevance to the present investigation. This study was under taken to explore relationships of eleven selected characteristics of the Opinion leader and farmers with the role of OLs in technology transfer. The number of literature related to the OLs role in technology transfer had not been found sufficiently. The researcher made an exhaustive search of available literature to find out studies dealing with the relationships of selected characteristics with role of Opinion leaders. In course of review, researcher found studies dealing with the relationships of opinion leadership with fourteen characteristics, namely, age, education, family size, farming experience, knowledge on agriculture, farm size, monthly family income, training received, organizational participation, cosmopolitanism and extension media contact directly or indirectly with role of opinion leader. This chapter contains of three sections. In the first section, literature relating to role extent of OLs in technology transfer have been presented. The second section deals with the reviews of past studies in connection with the relationship of independent variables with the role play of the OLs and the third section is concerned with the conceptual framework of the study.

2.1 Role of opinion leaders in different agricultural aspects

Research work related to extent of role of the opinion leaders in technology transfer in different agricultural aspect are presented below:

Katz and Lazarsfeld (1955) defined that opinion leaders as individual who receive information from media and pass it along to their peer. They are individual who are knowledgeable about various topics and whose advice are taken seriously by others. They often tend to be very socially active and highly interconnected within the community. Moreover, it was found that "effective opinion leaders tend to be slightly higher than the people they influence in terms of status and educational attainment, but not so high as to be in a different social class". This way, the leaders are still a part of their audience's reference group.

Stewart, Smith and Denton (1994) found that opinion leaders can bring legitimacy to a social movement. Known as "legitimizers," these social opinion leaders are judges, politicians, business executives, clergy members, sports figures and entertainers. Such people help

"legitimize" a cause in the eyes of the public by marching in demonstrations, appearing at rallies, donating money, speaking in favor of the cause, and so forth.

King and Bembridge (1988) found from their study conducted in South Africa that opinion leaders considered the fellow farmers as the most reliable sources for obtaining information

Rogers (1962) points out that all persons do not exert equal amount of influence on the adoption decisions of others. These individuals who have a greater share of influence are called opinion leaders. According to Rogers, opinion leaders are these individuals from whom others seek advice and information.

Merton (1957) defined opinion leaders as men who exert personal influence upon a certain number of other people in certain situations.

Singh (1961) describes these persons as local leaders who show special interest and initiative in a local program.

Trent (1966) considers these lay people as opinion leaders who by virtue of the social position, age, education, family reputations, wealth, prestige or political contacts influence opinions on most action programs in the country.

Hays (1961) definition is significant in the sense that it defines leadership as a series of behaviors, not something inherent by the individual himself. For the present purpose and as far as the extension activities are concerned, the concept of leadership will be discussed and interpreted in terms of leadership will be discussed and interpreted in terms of leadership behavior.

Alam (2005) recommended that personal contact was an excellent medium for channeling information to rural communities where the mass media could not penetrate because of educational under development.

Robertson (1971) believes that the diffusion of new innovations is not dichotomized into either a continuous or a discontinuous category. Rather, he posits that a continuum exists for classifying new product innovations by how continuous or discontinuous their effects are on established consumption patterns. Consequently, he identifies a mid-level third category of product innovation that is located between the two extremes of this continuum. This category is referred to as a dynamically continuous innovation and is described by Robertson (1971) as

an innovation involving the creation of a new product or the alteration of an existing one, but without dramatically altering existing consumption patterns or attitudes.

King and Bembridge (1988) found from their study conducted in South Africa that opinion leaders considered the fellow farmers as the most reliable sources for obtaining information.

2.2 Relationship between selected characteristics of respondent (Opinion leaders and farmers)

2.2.1 Age and role extent

Shah and patel (1970) investigated that most the opinion leaders (77%) belonged to the 31-50 gears age group. More importantly, 11 out of 12 “very effective opinion leaders came from this age group.

Islam et al. (2013) showed age had a negative significant relationship with their problem confrontation in fish farming.

Reddy and Sahy (1971) observed opinion leaders in two Andhra Pradesh villages belonged mostly to the middle age groups.

Mannan (1972) conducting a research on rural leadership at Comilla Kotwali thana in Bangladesh found that the age of the leaders varied from 21 to 55 years. Seventy-six percent of the leaders fell within the age group of (26-45) years as compared to 9 and 15 percent of leaders who fall within the age groups of (21-25) and (46-55) years. From these findings he concluded that rural leaders were neither too young nor too old.

2.2.2 Educational qualification and role extent

Raju (1969) reported more than half of the opinion leaders in Andhra Pradash villages were found to have up to secondary or higher education while only of six percent of the average farmers had a similar level of education.

Rahudkar (1962) studied opinion leaders can very easily call on the block development officer and Agricultural Extension officer. Their information contacts are also wide. Even their Kinship relations are spread over a wide area. They are able to purchase agricultural books or subscribe to agricultural magazines and newspapers. Thus these farmers have a number of

contacts which they utilize for new information large farmers can afford to take the risk of implementing the contents of the information they obtain from various sources.

Mannan (1972) found that the leaders were educated up to the levels of primary, secondary, matriculate, and above matriculate and the corresponding percentages were 28, 63, 6, and 3. Upon analysis of data he concluded that some educational background was needed to exhibit leadership role effectively.

2.2.3 Family size and role extent

Salam (2003) in his study found a positive significant relationship between family size and their indecision in adopting environmental friendly farming system.

2.2.4 Farming experience and role extent

Islam et al. (2013) showed farming experience had a negative significant relationship with their problem confrontation in fish farming.

2.2.5 Knowledge on agriculture and role extent

Hossain and Miah (2011) found that knowledge on manure of the resource poor farmers were found to have significant negative relationship with their problem confrontation.

2.2.6 Farm size and role extent

Reddy and Sahy (1971) found ownership of larger holdings is associated with role play of the opinion leader is that since landed property is an important indicator of social status and prestige in a village, people owning and operating larger holdings also trend to assume positions of opinion leadership and effect on others decision.

Rahman and Rahman (2014) found that farm size of the farmers had a negative significant relationship with their problem confrontation in conservation of biodiversity.

Hossain (1971) studied the adoption of four improved farm practices by the transplanted Aman rice growers in Gouripur Union of Mymensingh District. The four practices included recommended variety of transplanted Aman paddy, line transplanting method, recommended doses of fertilizer and plant protection measure. Hossain found positive relationship of farm size with adoption of all the four improved farm practices.

Karim (1973) in his study in keyetkhali union of Mymensingh district found a positive relationship between farm size and adoption of fertilizers.

2.2.7 Monthly family income and role extent

Raju (1969) observed in Andhra Pradesh, over two thirds of the opinion leaders, compared to only 14 percent of the average farmers, had an average annual income of Rupees 6,000 or over from agriculture. Income appears to be related to role play of opinion leader in the same way the ownership of large holdings is related to the latter.

A study by Rahman (1973) shows the influence of income on adoption of innovation. The findings indicate a positive relationship between income of the farmers and adoption of improved farm practices.

2.2.8 Training received and role extent

Islam et al. (2013) showed that training exposure had a negative significant relationship with their problem confrontation.

Hasan et al. (2014) showed that training exposure had a positive significant relationship with their problem confrontation.

2.2.9 Organizational participation and role extent

Rahim (1963) reported that opinion leaders in a Pakistani village were members of more organization than their followers.

Lionberger (1953) and Vanden Ban (in press) found that farm opinion leaders had greater participation in formal organizations than had the participation by the farmers with less influence.

2.2.10 Cosmopolitanism and role extent

Shah and Patel (1970) observed opinion leaders to visit fairs and exhibitions, the research station and the agricultural college and participate in group meetings and crop competitions outside the village more frequently than the average farmers in Gujarat village.

Dubey and Dwivedi (1978) examined opinion leaders had higher level of urban contact than average farmers in two Uttar Pradesh villages.

Lionberger (1953) found that the farm opinion leaders, tended to belong to formal organization located outside (rather than inside) the rural Missouri community where they lived in.

2.2.11 Extension media contact and problem extent

Dubey and Dwivedi (1978) observed opinion leaders use institutional sources of information more frequently than average farmers. The exposure to the mass media of both print and non print types is higher among opinion leaders than average farmers. Opinion leaders also have a greater contact with extension agents.

Karim (1973) in his study on the adoption of fertilizers by the transplanted Aman rice Growers found that extension exposure of the growers had a strong positive relationship with their adoption of fertilizers.

The literature reviewed supposed that there is a gap of knowledge related to agricultural extension at field level. Besides this literature related to relationship between selected characteristics and respondents' role confrontation also proved that the selected characteristics were correct.

2.3 The conceptual framework of the study

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

THE CONCEPTUAL FRAMEWORK OF THE STUDY

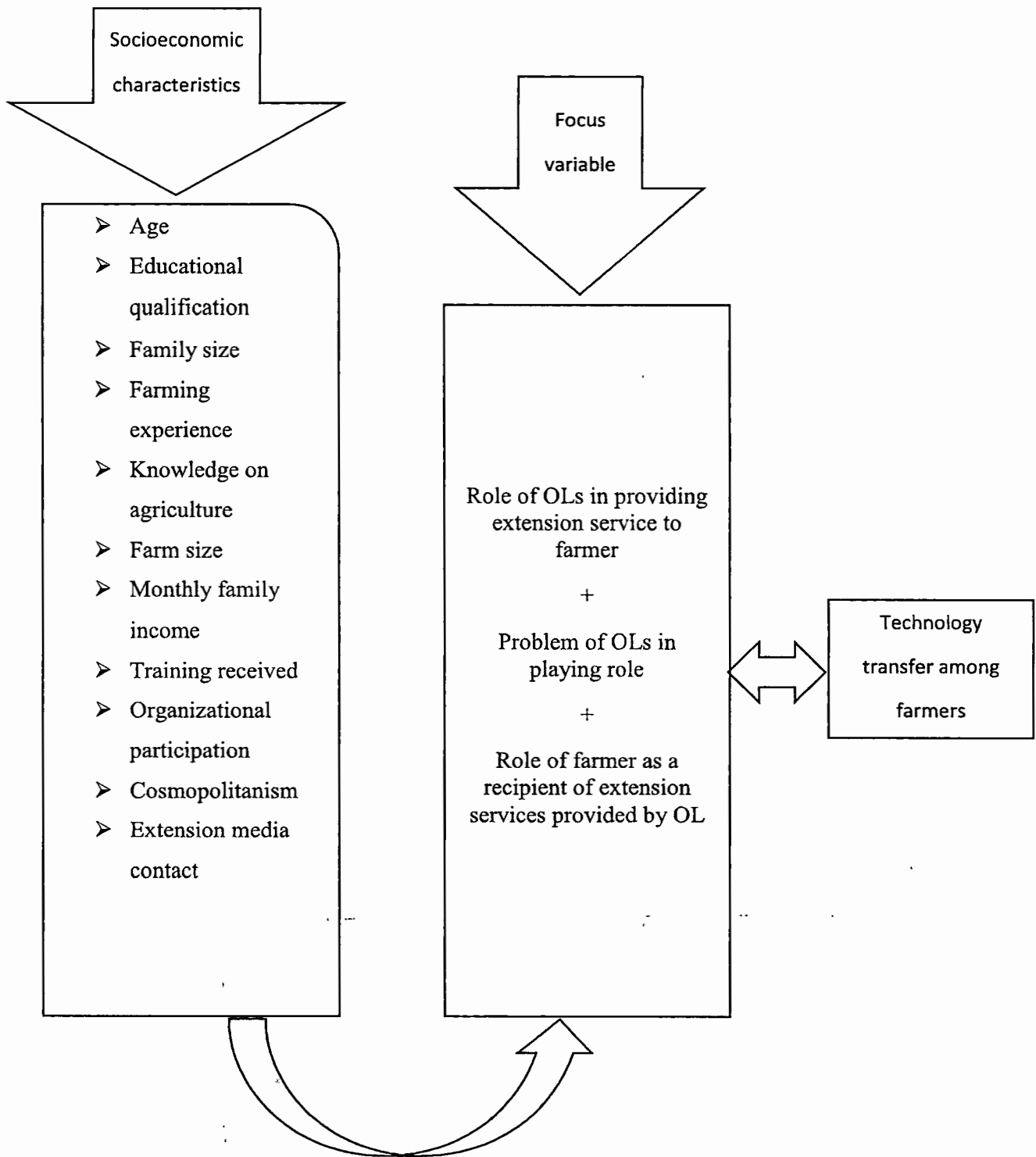


Figure 1: The conceptual framework of the study

CHAPTER III

METHODOLOGY

Research methodology is a systematic way to solve a research problem. It can also be defined as the study or description of methods. It may be understood as a science of studying how research is done. It is the general research strategy that outlines the way in which a research is to be undertaken and identifies the methods and procedures to be used in it. A methodology does not set out to provide solution, these methods described in the methodology, define the means or modes of data collection or something how a specific result is to be calculated. So, before conducting a research work it is very important to select proper methods and procedures that are required for collection and analysis of data.

In a methodology a research is responsible for describing clearly what sorts of research design, methods and procedures would be followed in collecting valid and reliable data and to analyze and interpret those data to arrive at correct summary and conclusion. So the methods and procedures followed in conducting this study have been described in this following chapter.

3.1 Design of the study

An ex-post facto explanatory cross sectional research design was used for the study. The study was quasi-experimental and tried to predict the relationship of the selected characteristics of the respondents with their knowledge and achievement of transferring technology among farmers through OLs. The study was conducted following “diagnostic and descriptive research design”. Data were collected through survey. It was conducted on the basis of collection of data by interviewing Opinion Leaders and farmers of a following upazila. It was designed to investigate the role of Opinion leader at Dumuria upazila of Khulna district by cross checking the statements of OLs and farmers.

3.2 The locale of the study

The study was conducted at different villages of Dumuria upazila under Khulna district. The researcher deliberately selected the villages from the upazila. The selected areas were in remote corner and depend mainly on farming and agriculture related works and business for their livelihood. An approximate distance of Dumuria upazila from Khulna city is 14 kilometers. In Dumuria farmers were practicing mainly vegetables and fish farming based agriculture. Dumuria upazila was known as a hub for agricultural production. The farmers of Dumuria

upazila are eager to adopt technology, but they get often confused in taking decision. A large portion of technology transfer depends on the influence of local leaders of this upazila.

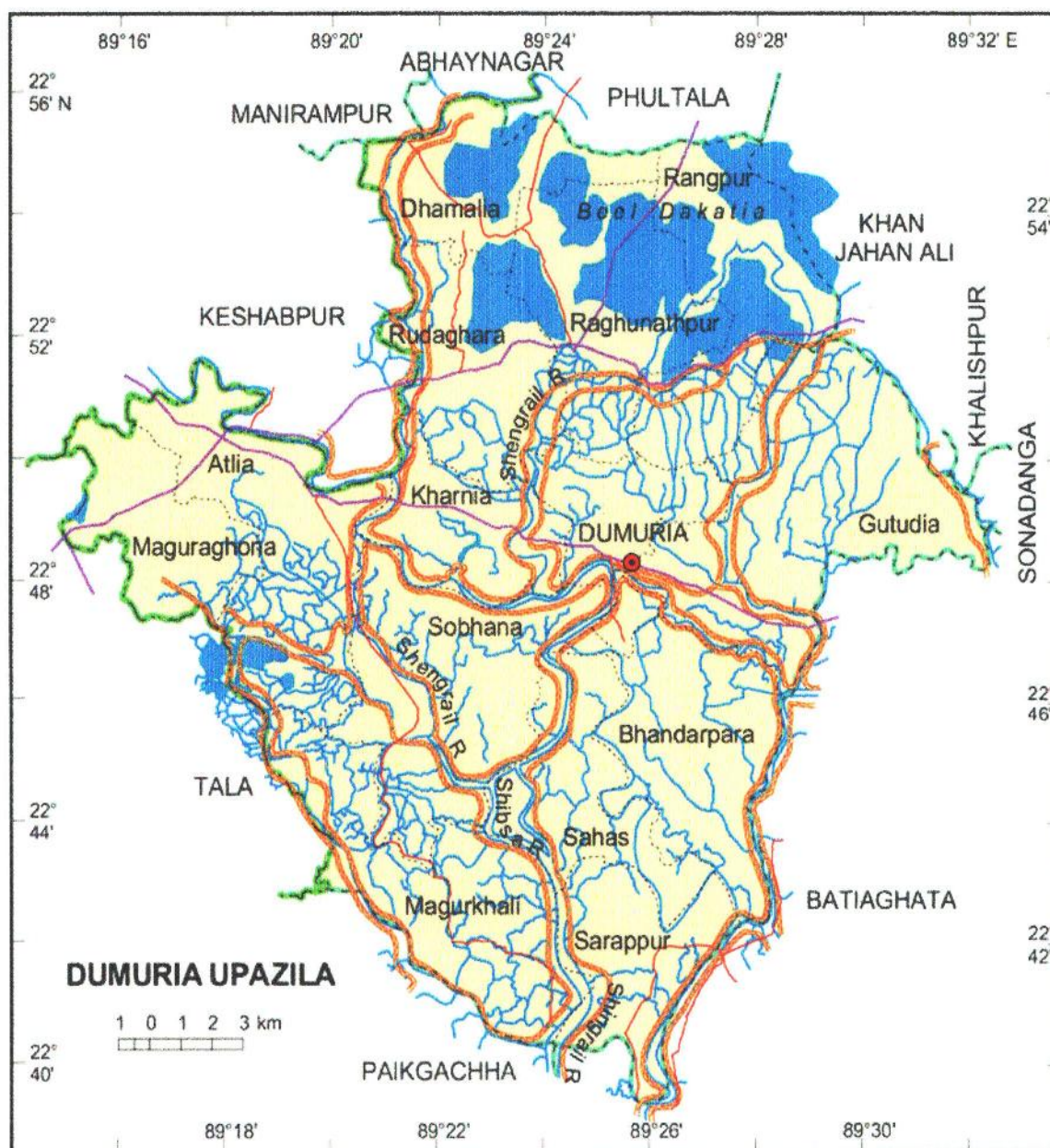


Figure 2: A map of Dumuria upazila

3.3 Population and sampling

An up to date list of leaders of the locale and farmers being involved in agricultural works of the study areas under Dumuria were considered as the population for this study. The total number of farmers in Dumuria upazila was 67500 (BBS, 2016). Among the leaders of the locale 25 opinion leaders were selected purposively. Among the farmers, 70 farmers were selected purposively to cross check the role of opinion leaders in technology transfer. The list comprised of a total number of sample was 25 Opinion Leaders and 70 Farmers. Thus the 25 OL and 70 farmers of Dumuria upazila constitute the active population of the study. The distribution of the population shown in Table 3.1.

Table 3. 1 Distribution of respondents in the study area

Serial No.	Name of respondents	Total number	Number of respondents
1.	Opinion leaders	Unknown	25
2.	Farmers	67,500	70

3.4 Preparation of interview schedule

An interview schedule was prepared for collecting valid and reliable information from the OL and Farmers. This interview schedule was used as research instrument. It was designed according to the objectives of the study. Different simple and direct questions and scales were added to the interview schedule to collect data required for the selected variables. Before final data collection, the interview schedule was pretested with 10 farmers and 5 OLs of the study areas for checking suitability of the statements added in it. On the basis of the pretested result, the interview schedule was carefully corrected and modified according to the directions of the supervisor of the researcher. The final interview schedule was then prepared and made necessary number of copies for the study. The English version of the interview schedule has been added in Appendix A.

3.5 Method and time of data collection

The researcher collected data from the OLs and farmers through face to face interview during their free time. The local people and the agricultural officers of the concerned block and areas helped and cooperated the researcher in data collection. During data collection, the researcher made necessary efforts to establish rapport with the OLs and farmers, so that they become free to answer the questions and statements included in the interview schedule. The researcher explained and clarified the questions and statements as much as possible so that the OL and farmers could easily understand and answer the questions correctly. All the data in the interview schedule was collected from the OLs and Farmers checked properly. The OL and Farmers were very cooperative during interview. The researchers collected data from the respondents during October 20 of 2021 to January 5 of 2022. During this time the researcher made several visits for collecting valid and reliable data from the respondents.

3.6 Data processing and analysis

3.6.1 Data processing and tabulation

During data processing, appropriate scoring technique was applied for conversion of all the qualitative data into quantitative form. Local units of measurements were converted into standard units. In case of some variables, proper indices and scales were made through the simple accumulation of score assigned to individual or pattern of attributes. Indices and scales were considered the efficient instruments for data reduction and analysis. All personal characteristics were categorized and arranged in simple tables for interpretation and discussion. Number, frequency, percentage, mean, range, standard deviation and correlation were used for statistical description.

All the interview schedules were prepared for data tabulation after completing the field study. Collected data were summarized and inspected thoroughly. A master sheet was prepared to tabulate all the data by transferring all the individual variables in order to meet the objectives of the study.

3.6.2 Compilation of data

After completion of field survey data from all the interview schedules were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the

responses in the interview schedule were given numerical coded values. Local units were converted into standard units and qualitative data were converted into quantitative ones by means of suitable scoring whenever necessary. The responses to the questions in the interview schedule were transferred to master sheet to facilitate tabulation.

3.6.3 Categorization of data

For describing the different characteristics and their problem extension, the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding prevailing in the social system and possible observed scoring system. The procedure for categorization of data in respect of different variable is elaborately being discussed while discussing those variables in section.

3.6.4 Statistical techniques

The analysis was performed using SPSS (Statistical package for social science) computer package. Descriptive statistics such as range, number, percentage, mean, standard deviation and rank order were used whenever possible. Spearman rank order correlation was used in order to explore the relationship between the concerned variables, throughout the study. When we have to find out the relationship between two variables, whether, as one variable increases the other variable tends to increase or decrease spearman rank order correlation is best option. At least five percent (0.05) level of probability was used as basis of rejecting a null hypothesis.

3.7 Specification and measurement of the variables

3.7.1 Specification of the variables

In survey research the specification and measurement of the variables constitute an important task. A research hypothesis contains at least two elements, an independent variable and dependent variable. The researcher keeping all these in mind took adequate care in selecting the variables of the study. Before the onset of the study, the researcher visited the study area for several times and identify the Opinion Leaders properly. The researcher also met the farmers several times to establish an intimate relationship so the farmers can share their experiences with the OL. Moreover, by staying in the study area for sometimes, it was possible to observe the personal, socioeconomic, sociocultural and psychological factors of the Opinion leaders and Farmers which the researcher assumed might have influenced on the behavior pattern of the Opinion leaders. Based on the practical knowledge, side by side an extensive

literature review and discussions with relevant experts and academicians, the researchers selected socioeconomic characteristics of these respondents as independent variables and role and problem severity as dependent variable for the study. For the respondents both OLs and farmers, the selected characteristics (independent variables) are age, educational qualification, family size, farming experience, knowledge on agriculture, farm size, family income, training received, organizational participation, cosmopolitanism and extension media contact.

Selected characteristics of Respondents	
i.	Age
ii.	Educational qualification
iii.	Family size
iv.	Farming experience
v.	Knowledge on agriculture
vi.	Farm size
vii.	Family income
viii.	Training received
ix.	Organizational participation
x.	Cosmopolitanism
xi.	Extension media contact

3.7.2 Measurements of socio-economic characteristics

3.7.2.1 Age

Age of the respondents was determined by counting their age from the birth to the time of data collecting according to their statement. It was expressed in terms of complete year. It was scored one for each year of their age. It is included in the interview schedule as the item No.1 (Appendix A). According to age range the OLs and Farmers of the upazila were classified into three categories as shown in Table 3.2. (Hamid, 2020)

Table 3. 2 Categories of respondents according to their age

Categories	Age limits (years)
Young aged	≤35
Middle aged	36-55
Old aged	>55

3.7.2.2 Educational qualification

Formal education was regarded as educational qualification of a respondent. The level of education was measured by the years required to achieve formal education. A score of one (1) was given to the respondents for each year of schooling on the basis of passed class. Again the score of 1 was also given to those respondents who have no formal education but can sign name only. Thus the score of a respondent on educational qualification was determined from response to item No.2 in the interview schedule (appendix A). On the basis of educational qualification, respondents were classified into following categories shown in Table 3.3.

Table 3. 3 Categories of respondents according to their Educational qualification

Categories	Score (years of schooling)
Illiterate	0
Can sign only	0.5
Primary	1-5
Secondary	6-10
Higher Secondary	11-12
Undergraduate	13-16
Postgraduate	>16

3.7.2.3 Family size

Family size was determined by the total number of family members of a respondent including themselves and the others dependents. Score of a OL and a Farmer on family size was counted by the actual number of their family members. Family size belongs to item No.3 in the interview schedule (Appendix A). On basis of family size, respondents were classified into following categories showing in Table 3.4.

Table 3.4 Categories of respondents according to their family size

Categories	Number of family members
Small	≤ 4
Medium	5-6
Large	>6

3.7.2.4 Farming experience

The experience in farming of a respondent was measured by length covered from his/her starting year in farming to the interview on the basis of his/her statement No.4 in the interview schedule (Appendix A). On the basis of the farming experience they are classified into following categories in Table 3.5 (Hamid, 2020).

Table 3. 5 Categories of respondents according to their farming experience

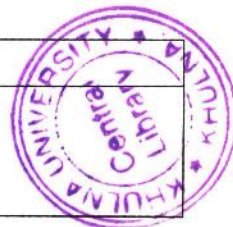
Categories	Score
Low	≤ 10
Medium	11-20
High	> 20

3.7.2.5 Knowledge on agriculture

Knowledge on agriculture was measured by asking 5 different questions in relation to the agricultural practices. This category was set for both OLs and the farmers of the two upazila. It was composed of basic knowledge and practices commonly used in the field. It appears in item No.5 in the interview schedule (Appendix A). The assigned score for each correct answer was 2. If the answer is partially correct, it is scored 1, A zero was given for wrong or no answer. The total score obtained by a respondent determined his/her knowledge on agriculture. The score could range from 0 to 10 where 0 means no knowledge on agriculture and 10 meaning high knowledge on agriculture. According to knowledge, respondents are classified into following categories as shown in Table 3.6

Table 3.6 Categories of respondents according to their knowledge on agriculture

Categories	Score
Low	≤ 3
Medium	4-6
High	> 6



3.7.2.6 Farm size

Farm size refers to the total area of land owned by a respondent including homestead area. It also includes the land obtained from others on share cropping/borga or taken from others on lease. The area was being estimated in terms of full of benefits to the respondents. The farm size was calculated using following formula,

$$FS = A1+A2+1/2 (A3+A4) +A5$$

Where, FS= Farm size

A1= Homestead

A2= Own land under cultivation

A3= Land given to others on borga

A4= Land taken from others on borga

A5= Land taken from others on lease

A6= Others

The farm size was recorded in local unit and then it was converted to hectare. Farm size belongs to item No.6 in the interview schedule (Appendix A). On the basis of farm size, farmers were classified into five categories which are shown in Table 3.7.

Table 3.7: Categories of respondents according to their farm size

Categories	Score (ha)
Landless	≤ 0.02
Marginal	0.02-0.2
Small	0.21-1.0
Medium	1-3
Large	>3

(BBS,2016)

3.7.2.7 Monthly family income

Family income (monthly) was estimated by considering total earning in the last year from different source viz. agriculture, business, service and others. Family income is included in the

interview schedule as item No.7 and (Appendix A). The respondents were classified into following categories according to monthly income as shown in Table 3.8.

Table 3.8: Categories of respondents according to their monthly family income

Categories	Taka (BDT)
Low	<15000
Medium	15000-25000
High	>25000

3.7.2.8 Training received

Training score of the respondent was measured depending on the number of training he/she had received. For computing training score (1) was given receiving on the training only. Respondents who have received one or two or three training, were assigned a score of 1, 2, 3 respectively. The score 0 was assigned if they do not take any train. Training received is included in the interview schedule as item No.8 (appendix A). The respondents were classified into following categories in the Table 3.9. (Hamid, 2020)

Table 3.9 Categories of respondents according to their training received

Categories	Score
No	0
Low	≤ 2
Medium	3-5
High	>5

3.7.2.9 Organizational participation

Organizational participation of a respondent was measured on the basis of his/her involvement and the nature of participation in different organizations of the study area during the time of interview. List of different organizations are shown in item No.9 in the interview schedule (Appendix A). The score '0' was assigned for no participation, "1" for ordinary member, "2" for executive committee member and "3" for executive committee officer. The summation of

score obtained by a respondent was the score of his/her organizational participation, OLs and farmers are classified into following categories as shown in Table 3.10.

Table 3.10 Categories of respondents according to their organizational participation

Categories	Score
Low	≤ 8
Medium	9-16
High	>16

3.7.2.10 Cosmopolitanism

The cosmopolitanism score of a respondent was measured to determine the extent of his/her cosmopolitanism on the basis of his/her frequencies of visits to the places outside of his/her own social system. It was determined by counting the number of visits made in five different places which indicate the extent of visit as frequently, occasionally, rarely and not at all and the scores were 3, 2, 1 and 0 respectively. The score could range from 0 to 15 where '0' meaning no cosmopolitanism and "15" meaning very high cosmopolitanism. Cosmopolitanism of the respondents is shown in item No.10 (Appendix A). Respondents are classified into different categories according to their cosmopolitanism as shown in Table 3.11.

Table 3.11 Categories of respondents according to their cosmopolitanism

Categories	Score
Low	≤ 5
Medium	6-10
High	>10

3.7.2.11 Extension Media Contact

Extension media contact of a respondent was determined as his/her degree of exposure with different extension media and persons that acted as information sources to motivate him/her and to broaden his outlook to new practices. A list of media sources was selected in consulting with local extension personnel, farmers and by reviewing related literature. It is included in item No.11. In interview schedule (Appendix A). the score could range from 0 to 96 where "0" meaning no extension media exposure and "96" meaning very high extension media exposure.

The respondents were classified into following categories according to extension media exposure as shown in Table 3.12.

Table 3.12 Categories of respondents according to their extension media contact

Categories	Score
No	0
Rare	1-24
Occasional	25-48
Often	49-72
Regular	>72

3.8 Measurement of focus variable

3.8.1 Role of opinion leaders in providing extension service to the farmers

A number of 25 statements related to role of OLs in technology transfer were incorporated in question No.12 in the interview schedule (Appendix A). Both OLs and farmer were asked to indicate the role of OLs as very important role, important role, moderate role, less important role and no role to play. The rating scale was assigned as 4, 3, 2, 1, 0 respectively. The role of OLs score of a respondents was determined by summing the scores of all the role in the item no.12 in the interview schedule (Appendix A). The possible range of score was 0 to100 for the respondents. Based on the perceived role score the respondents (Both OLs and Farmer) was classified into following categories as shown in table 3.13

Table 3.13 Categories of opinion leader according to their role in providing extension service to the farmer

Categories	Score
No	0
Little role	<25
Moderate role	26-50
Important role	51-75
Very important role	>75

3.8.2 Problem severity score

In this study, problem severity score was computed for each respondent as ascertain from his/her response to question No.13 in the interview schedule (Appendix A). Each of the OLs was asked to indicate his/her problems on playing roles in extension service. Again each of the farmers was asked to indicate the problems faced by the OLs in extension service. By analyzing many problems regarding technology transfer of OLs, 10 problems of OLs in extension service were incorporated in the interview schedule. Each respondent was asked to identify the problems he/she has faced along with the extent of the problem against each of the statements. The extent of the problem was related as severe, acute, moderate, less and not at all and the rating scale was assigned as 4, 3, 2, 1, 0 respectively. The problem extent score of a respondent was determined by summing the scores of all the problems in the item no.13 in the interview schedule (Appendix A). The possible range of score was 0 to 40 for the Opinion leaders and the farmers. The respondents were classified into following categories according to problem extent of OLs in extension service as shown in Table 3.14. (Hamid, 2020)

Table 3.14 Categories of respondents according to the problem extent

Categories	Score
No	0
Less	1-46
Moderate	46-92
Acute	93-138
Severe	>138

3.8.3 Role of farmers as a recipient of the service provided by opinion leaders score

In this study, role of Farmers score was computed for each respondents as ascertain from his/her response to question No.14 in the interview schedule (Appendix A). Each OLs was asked to indicate how the farmers were playing roles as a recipient of the service. Each Farmers was asked to indicate how they were playing their role and cross check the statements given by the OLs by providing same interview schedule. Ultimately 15 roles of Farmers were incorporated in the interview schedule. Each respondent was asked to identify the roles of Farmers. The role of the farmers was related as very important role, important role, moderate important role, less important role and no role to play and the rating scale was assigned as 4, 3, 2, 1, 0 respectively. The role of farmers score of a respondent was determined by summing the scores of all the role

in the item no.14 in the interview schedule (Appendix A). The possible range of score was 0 to 60 for the respondents. The role of farmers was classified into following categories as shown in table 3.15

Table 3.15 Categories of farmer according to their role as a recipient of the service provided by opinion leader

Categories	Score
No	0
Little role	<20
Moderate role	21-35
Important role	36-50
Very important role	>50

3.8.4 Role Extent Index (REI)

The extent of a role of OLs was determined based on role extent index (REI), again to measure a role of farmers was determined based on the same role extent index. The possible range of role extent index (PSI) was 0 to 100 for the Opinion Leaders and 0 to 280 for the farmers. The REI was determined by using the following formula.

$$REI = (N1 \times 4) + (N2 \times 3) + (N3 \times 2) + (N4 \times 1) + (N5 \times 0)$$

Where,

N1= Number of respondents extended the role and related as very important.

N2= Number of respondents extended the role and rated as Important

N3= Number of respondents extended the role and rated as moderate important

N4= Number of respondents extended the role and rated as less

N5= Number of respondents did not extent the role at all

For example, among 25 respondents 15,7,5,8 and 10 respondents indicate the extent of role regarding role number as very important, important, moderately important, less important and no role to play respectively. Thus the REI for extension number

$$\begin{aligned} \text{REI} &= (15 \times 4) + (7 \times 3) + (5 \times 2) + (8 \times 1) + (10 \times 0) \\ &= 60 + 21 + 10 + 8 = 99 \end{aligned}$$

After determination of REI, the extent of the role was determined by following formula (%)

$$\text{Extent of the role} = \frac{\text{observe role extension score}}{\text{possible highest role extension score}} \times 100$$

3.8.5 Problem Severity Index (PSI)

The severity of a problem of OLS was determined based on problem severity index (PSI). The possible range of problem severity index (PSI) was 0 to 100 for the OLS and 0 to 280 for the farmers. The PSI was determined by using the following formula,

$$\text{PSI} = N1 \times 4 + N2 \times 3 + N3 \times 2 + N4 \times 1 + N5 \times 0$$

Where,

N1= Number of respondents extended the problems and related as severe

N2= Number of respondents extended the problems and rated as acute

N3= Number of respondents extended the problems and rated as moderate

N4= Number of respondents extended the problems and rated as less

N5= Number of respondents did not extent the problems at all

For example, among 25 respondents 15,7,5,8 and 10 respondents indicate the extent of problem regarding problem number as severe, acute, moderate, less and not at all respectively. Thus the PSI for extension number

$$\begin{aligned} \text{PSI} &= (10 \times 4) + (7 \times 3) + (4 \times 2) + (8 \times 1) + (10 \times 0) \\ &= 40 + 21 + 8 + 8 = 77 \end{aligned}$$

After determination of PSI, the severity of the problem was determined by following formula

$$(\%) \text{ Severity of the problem} = \frac{\text{observe problem extension score}}{\text{possible highest problem extension score}} \times 100$$

3.8.6 Rank

The rank of a role of OLs was determined based on the (%) extent of the role. The role which obtain highest (%) extent hold the first rank and then the second highest (%) extent hold the second rank. The rank continued from 1st to 25th. The rank of a problem was determined based on the (%) severity of the problem of OLs. The problem which obtain highest (%) severity hold the first rank and then the second highest (%) severity hold the second rank. The rank continued from 1st to 10th. The rank of a role of farmer was determined based on the (%) extent of the role. The role which obtain highest (%) extent hold the first rank and then the second highest (%) extent hold the second rank. The rank continued from 1st to 15th.

CHAPTER IV

RESULTS AND DISCUSSION

The main purpose of this chapter is to describe the findings of the present study. The study investigate the role of Opinion leader as perceived by the Opinion leaders themselves and by the farmers in technology transfer among the farmers. In accordance with the objectives, presentation of the findings has been made in the following 5 sections:

1. Description of the selected characteristics of the respondents.
2. Extent of role of the Opinion leaders in technology transfer among farmers.
3. Relationship between selected characteristics and extent of role of Opinion leader.
4. Relationship between selected characteristics and problem severity of the opinion leader.

4.1 Selected characteristics of the respondents

The characteristics can include social and economic standing, age, educational qualification, family size, farming experience, knowledge on agriculture, farm size, monthly family income, training received, organizational participation, cosmopolitanism and extension media contact of an individual.

4.1.1 Personal Characteristics

4.1.1.1 Opinion leaders

The personal characteristics of the respondents Opinion leaders varied from different ranges. On the basis of the personal characteristics, distribution of respondents is shown below in Table 4.1.

Data presented in Table 4.1 showed that highest proportion (52%) of the respondents were middle aged. The minimum and maximum age was 27 and 65 years, respectively with a mean of 42.6 years and standard deviation 10.84.

The highest portion (40%) of Opinion Leaders had secondary level of education. The minimum and maximum schooling years were 2 and 16 years, respectively with a mean of 8.91 years and standard deviation 3.96.

According to the data of table 4.1 the majority of families (48%) were medium sized. The minimum and maximum family members of the respondents were 3 and 8 respectively with a mean of 4.88 and standard deviation 1.33.

Highest proportion (64%) of the respondents had medium level of farming experience with a mean of 19.74 and standard deviation 10.69. The maximum and minimum experiences ranges from 45 years to 0.5 years respectively.

It is shown in 4.1 showed that the highest proportion (92%) of the respondents are highly knowledgeable with minimum and maximum score of 5 and 10, respectively. The mean of this variable was 9.6 with a standard deviation of 1.38.

The farm size of the maximum respondent (52%) OLs was small. The minimum and maximum land size of the respondents were 0.02ha and 10.71 ha, respectively with a mean of 1.22 and standard deviation of 4.1.

Data presented in table 4.1 showed that highest portion of the respondents (68%) had low income with a mean and standard deviation of 13840 and 7652.23 respectively. The minimum and maximum income were 5000 BDT. and 35000 BDT.

Among the total respondents of OLs, 56% had training on different agricultural technologies. Highest portion (71.4%) had low level of training with maximum number of training 4 to minimum 2 numbers of training.

In table 4.1 it has been shown that 100% of respondents had organizational participation. The highest level (88%) of organizational participation was low with a mean of 4.68 and standard deviation of 2.70.

The data presented in table 4.1 that 52% of respondents had high cosmopolitanism and 12% had low cosmopolitanism. The minimum and maximum score of the respondents were 5 and 15 with a mean of 11.70 and standard deviation 3.72 respectively.



Table 4.1 Distribution of respondents according to their personal characteristic

Opinion Leader	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Age (years)	Young	≤35	7	28.0	42.6±10.84	27	65
	Middle	36-55	13	52.0			
	Old	>55	5	20.0		Range (possible): Unknown	
Educational qualification	Illiterate	0	0	0	8.91±3.96	2	16
	Can sign only	0.5	0	0			
	Primary	1-5	5	20.0			
	Secondary	6-10	10	40.0			
	Higher Secondary	11-12	4	16.0			
	Undergraduate	13-16	6	24.0			
	Postgraduate	>16	0	0		Range (possible):0-21	
Family size	Small	≤4	10	40.0	4.88±1.33	3	8
	Medium	5-6	12	48.0			
	Large	>6	3	12.0		Range (possible):Unknown	
Farming experience	Low	≤10	3	12.0	19.74±10.69	0.5	45
	Medium	11-20	16	64.0			
	High	>20	6	24.0		Range (possible):0-unknown	
Knowledge on agriculture	Low	≤3	0	0	9.6±1.38	5	10
	Medium	4-6	2	8.0			
	High	>6	23	92.0		Range (possible):0-10	
Farm size	Landless	≤0.02	0	0	1.22±2.11	0.02	10.71
	Marginal	0.02-0.2	4	16.0			
	Small	0.21-1.0	13	52.0			
	Medium	1.01-3	6	24.0			
	Large	>3	2	8.0		Range (possible): 0-Unknown	

Table 4.1 continue.....

Opinion Leader	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Family income (tk/month)	Low	<15000	17	68.0	13840±7652.23	5000	35000
	Medium	15000-25000	6	24.0		Range (possible): 0-Unknown	
	High	>25000	2	8.0			
Training received	Yes	14			56(%)		
	no	11			44(%)		
Training received (number)	Low	≤2	10	71.4	1.06±0.63	2	4
	Medium	3-5	3	21.4		Range (possible): 0-Unknown	
	High	>5	1	7.2			
Organizational participation	Yes	25			100(%)		
	no	0			0(%)		
Organizational Participation	Low	≤8	22	88.0	4.68± 2.70	1	7
	Medium	9-16	3	12.0		Range (possible): 0-24	
	High	>16	0	0			
Cosmopolitani sm	Low	≤5	3	12.0	11.70±3.72	5	15
	Medium	6-10	9	36.0		Range (possible): 0-15	
	High	>10	13	52.0			
Extension media contact	No	0	0	0	60.24±11.22	41	90
	Rare	1-24	3	12			
	Occasional	25-48	19	76			
	Often	49-72	3	12			
	Regularly	>72	0	0		Range (possible): 0-96	

The data presented in table 4.1 showed that highest portion (76%) of respondents had occasional extension media contact with a mean of 60.24 and standard deviation 11.22. The minimum and maximum score of the respondents were 41 and 90.

4.1.1.2 Farmers

The selected personal characteristics of the farmer varied from different ranges. The selected personal characteristics of the respondent farmer have been distributed into following categories as shown in table 4.2.

The data presented in table 4.2 showed that highest proportion (50%) of the respondent farmer were middle age and lowest (11.4%) was old aged. The minimum and maximum age was 21 and 75 years respectively with a mean of 41.54 years and standard deviation 12.47.

The highest portion (42.8%) of the farmers had secondary level of education. The minimum and maximum schooling years were 2 and 15 years respectively with a mean of 7.70 years and standard deviation of 3.42.

According to the data of table 4.2 the majority of families (50%) were medium. The minimum and maximum family members of the respondents were 2 and 12 respectively with a mean of 4.35 and standard deviation 1.97.

Highest proportion (41.4%) of the respondents had medium level of farming experience with a mean of 19.22 and standard deviation 10.72. the maximum and minimum experiences were 5 and 55 years respectively.

The table 4.2 showed that the highest proportion (84.3%) of the respondents are highly knowledgeable with minimum and maximum score of 5 and 10 respectively. The mean of this variable was 9.1 with a standard deviation of 1.83.

The farm size of the maximum respondents (51.4%) was small and the minimum and maximum land size of the respondents were 0.02ha and 4.04 ha respectively with a mean of 0.47 and standard deviation 0.57.

The data presented in the table 4.2 showed that highest portion of the respondents (52.9%) had medium income with a mean and standard deviation of 16642.9 and 8789.05 respectively. The minimum and maximum income were 4000 BDT. and 68000 BDT. Respectively.

Among the total respondents only 35.7% had received training on different agricultural practices and technologies. Among them 96% had low level of training and only 4% had medium level

Table 4.2 Distribution of respondents Farmer according to their personal characteristics

Farmer	Categories	Score	N=70		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Age (years)	Young	≤35	27	38.6	41.54±12.47	21	75
	Middle	36-55	35	50			
	Old	>55	8	11.4		Range (possible): Unknown	
Educational qualification	Illiterate	0	0	0	7.70±3.42	2	15
	Can sign only	0.5	0	0			
	Primary	1-5	26	37.2			
	Secondary	6-10	30	42.8			
	Higher Secondary	11-12	12	17.2			
	Undergraduate	13-16	2	2.8		Range (possible):0-21	
	Postgraduate	>16	0	0			
Family size	Small	≤4	22	31.4	4.35±1.97	2	12
	Medium	5-6	35	50.0			
	Large	>6	13	18.6		Range (possible) : unknown	
Farming experience	Low	≤10	20	28.6	19.22±10.72	5	55
	Medium	11-20	29	41.4			
	High	>20	21	30		Range (possible):0-unknown	
Knowledge on agriculture	Low	≤3	0	0	9.1±1.83	5	10
	Medium	4-6	11	15.4			
	High	>6	59	84.3		Range (possible):0-10	
Farm size	Landless	≤0.02	0	0	0.47±0.57	0.02	4.04
	Marginal	0.02-0.2	24	34.3			
	Small	0.21-1.0	36	51.4			
	Medium	1.01-3	8	11.4			
	Large	>3	2	2.9		Range (possible): 0-Unknown	

Table 4.2 continue.....

Farmer	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Family income (tk/month)	Low	<15000	31	44.3	16642.9±8789.05	4000	68000
	Medium	15000-25000	37	52.9			
	High	>25000	2	2.9		Range (possible): 0-Unknown	
Training received	Yes	25			35.7(%)		
	no	45			64.3(%)		
Training received (number)(N=25)	Low	≤2	24	96.0	1.48±0.58	1	3
	Medium	3-5	1	4.0			
	High	>5	0	0		Range (possible): 0-Unknown	
Organizational participation	Yes	60			85.7%		
	no	10			14.3%		
Organizational Participation (N=0)	Low	≤8	60	100	1.83± 1.18	1	7
	Medium	9-16	0	0			
	High	>16	0	0		Range (possible): 0-24	
Cosmopolitani sm	Low	≤5	27	38.6	8.52±3.50	4	15
	Medium	6-10	27	38.6			
	High	>10	16	22.8		Range (possible): 0-15	
Extension media contact	No	0	0	0	48.62±7.96	33	69
	Rare	1-24	0	0			
	Occasional	25-48	36	51.4			
	Often	49-72	24	48.6			
	Regularly	>72	0	0		Range (possible): 0-96	

In table 4.2 it has been shown that 60% of respondents had organizational participation. Almost 100% of organizational participation was low with a mean of 1.83 and standard deviation of 1.18

The data presented in table 4.2 show that the cosmopolitanism of the farmers ranges from low to medium. The minimum and maximum score of the respondents were 4 and 15 with a mean of 8.52 and standard deviation 3.50.

The data presented in table 4.2 showed that highest portion (51.4%) of respondents had occasional extension media contact with a mean of 48.62 and standard deviation 7.96. The minimum and maximum score of the respondents were 33 and 69 respectively.

Table 4.1 and **table 4.2** showed us the complete picture of personal characteristics of the respondents both the Opinion Leaders and The farmers. From the above two tables we have come to know the following fact.

The maximum OLs and farmers are **middle aged**. The middle age OLs are more optimistic about the technologies and they are eager to transmit their knowledge towards farmers than the old aged OLs. It has been found that the farmers of our country involve themselves in farming after a certain age looking for some other professions for their livelihood.

Das et al. (2019) found middle aged farmers (60.0%) were highly involve in farming followed by young aged (20.0%) and old aged farmers (20.0%).

In present time many young people are involving in farming occupation. The farmers are now more enthusiastic about newer technologies for farming. Youngest and middle aged Opinion leaders are more appreciated for disseminating information among the farmers regarding technologies.

Educational qualification both in Opinion leaders and farmers were quite well. The highest portion of the respondents had secondary level of education.

Mondol et al. (2019) found highest portion (32.10%) of the respondents had secondary level of education followed by primary (22.60%) & illiterate (20.80%).

Das. et al. (2019) found major proportion (55%) of respondents had secondary level of education while (24.2%) farmers had primary level of education, (11.7%) of respondents had higher secondary level of education.

In recent years educated young people are interested in farming. We can see that higher secondary (17.2%) and undergraduate (2.8%) people were involved in farming among the

farmers. But still now the primary level of education (37.2%) is higher in farming profession. Educated OLs are now involving themselves to take parts in different government arranged programs, they are up to date and acknowledged about the use of apps or other technology in farming. The level of education accelerated the way of technology transfer among the respondents.

Table 4.1 and table 4.2 showed us where the **Monthly income** of the highest portion (52.9%) of the farmers was medium level, the income level of the maximum OLs was low. The maximum income of the farmers was 68000, in case of OLs it was only 35000.

Mondol et al. (2019) found majority (52.80%) of the respondents belonged to medium income group as compared to low (34%) and high (13.20%) income groups.

Das et al. (2019) found (55.8%) the respondent family member had lower annual income followed by medium (35.8%) annual income and high (8.3%) annual income.

In this area the farmer's family income is increasing day by day. In case of OLs, they are not provided any fees or payment for their service. The local OLs always try to help their neighbors, relatives and friends regarding information without any payment. Proper support and sponsorship can change the scenario of family income level of the local OLs.

Among the respondents the percentage of respondents who received **Training** on different agricultural technologies and practices was higher in Opinion leaders than the farmers. Although the level of training received was low in both OLs and farmers.

Das et al. (2019) found most of the respondents (90.8%) had no training and small portion (6.7%) of the respondents had received low (<3) training and only a few portion (2.7%) of respondents had higher number (>5) of training.

There are very low training facilities of the respondents in both for Opinion Leaders and for Farmers. People are not aware of the advantages of taking training and sometimes nepotism works in selecting person suitable for training. The authority should have increased the training facilities for the betterment in this area.

100% Opinion leaders were related to different **organization** in Dumuria. The farmer percentage in organizational participation was also higher. The level of participation for both OLs and farmers was lower. Mondol et al. (2019) found majority (68%) of respondents had participation of different organization and (32%) of respondents had no participation.

4.1.2 Extent of extension media contact

Table 4.3 Extension Media Contact index of opinion leader

Categories		Regularly (4)	Often (3)	Occasionally (2)	Rarely (1)	Not at all (0)	Score	%	Rank
a. Mass media	1. Radio	4×2	3×8	2×15	1×0	0×0	62	62	8 th
	2. Television	4×15	3×5	2×5	1×0	0×0	85	85	6 th
	3. Poster	4×14	3×7	2×3	1×1	0×0	84	84	7 th (=)
	4. Leaflets	4×14	3×7	2×3	1×1	0×0	84	84	7 th (=)
	5. Newspaper	4×15	3×7	2×2	1×1	0×0	86	86	5 th
	6. Exhibition Agriculture fair	4×2	3×1	2×12	1×10	0×0	45	45	11 th
	7. Magazine	4×3	3×1	2×9	1×10	0×2	43	43	12 th
	8. Online Agricultural Apps	4×2	3×2	2×5	1×6	0×10	30	30	16 th
b. Group Contact	9. Farmers field	4×24	3×1	2×0	1×0	0×0	99	99	2 nd (=)
	10. School	4×1	3×5	2×11	1×6	0×2	47	47	10 th (=)
	11. IPM/ICM club	4×1	3×0	2×6	1×9	0×9	25	25	17 th
	12. Tours	4×0	3×1	2×12	1×9	0×3	36	36	13 th
	13. Lecture	4×1	3×4	2×11	1×9	0×0	47	47	10 th (=)
c. Personal contact	14. Office call (SAAO)	4×0	3×3	2×5	1×15	0×1	36	36	13 th
	15. Office call(AEO/UAO)	4×0	3×3	2×5	1×16	0×1	35	35	14 th
	16. Email	4×1	3×0	2×1	1×3	0×20	9	9	18 th
	17. Personal letter	4×2	3×2	2×4	1×11	0×6	33	33	15 th
	18. Mobile	4×18	3×6	2×1	1×0	0×0	92	92	3 rd
	19. Farm & home visit by SAAO	4×0	3×5	2×15	1×5	0×0	50	50	9 th
d. Opinion leader	20. Friends	4×25	3×0	2×0	1×0	0×0	100	100	1 st (=)
	21. Relatives	4×16	3×6	2×3	1×0	0×0	88	88	4 th
	22. Neighbor	4×24	3×1	2×0	1×0	0×0	99	99	2 nd (=)
	23. Dealer (pesticide)	4×25	3×0	2×0	1×0	0×0	100	100	1 st (=)
	24. Model farmer	4×25	3×0	2×0	1×0	0×0	100	100	1 st (=)

The data presented in table 4.3 showed that the highest percentage (100%) obtained by contact with friends, dealer (pesticide) and model farmer hold first rank. The 2nd rank hold by neighbor,

and farmers field. 3rd, 4th and 5th rank hold by mobile, relatives and newspaper respectively in case of the Opinion Leaders.

Table 4.4 Extension media contact index of farmer

Categories		Regularly (4)	Often (3)	Occasionally (2)	Rarely (1)	Not at all (0)	Score	%	Rank
a. Mass media	1. Radio	4×2	3×10	2×47	1×11	0×0	143	51.07	11 th
	2. Television	4×21	3×13	2×29	1×7	0×0	188	67.14	8 th
	3. Poster	4×16	3×14	2×26	1×10	0×0	168	60.0	10 th
	4. Leaflets	4×15	3×16	2×26	1×8	0×5	168	60.0	10 th
	5. Newspaper	4×18	3×16	2×26	1×8	0×12	180	64.29	9 th
	6. Exhibition Agriculture fair	4×0	3×2	2×18	1×39	0×11	81	28.93	15 th
	7. Magazine	4×1	3×1	2×10	1×37	0×21	64	22.86	17 th
b. Group Contact	8. Online Agricultural Apps	4×6	3×0	2×5	1×24	0×35	58	20.71	19 th
	9. Farmers field	4×51	3×11	2×7	1×1	0×0	252	90.0	5 th
	10. School	4×0	3×7	2×31	1×26	0×6	109	38.93	14 th
	11. IPM/ICM club	4×0	3×2	2×14	1×27	0×27	61	21.78	18 th
	12. Tours	4×0	3×1	2×20	1×36	0×14	79	28.21	16 th
c. Personal contact	13. Lecture	4×0	3×12	2×28	1×26	0×4	118	42.14	13 th
	14. Office call (SAAO)	4×0	3×2	2×7	1×31	0×30	51	18.21	20 th
	15. Office call(AEO/UAO)	4×3	3×0	2×2	1×20	0×45	16	5.71	22 th
	16. Email	4×0	3×0	2×3	1×5	0×62	11	3.93	23 th
	17. Personal letter	4×6	3×4	2×3	1×10	0×47	42	15.0	21 th
	18. Mobile	4×36	3×17	2×6	1×5	0×6	212	75.71	7 th
d. Opinion leader	19. Farm & home visit by SAAO	4×9	3×5	2×35	1×19	0×2	140	50.0	12 th
	20. Friends	4×64	3×3	2×2	1×1	0×0	270	96.43	4 th
	21. Relatives	4×30	3×24	2×12	1×0	0×4	216	77.14	6 th
	22. Neighbor	4×66	3×4	2×0	1×0	0×0	276	98.57	3 rd
	23. Dealer (pesticide)	4×69	3×1	2×0	1×0	0×0	279	99.64	1 st
	24. Model farmer	4×68	3×1	2×1	1×0	0×0	277	98.93	2 nd

The data presented in table 4.4 showed that the highest percentage (99.64%) obtained by contact with dealer (pesticide). The 2nd, 3rd, 4th and 5th rank hold by contact with model farmer, neighbor, friends and farmers field respectively.

The data presented in table 4.4 showed that in case of OLs 76% of respondents had occasional extension media contact. In case of Farmers 51.4% respondents had occasional extension media contact and 48.5% had often extension media contact.

Das et al. (2019) found majority (56.60%) of the respondents had low extension media contact while 37.70% of them had medium and 5.70% had high extension media contact.

On the basis of data, the OLs had more extension media contact than the farmers. To keep up with the modern world in agriculture the OLs and farmers should have to improve extension media contact.

4.2 Role of Opinion leaders in providing extension service to the farmers

Rural development depends on both technology generation and dissemination of the technology as per the need of the target group. Activities of the farmers are influenced by the opinion leaders from whom they seek information and advice. Generally, opinion leaders play important role in technology among the farmers. If we identify the actual role of OLs as perceived by both the OLs and farmers it will be more easy to transmit technology for betterment of the agricultural sector.

4.2.1 Categorization of opinion leaders as perceived by themselves

Table 4.5 Distribution of Opinion Leader according to their role in providing extension service to the farmers

Role	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Opinion leader	No	0	0	0	72.76±7.34	60	93
	Little role	<25	0	0			
	Moderate role	26-50	0	0			
	Important role	51-75	15	60			
	Very important role	>75	10	40		Range (possible): 0-100	

The data presented in table 4.5 indicate that majority of the respondents OLs (60%) play important role and rest of the OLs (40%) play very important role in providing extension service to the farmers. The minimum and maximum score was 60 and 93 respectively with the mean of 72.76 and standard deviation 7.34.

Extension programs can receive greater acceptance and participation of the people by their leader's involvement in programs. Opinion leadership is the way to which an individual is able informally to influence other individual in a desired way with relative frequency. In recent days OLs accelerated the extension program in agriculture by conducted their service.

4.2.2 Categorization of OLs as perceived by farmers.

Table 4.6 Distribution of opinion leader according to their role in providing extension service to the farmer as perceived by the farmer.

Role of Opinion leader	Categories	Score	N=70		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Farmer	No	0	0	0	64.87±8.01	43	84
	Little role	<25	0	0			
	Moderate role	26-50	3	4.3			
	Important role	51-75	61	87.1		Range (possible)	
	Very important role	>75	6	8.6		0	100

Data presented in the table 4.5 showed that the highest portion (87.1%) OLs play important role in extension service as provided by the farmer responses. The rest of the OLs play very important role in the area. The role of OLs ranges from 43 to 84 where possible range was 0 to 100. The mean was 64.87 with standard deviation 8.01.

Table 4.5 and 4.6 presented the picture of role playing of OLs in providing extension service to the farmer. Both of the respondents mention that important role was playing by the OLs. The proper supervision and the carefulness about the OLs role can make the important role to very important role in extension service as well as technology transfer among the farmers.

4.2.3 Role of OLs as perceived by respondents in technology transfer

Table 4.7 Role of Opinion leader extent Index as perceived by OLs

SL No.	Role of OL in technology transfer	Extent of role (%)		Rank	
		Perceived by OLs	Perceived by farmers	OLs	Farmers
1.	Collect agricultural information regularly	95	80.71	4 th	6 th
2.	Keep contacts with extension agent	70	56.79	11 th	13 th (=)
3.	Participate in method demonstration	72	55	10 th (=)	17 th
4.	Participate in result demonstration	74	55.36	9 th (=)	16 th
5.	Give farmers information	99	86.43	2 nd	3 rd
6.	Give remedies on agricultural problem to the farmers	91	77.86	5 th (=)	8 th
7.	Give farmers information obtained from mass media	88	80.36	6 th	7 th
8.	Give farmers information obtained from extension agent	45	54.64	16 th	18 th
9.	Visit upazila agricultural office for solution of particular problem	51	42.88	14 th	20 th (=)
10.	Advice farmers to adopt modern technologies	84	76.07	7 th	9 th (=)
11.	Serve as catalyst for extension agent	72	56.43	10 th (=)	14 th
12.	Help farmers when they are in problem	91	83.93	5 th (=)	4 th
13.	Serve as center of interpersonal communication	63	56.79	12 th	13 th (=)
14.	Give advice to the farmer regarding marketing	74	64.29	9 th (=)	12 th



SL No.	Role of OL in technology transfer	Extent of role (%)		Rank	
		Perceived by OLs	Perceived by farmers	OLs	Farmers
15.	Advice farmers to adopt agri-machinery for their crops	83	76.07	8 th	9 th (=)
16.	Attend in different training program	48	44.64	15 th	19 th
17.	Arrange different kind of motivational program for the farmers	62	42.88	13 th	20 th (=)
18.	Act as a transfer agent of agricultural technologies	72	72.14	10 th (=)	11 th
19.	Give financial support to the farmer	42	42.88	17 th	20 th (=)
20.	Remain unbiased to share information	100	97.14	1 st	1 st
21.	Having contacts with cities, towns and other areas outside their own communication	61	55.71	14 th	15 th
22.	Support farmer organization	96	90	3 rd	2 nd
23.	Use political influence to mediate development in positive direction	2	17.14	18 th	21 th
24.	Influence late adopters to move forward for adopting innovation	88	82	6 th	5 th
25.	Implement technologies to their own	85	73.93	7 th	10 th

From table 4.7 it was found that according to the respondents (both OLs and Farmers) remaining unbiased to share information ranked first in the rank table. The least ranked role of OLs were attending different training program, giving financial support to the farmer, using political influence etc.

From table 4.7 we can draw a comparative pictures of role play by the OLs in providing extension service to the farmers.

Extreme 5 role of OLs as perceived by OLs themselves	Extreme 5 role of OLs as perceived by the Farmers
1. Remain unbiased to share information 2. Give farmers information 3. Support farmer organization 4. Collect agricultural information regularly 5. Give remedies on agricultural problem to the farmers	1. Remain unbiased to share information 2. Support farmer organization 3. Give farmers information 4. Help farmers when they are in problem 5. Influence late adopters to move forward for adopting innovation

Both respondents mention that the OLs remain unbiased to share information which was the first ranked role. Give farmers information was the second ranked role in OLs but it was third ranked role in case of farmers. Support farmer organization ranked third role for OLs but it was second ranked role for farmers. The role of Opinion leaders in providing extension service to farmers ranked differently for OLs and for Farmers but the important role play of OLs was picturized clearly which is very important in agricultural development.

4.3 Problem Severity of OLs

The OLs are the field level worker directly or indirectly regarding extension service. They keep contact with the extension agent, farmers, dealers and other relatives and friends to give updated information to the farmer. Farmers keep contact with the OLs to find out the probable solution of the problem they face during farming rather than contact with the professional leader. In doing the extension service as well as technology transfer the OLs had to face a lot of problems, which hinder their role to provide extension service to the farmers. This problem not only hinder the role of Opinion leader in technology transfer but also discourage them to do their services regarding farmers.

4.3.1 Categorization of problem faced by OLs as perceived by them

Table 4.8 Distribution of opinion leader according to the problem extent as perceived by themselves.

Problem	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X} \pm \delta$)	Range (observed)	
			Number	%		Min.	Max.
Opinion leader	Not at all	0	0	0	16.0±3.81	10	23
	Less	<10	2	8			
	Moderate	11-20	18	72			
	Severe	21-30	5	20			
	highly severe	>30	0	0			

The data presented in table 4.8 indicate that majority of the OLs (72%) had moderate problems and rest (20%) had severe problem and 8% had less problem. The minimum and maximum score was 10 and 23 with the mean 16.0 and standard deviation 3.81.

OLs are discouraged due to lack of their social appreciation and media coverage. The social acceptance and government reward system can eradicate the moderate problem of the Opinion Leaders in extension service. Thus the agricultural sector will be more enlighten by giving a friendly hand toward the OLs.

4.3.2 Categorization of problem faced by the OLs as perceived by the farmer

Table 4.9 Distribution of opinion leader according to the problem extent as perceived by the Farmers

Problem	Categories	Score	N=70		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Farmer	Not at all	0	0		19.0 ±6.34	9	44
	Less	<10	2	2.8			
	Moderate	11-20	46	65.7			
	Severe	21-30	19	27.1			
	Highly severe	<30	3	4.4		Range (possible): 0-40	

The data presented in table 4.9 indicate that majority of the OLs had moderate problems and rest had (27.1) severe problem as perceived by the farmers. The minimum and maximum score was 9 and 44 with the mean of 19.0 and standard deviation 6.34.

Major portion (71.07%) of the respondents faced medium problem as compared to low (21.50%) according to Rahman (2019).

4.3.3 Problem faced by the OLs in technology transfer among farmer

Table 4.10 Problem severity index of OLs as perceived by the respondent

SL. No.	Problem faced by OLs	Problem severity score (%)		Rank	
		Perceived by OLs	Perceived by farmer	OLs	Farmer
1.	Many farmer do not share their problem	23	32.5	9 th	7 th
2.	Farmers are not agreed to make model demonstration farm	24	33.93	8 th	5 th
3.	Low eagerness of the farmers to attend in extension program	30	33.21	6 th	6 th
4.	Tendency of the farmer to follow conventional cultivation	27	30	7 th	9 th
5.	Traditional/ orthodox behavior of the farmer	22	30.36	10 th	8 th
6.	Less social appreciation	49	50.36	4 th	4 th
7.	Less co-operation by the extension agent	58	67.14	3 rd	3 rd
8.	Less recognition by the government	75	74.26	2 nd	1 st
9.	Lack of media exposure	81	73.93	1 st	2 nd
10.	Interruption by middle man	31	26.43	5 th	10 th

The data presented in table 4.11 showed different problems of OLs during their work and their severity perceived by the respondents. Less recognition by the government was the first ranked problem as per the farmers' perception, on the other hand, lack of media exposure was the first ranked problem to the OLs. Least problem was found in interruption by the middleman and tendency of the farmer to follow conventional cultivation.

Table 4.11 represent comparative pictures of the Opinion Leaders problem in extension service. The respondents mentioned that the OLs had to face different problems in providing information and suggestion to the farmers which hinder the technology transfer process in agriculture. The problems faced by the OLs, perceived by the OLs themselves and Farmers can be presented by the following table with a constructive framer.

Severe 5 problem of OLs as perceived by OLs themselves	Severe 5 problems of OLs as perceived by the Farmers
1.Lack of media exposure 2. Less recognition by the government 3. Less co-operation by the extension agent 4. Less social appreciation 5. Interruption by middle man	1.Less recognition by the government 2. Lack of media exposure 3. Less co-operation by the extension agent 4. less social appreciation 5.Farmers were not ready to make model demonstration farm

4.4 Role of farmer as recipient of the service provided by OLs

In agriculture extension service is accelerated mainly by the participation of the farmers. Farmers role is the main focus in agriculture. The role play by the farmers in extension service play vital role for the OLs to transmit new invention as well as the technology. With the modernization of technology, transferring technology to the focus point made the success rate of production higher. The technology transfer became difficult to the areas where farmers are indifferent to the use of technology. Farmers role played as subsidiary to the Opinion leaders in technology transfer.

4.4.1 Categorization of the farmer as perceived by the OLs

Table 4.11 Distribution of farmer according to their role as a recipient of the service provided by opinion leader perceived by the OLs.

Role of Farmer	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Opinion leader	No	0	0	0	44.72±4.63	35	52
	Little role	<20	0	0			
	Moderate role	21-35	2	8			
	Important role	36-50	20	80			
	Very important role	>50	3	12		Range (possible): 0-60	

The following table 14 showed that highest portion (80%) farmers play important role as recipient of extension service provided by the Opinion Leaders as perceived by the OLs. The minimum and maximum score was 35 and 52 respectively with the mean 44.72 and standard deviation 4.63. Farmers are ultimate users of the agricultural technologies. The adoption rate not only by the professional leaders and local leaders but also depends on the farmer's behavior as well as recipient characteristics

4.4.2 Categorization of farmers as perceived by them

Table 4.12 Distribution of farmer according to their role as a recipient of extension service provided by the OLs as perceived by the farmers themselves

Role of farmer	Categories	Score	N=25		Mean±Standard Deviation ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Farmers	No	0	0	0	41.85 ±5.37	28	52
	Little role	<20	0	0			
	Moderate role	21-35	7	10			
	Important role	36-50	59	84.3		Range (possible)	
	Very important role	>50	4	5.7		0	60

The above table show us that 84.3% farmers play important role as a recipient of extension service provided by the OLs. The maximum and minimum score was 28 and 52 with a mean of 41.85 and standard deviation 5.37. The farmer role is important consideration in extension service. As in the study area the farmers were very active and they play their role by concerning with the OLs. This is a positive sign which is making significant differences in the area.

4.4.3 Role of farmer as a recipient of extension service.

Table 4.13 Role of farmer extent index as perceived by the OLs

SL No.	Role of farmer	Role extent score (%)		Rank	
		Perceived by OLs	Perceived by farmer	OLs	Farmer
1.	Asking solution for particular problem	93	82.14	1 st	4 th
2.	Timely approach	90	76.78	3 rd	8 th
3.	Keeping regular contact to OL	92	83.57	2 nd	3 rd
4.	Ask for economic help	46	50	15 th	15 th
5.	Showing desire for adopting new technologies	82	81.07	8 th	6 th
6.	Asking help for farm management	84	88.92	6 th	1 st
7.	Asking help for pesticide application	83	81.78	7 th	5 th
8.	Asking help for marketing agricultural products	78	77.86	10 th	7 th
9.	Asking technical guideline	85	72.5	5 th	10 th
10.	Arrangement of training program	58	50.71	12 th	14 th
11.	Method demonstration programs	56	47.86	13 th	13 th
12.	Plot demonstration programs	55	48.93	14 th	13 th
13.	Motivational program	60	50	11 th	12 th
14.	Mutual discussion of profitability	80	76.43	9 th	9 th
15.	Asking guidelines for organization	89	84.64	4 th	2 nd

The data presented table 4.13 showed the different roles of farmers as a recipient in the service provided by the OLs as perceived by the respondents. Asking solution for particular problem ranked first in the index as perceived by the OLs. As per the farmers opine asking help for the farm management was the first ranked role. The area of least role played by the farmers were arrangement of training program, asking economic help etc. The farmers role were important in technology transfer through Opinion leaders.

King and Bembridge (1988) that opinion leaders considered the fellow farmers as the most reliable sources for obtaining information.

On the basis of the respondent responses the role of the farmers can be compare with their holding position in the above table 4.13

Extreme 5 role of farmers as perceived by OLs themselves	Extreme 5 role of farmers as perceived by the Farmers
1. Asking solution for particular problem 2. keeping regular contact to OL 3. Timely approach 4. asking guideline for organization 5. Asking technical guideline	1. Asking help for farm management. 2. asking guideline for organization 3. keeping regular contact to OL 4. asking solution for particular problem 5. asking help for pesticide application

Asking solution for particular problem ranked first as per the OLs responses but in case of farmer it was fourth ranked role of the farmers. Keeping regular contact covers second position in case of OLs but it was third ranked role in case of farmers. Asking guideline for organization was ranked fourth and second ranked position respectively according to the OLs and Farmers.

4.5.1 Relationship between the selected characteristics of the respondents Opinion Leader and their extent of role as perceived by the OLs themselves

Correlation of role extent of OLs with selected characteristics of the study area was discussed in table 4.14

Table 4.14 Relationship between the selected characteristics of the respondent Opinion Leader and their extent of role

Selected characteristics	Focus Variable	Coefficient of Correlation (r)
		Opinion Leader
Age	Extent of Role of Opinion Leader	-0.128
Educational qualification		0.396
Family size		0.091
Farming experience		-0.242
Farming knowledge		0.072
Farm size		-0.058
Family income		0.581**
Organizational participation		0.390
Training received		0.722**
Cosmopolitanism		0.140
Extension media contact		0.531**

Among the selected eleven characteristics family income, training received and extension media contact had significant and positive relationship with the extent of role of the Opinion leader in providing extension service to the farmer at 1% level of significant. Based on the findings null hypothesis could be rejected and research hypothesis was accepted. It means that the higher the family income, training and extension media contact the higher is the ability to play role in providing extension services to the farmers. Educational qualification, farm size, farming knowledge, organizational participation and cosmopolitanism had positive but non-significant relationship. Age, farming experience and farm size had non-significant and negative relationship. Based on the findings null hypothesis is accepted.

4.5.2 Relationship between the selected characteristics of the OLs and their extent of problem as perceived by the opinion leaders themselves

Correlation between extent of problems of OLs with selected characteristics of the study area was discussed in table 4.15.

Table 4.15 Relationship between the selected characteristics of the respondent Opinion Leader and their extent of problem

Selected characteristics	Focus Variable	Coefficient of Correlation (r)
		Opinion Leader
Age	Problem of Opinion Leader	0.002
Educational qualification		-0.033
Family size		0.195
Farming experience		0.317
Farming knowledge		0.323
Farm size		0.173
Family income		-0.079
Organizational participation		-0.029
Training received		-0.276
Cosmopolitanism		0.021
Extension media contact		-0.100

Among the selected eleven characteristics educational qualification, family income, organizational participation, training received and extension media contact had negative and non-significant relationship with the extent of problem of OLs. That means higher the score of characteristics higher the ability to identify problems and ability to solve the problem. Age, family size, farming experience, farming knowledge, farm size and cosmopolitanism had positive and non-significant relationship with extent of problems of OLs. Based on the findings, null hypothesis is accepted.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of findings

5.1.1 Extent of role of Opinion Leader in providing extension service to the Farmers

The observed role extent score of the OLs as perceived by the Opinion Leaders themselves ranges from 60 to 93. The mean was 72.76 and standard deviation 7.34. Majority of the OLs (60%) had important role, rest had (40%) very important role. When the role was cross checked by the Farmers it was found that the OLs role ranged from 43 to 84. The mean was 64.87 and standard deviation 8.01. According to Farmers Majority of the OLs (87.1%) had important role in extension service.

In case of OLs the Role extent index scores ranged from 2 to 100. According to REI, remain unbiased to share information, give farmers information, support farmer's organization, collect agricultural information regularly and helping farmers in problem ranked 1st, 2nd, 3rd, 4th and 5th respectively. In farmer response the Role extent index score ranged from 48 to 272. Remain unbiased to share information was, support farmer's organization hold, give farmers information help farmers when they are in problem and influence late adopters to move forward for adopting innovation covers 1st, 2nd, 3rd, 4th, and 5th rank in the index respectively.

5.1.2 Problem severity of OLs in extension service

The observed problem extent score of OLs as perceived by the Opinion Leaders themselves ranges from 10 to 23. The mean score was 16 with standard deviation 3.81. Majority of the OLs (72%) had moderate problem. The problem extent was checked by the respondent farmers where majority (65.7%) of the OLs had moderate problem, the score ranges from 9 to 44 with a mean of 19 and standard deviation 6.34.

According to OLs the problem severity index (PSI) scores ranged from 22 to 81 where possible range was 0 to 100. Lack of media exposure was the first ranked problem. Less recognition by the government, less co-operation by the extension agent, less social appreciation and interruption by middle man were the 2nd, 3rd, 4th and 5th ranked problem. In case of farmer the problem severity index of OLs score ranged from 74 to 208 where possible range was 0 to 280. Less recognition by the government, lack of media exposure, less co-operation by the extension

agent, farmers were not agreed to make model demonstration farm were the 1st, 2nd, 3rd, 4th and 5th ranked problem respectively.

5.1.3 Extent of role of Farmer as a recipient of the service provided by OLs

The role played by the farmer as a recipient of the service provided by the OLs determined by the Opinion leader. The observed role extent score of the farmers perceived by OLs ranged from 35 to 52. The mean score was 44.72 and standard deviation 4.63. Majority of the farmers (80%) plays important role according to the OLs. In case of farmer the role extent score ranged from 28 to 52. The mean score was 41.85 and standard deviation 5.37. majority (84.3%) of the respondents assumed that they play important role as a recipient of the service provided by the OLs.

In case of OLs the roles of farmers as a recipient in the service provided by the OLs as the extent of the role ranges from 46 to 93. Asking solution for particular problem ranked first in the index. Keeping regular contact to OLs was ranked 2nd. Timely approach, asking guideline for organization and asking technical guideline were 3rd, 4th, and 5th ranked role of farmers.

According to the farmers the role extent index (REI) ranges from 140 to 249. Asking help for farm management, asking guideline for organization, keeping regular contact to OL, asking solution for particular problem and asking help for pesticide application were the 1st, 2nd, 3rd, 4th ranked role of farmers as perceived by the farmers themselves.

5.1.4 Selected characteristics of the Respondents (Opinion Leaders and Farmers)

Findings in respect of the eleven selected characteristics of the respondents both OLs and Farmers are summarized below.

Highest proportion of the respondent OLs (52%) were middle aged and majority of the respondent farmers (50%) were middle aged.

Highest proportion (40.0%) of the respondents OLs had secondary level of education. In case of farmer highest proportion (42.8%) had secondary level of education.

Highest proportions of families (48.0%) of OLs were medium sized. In case farmers, highest proportions of families (50.0%) were medium in size too.

Majority of OLs (35.6%) had high farming experience. While in farmer majority of respondents (48.4%) had high farming experience.

Highest proportion (92.0%) of the respondents had high knowledge on agricultural farming in case of OLs, while in farmer highest proportion (84.3%) of the respondents had high knowledge on agricultural farming.

Highest proportion (52%) of the respondents had small farm area in case of OLs, while highest proportion (51.4%) of the respondents had small farm area in farmers.

Highest proportion (68.0%) of the respondents had low family income in case of OLs. while in case of farmer highest proportion (52.86 %) of the respondents had medium family income.

14 OLs (56.0%) out of 25 were received training and rest of 11 OLs (44.0%) were not receive in any training. 25 farmers (35.7%) out of 70 farmers were received training and rest of 45 farmers (64.2%) were not receive in any training.

Among the respondents OLs, 25 OLs (100%) out of 25 OLs were participated in different organization. In case of farmers 60 farmers (85.7%) out of 70 farmers were participated in different organization and rest of 10 farmers (14.2%) were not participated in any organization. All the (100%) of OLs and farmers who participated in any organization had low organizational participation.

Highest proportion (52.0%) of respondents OLs had high cosmopolitanism, while in case of farmer majority (38.5%) of respondents had low cosmopolitanism.

Highest proportion (76.0%) of respondents OLs had occasional extension media contact and highest proportion (51.4%) of respondent farmers had occasional extension media contact.

5.1.5 Relationship between the selected characteristics of the respondents (Opinion Leaders) with their extent role of OLs in providing extension service to the farmers

In case of the OLs role, family income, training received and extension media contact had significant and positive relationship with the extent of role of the Opinion leader in providing extension service to the farmer at 1% level of significant. Based on the findings null hypothesis could be rejected and research hypothesis was accepted. It means that the higher the family income, training and extension media contact the higher is the ability to play role in providing extension services to the farmers. Educational qualification, farm size, farming knowledge,

organizational participation and cosmopolitanism had positive but non-significant relationship. Age, farming experience and farm size had non-significant and negative relationship.

5.1.6 Relationship between the selected characteristics of the OLs and their extent of problem as perceived by the opinion leaders themselves.

About the problem perception of OLs, educational qualification, family income, organizational participation, training received and extension media contact had negative and non-significant relationship. That means higher the score of characteristics higher the ability to identify problems and ability to solve the problem. Age, family size, farming experience, farming knowledge, farm size and cosmopolitanism had positive and non-significant relationship with extent of problems of OLs.

5.2 Conclusion

The hypothesis received support on the fact that Opinion Leaders do have important role in technology transfer among the farmers.

Findings of the study and the logical interpretation of their meaning in the light of other relevant facts prompted the following conclusion:

Most of the respondents both OLs and farmers were middle to old aged. Majority of them had secondary to higher secondary level of education. Both the respondents maintained nuclear family. Had small sized farm. Majority had high level of knowledge on agriculture. In case of OLs, had low annual family income whereas, the farmers had medium annual family income. Majority of respondents had low organizational participation. Both respondents had low level of training regarding technologies. The OLs had medium to high cosmopolitanism but the farmers had low to medium. Most of them had occasional extension contact.

Majority of the OLs played important to very important role. Highly common areas of role played by OLs were remaining unbiased to share information, giving farmers information, supporting the farmer's organization, collecting agricultural problem regularly. Among the 25 roles in extension service remain unbiased to share information and give farmers information were the areas where OLs play the very important role. Family income, training received by the opinion leaders and extension media contact had positive and significant relationship with the role played by the opinion leaders.

The findings of the study indicate that all of the respondent OLs were in moderate to highly severe problem in providing extension service to the farmers. Highly common areas of problems faced by the OLs were lack of media exposure, less recognition by the government and less co-operation by the extension agent related problem. Among the selected 10 problems of OLs in extension service lack of media exposure and less recognition by the government was highly severe problem. Still now, there is no proper initiatives to involve local leaders as well as OLs in government agricultural services. Besides among the OLs only 56% OLs were trained. The farmers sometimes didn't get the proper solution of their problem by the OLs due to lack of training and proper supervision of the OLs. The problem extent can be reduced by providing more and more training to the OLs and encourage them by giving proper reward arranged by the authority.

In case of the farmer's role as a recipient of the service provided by the OLs, respondent farmers play moderate to very important role. Farmers are the ultimate users of the extension service in agriculture. Their roles also played a vital role in succeeding the extension services. Asking solution for particular problem, asking help for farm management, keeping regular contact to OL and asking guideline for the organization are the common areas of the farmers roles. Among the selected 15 roles of farmers, asking solution for particular problem and keeping contact with OL is the facts where farmers play very important role.



5.3 Recommendation

Recommendation based on the findings and conclusion of the study are presented below:

- i. OLs need to be involve in program planning and its execution in the area. Authority should give look on the OLs and give them support, to involve properly in technology transfer program in agriculture. Government and the authorities as well as the media should take care of incentives required by an OL to make agricultural extension effective in field level.
- ii. Existence of a negative relationship between age of OLs and their roles in extension service may provide a basis to recommend relatively middle aged OLs be selected for leadership training. On being trained, these OLs may be effectively used in the implementing change programs in the locality.
- iii. In view of the positive relationship between formal education and role of opinion leader, it is necessary to the authority to consider the education of individuals while

going to involve OLs in technology transfer program. Considering the importance of education for opinion leadership, it is recommended that adult literacy programs should be introduced in the rural areas for development of opinion leadership.

- iv. Higher training exposure in agriculture seems the problem extent of the OLs. It is therefore highly recommended that the concerned authority should take steps so that Opinion leaders can get more opportunities to receive training and increase their efficiency in efficiency so that later they can transmit their efficiency to the farmers.
- v. Extension contact helps the people to become more conscious and more dynamic. It is therefore, recommended that extension personnel should take appropriate and suitable steps so that farmers can come in contact with different media.

5.4 Recommendation for further study

A small piece of study having conducted in some specific location cannot provide all information for proper understanding about the role of OLs in transferring technology among farmers and related matters. Following future studies should be undertaken covering more dimension in the related matters:

- i. The study was conducted on population of the Opinion Leaders and farmers of a upazila of Khulna district. Further research is recommended with larger sample and a wider area for possible increase in reliability in conforming the extent OLs have a role to play in extension work in transferring technology to farmers to increase production for self-reliance.
- ii. Relationship of 25 characteristics of the OLs with their role extent in extension in agriculture were investigated in this study. Further research should be undertaken for exploring relationship of other characteristics of the OLs with their role in technology transfer among farmers at field level.
- iii. Further research is also recommended on problems that may occur with the role of opinion leaders in extension work. This is in order to increase the understanding of problems of the role of opinion leaders in agricultural development in raising living standards and reducing poverty

CHAPTER VI

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APPENDIX A

Agrotechnology Discipline

Life Science School

Khulna University, Khulna-9208

Title: Role of Opinion Leaders in Technology Transfer among Farmers

(Interview Schedule)

(Please answer the following questions & put a tick mark (✓) whenever applicable)

1. Age of the respondent.....years

2. Educational qualification:years

3. Family size:

Number of family members.....

4. Farming experience..... years

5. Address:

6. Cell Phone:

7. Knowledge on agriculture.....

SL NO.	Question	Correct (2)	Partially Correct(1)	Wrong(0)
1.	Do you transplant or broadcast the boro rice			
2.	How can you keep hybrid crop seed for next season			
3.	When you apply urea in the field			
4.	Why perching is important for pest control			
5.	Do you discuss with others about any farm problems			

8. Farm size (ha):

Please Furnish information about your lands according to use

SL No.	Use of land	Area of land	
		Local unit	Hectare or acre

A1	Homestead		
A2	Own land under cultivation		
A3	Land given to others on barga		
A4	Land taken from others on barga		
A5	Land taken from others on lease		
A6	Others		

$$FS = A1 + A2 + 1/2(A3 + A4) + A5 \pm A6$$

9. Monthly family income:

Please mention information's about your family income (annual) from different sources:

SL No.	Sources of income	Amount of income (taka)
1.	Agriculture:	
	a. Fishing	
	b. Farming	
	c. Crop Cultivation	
	d. Livestock	
2.	Business	
3.	Service	
4.	Others	
5.	Total	

10. Training Received: Do you receive any agricultural training?

a. Yes () b. No ()

Name of the training	Duration(Days)	Organized by

11. Please mention the nature and number of your participation in the following organizations:

SL No:	Name of Organizations	Nature of Participation (with number)				Duration
		Executive Committee Officer(3)	Executive Committee Member(2)	Ordinary Member(1)	Not involved(0)	
1.	Farmers Cooperative Society					
2.	School / Mardrashah Committe					
3.	Mosque/Mondir/Churge/Pagoda Committee					
4.	IPM/ICM Club					
5.	NGO conducted committee					
6.	Union council					
7.	Youth club					
8.	Cricket / Football Club					

12. Cosmopolitanism

Please indicate the number of times you have visited the following places within the specified period:

SL No.	Place of visit	Nature of visit			
		Frequently (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Relative or other Known persons located outside of your own village	5-6 times/month	3-4 times/month	1-2 times/month	0 times/month
2.	Union parishad office	8-10 times/month	5-6 times/month	2-3 times/month	0 times/month

3.	Own upazila/ distric sadar	5-6 times/month	3-4 times/month	1-2 times/month	0 times/month
4.	Other district upazila/ sadar	4 times/year	3 times/year	1-2 times/year	0 times/year
5.	Capital and other cities	3 times/year	2 times/year	1 times/year	0 times/year

13. Extension media contact:

Categories		Regularly (4)	Often (3)	Occasionally (2)	Rarely (1)	Not at all (0)
a. Mass media	1. Radio					
	2. Television					
	3. Poster					
	4. Leaflets					
	5. Newspaper					
	6. Exhibition/Agri- culture fair					
	7 .Magazine					
	8. Online Agricultural Apps					
b. Group Contact	1. Farmers field					
	2. School					
	3.1PM/ICM club					
	4. Tours					
	5 .Lecture					
c. Personal contacts	1.Office call (SAAO)					
	2.Office call(AEO/UAO)					
	3. Email					
	4. Personal letter					
	5. Mobile					
	6.Farm & home visit by SAAO					
d.Opinion leader	1. Friends					
	2.Relatives					
	3.Ncighbor					
	4.Dealer (pesticide)					
	5. Model farmer					

14. Role of Opinion Leaders:

Role	Very important role to play (4)	Important Role to play (3)	Moderate Important role to play (2)	Little important role to play (1)	No role to play (0)
1. Collect agricultural information regularly					
2. Keep contacts with extension agent					
3. Participate in method demonstration programs					
4. Participate in Result demonstration programs					
5. Give Farmers information					
6. Give remedies on agricultural problem to the farmers					
7. Give farmers information obtained from mass media					
8. Give farmers information obtained from extension agents					
9. Visit upazila agricultural office for solution of particular problem					
10. Advice farmers to adopt modern technologies					
11. Serve as catalyst for extension agent					
12. Help farmers when they are in problems					
13. Serve as center of inter personnel communication					
14. Give advice to the farmers regarding marketing					
15. Advice farmers to adopt particular agri machinery for their crops.					
16. Attend in different training program					
17. Arrange different kind of motivational programs for the farmers.					
18. Act as a transfer agent of agricultural technologies					
19. Give financial support to the farmer sometimes					
20. Remain unbiased to share information					

21. Having contacts with cities, towns and other areas outside their own communication					
22. Support farmer organization					
23. Use political influence to mediate development in positive direction					
24. Influence late adopters to move forward for adopting innovation					
25. Implement technologies to their own					

15. Problems of Opinion Leaders:

Problem	Highly Severe (4)	Severe (3)	Moderately Severe (2)	Less Severe (1)	Not at All (0)
1. Many Farmers do not share their problems					
2. Farmers are not agreed to make model demonstration farms					
3. Low eagerness of the farmers to attend in extension program					
4. Tendency of the farmers to follow conventional cultivation					
5. Traditional / orthodox behavior of farmers					
6. Less social appreciation					
7. Less co- operation by the extension agent					
8. Less recognition by the government					
9. Lack of media exposure					
10. Interruption by middle man					

16. Role of Farmers in Utilizing opinion leaders in extension activity:

Role	Very Important Role to play (4)	Important Role to play (3)	Moderate Important role to play (2)	Little important role to play (1)	No role to play (0)
1. Asking solution for particular problem					