

**PROBLEM FACED BY THE SUB ASSISTANT AGRICULTURAL
OFFICERS IN TECHNOLOGY TRANSFER**

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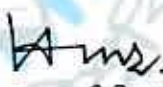
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CERTIFICATE

This is to certify that the thesis entitled "**Problem Faced by the Sub Assistant Agricultural Officers in Technology Transfer**" submitted to Sher-e-Bangla Agricultural University, Dhaka-1207, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension**, embodies the result of a piece of bona fide research work carried out by **Md. Majharul Hossain**, Registration No. **13-05748** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

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DEDICATED TO

MY

BELOVED PARENTS

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PROBLEM FACED BY THE SUB ASSISTANT AGRICULTURAL OFFICERS IN TECHNOLOGY TRANSFER

ABSTRACT

The main objectives of this study were to assess the extent of problem faced by the Sub Assistant Agricultural Officers (SAAOs) in technology transfer and to explore the relationship between the selected characteristics of Sub Assistant Agricultural Officers and problem faced by them in technology transfer. All the five upazillas of Narayanganj district namely, Narayanganj sadar, Bandar, Sonargaon, Arai hazar and Rupganj were selected as the study area. Spearman's Rank Correlation Coefficient was used to test the relationship between the selected eight characteristics of SAAOs and their problem faced in technology transfer. The findings revealed that 70.50% of the SAAOs belonged to high problem facing category while 27.90% and 1.60% respondents were under medium and low problem category respectively. Spearman's Rank Correlation Coefficient analysis also revealed that training exposure, job satisfaction and use of internet showed negative significant relationship with the problem faced in technology transfer. Based on Problem Faced Index (PFI), "lack of required teaching aid" ranked the highest problem followed by "lack of transportation facilities" and "lack of required technical knowledge".

CHAPTER I INTRODUCTION



1.1 General Background

An extension worker of Department of Agricultural Extension (DAE) at grass-root level designated as Sub Assistant Agricultural Officer (SAAO). He is posted at a block with duties and responsibilities of agricultural development including technology transfer to the farmers.

Department of Agricultural Extension (DAE) plays a vital role in accelerating technological, social and economic development of the country. Department of Agricultural Extension (DAE) provides unified agricultural extension services to farmers throughout the country. The DAE encourages and supports planning and implementation of all agricultural extension activities at the grass-root level and works in partnership with government organizations, non-government organizations and private sectors. To provide high quality extension services, the DAE employs 12,640 Sub Assistant Agricultural Officers (SAAOs) at the field level. According to the DAE guidelines each SAAO has to provide extension services to around 1,200 farm households in his/her assigned service area. Since the extension coverage of each SAAO is very large, the success or failure of his/her extension services largely depends on his/her extension skill level in the following areas: 1) Working with group, 2) Organizing and running a demonstration, 3) Assessing farmers' problems, and 4) Work planning.

Sub Assistant Agricultural Officers (SAAOs) are the grass-root level workers of DAE. They are directly communicating with the rural people. The success of extension service of DAE largely depends on SAAOs. So it is very important to see how SAAOs perform their duties and responsibilities effectively and

efficiently. The SAAOs have good interaction with the rural elites in sharing information about agriculture.

Viewing the role of extension service performed by SAAOs, it is apprehensive that they have good interaction with rural people in sharing technological information. In spite of this, SAAOs face different problems in transferring technological information properly. Due to lack of required teaching aid they cannot present technological information effectively. They also face barrier to provide demand led information due to lack of technical knowledge and required skill to disseminate agricultural information. Moreover, unavailability of internet, lack of freedom for planning of own works and transportation facilities restrain technology transfer process. At the same time non-adoptive behavior about adopting innovation and lack of functional literacy of farmers create great obstacle in transferring technology. But very few studies were conducted on their problem in technology transfer. So the present researcher is keenly interested to conduct a research entitled: "Problem Faced by the Sub Assistant Agricultural Officers in Technology Transfer".

1.2 Statement of the Problem

In Bangladesh there are about 12,640 front line staff i.e. Sub Assistant Agricultural Officers (SAAOs). Each SAAO is responsible for providing extension services to the farm families within a block as well as for planning and programming of related activities. Technology transfer to the farmers is essential for the improvement of agricultural production in Bangladesh condition. As SAAOs are working for the dissemination of technology among the farmers, they are to face different problems in technology transfer. In this regard, the answers to the following questions were supposed to be very much pertinent:

1. What are the problems faced by SAAOs in technology transfer?
2. What are the characteristics of SAAOs?
3. What relationship does exist between the selected the characteristics of SAAOs and problems faced by them in technology transfer?

The above mentioned questions obviously inspired the present researcher for conducting a research entitled: "Problem Faced by the Sub Assistant Agricultural Officers in Technology Transfer".

1.3 Specific Objectives of the Study

1. To assess the extent of problems faced by the Sub Assistant Agricultural Officers (SAAOs) in technology transfer
2. To assess and describe the following selected characteristics of SAAOs:
 - Academic accomplishment
 - Training exposure
 - Job satisfaction
 - Job performance
 - Cooperation from super-ordinates
 - Cooperation from local leaders
 - Cooperation from farmers
 - Use of internet
3. To explore the relationship between the selected characteristics of Sub Assistant Agricultural Officers and problem faced by them in technology transfer
4. To compare the severity of the problems faced by Sub Assistant Agricultural Officers in technology transfer



1.4 Scope of the Study

- ❖ The study was conducted in Narayanganj district. The research study was carried out in order to have an idea about what problems faced by SAAOs in technology transfer.
- ❖ It was expected that the findings of this study would help both the extension workers and farmers to communicate different technology among themselves and at the same time it would help to transfer other research information to the farmers effectively. It would also specify the roles of intra and inter-system communication as well as highlight the bottlenecks in effective transfer of technology in the government extension organization i.e. DAE.
- ❖ It was also expected that the findings of the study would be useful for designing a communication strategy for disseminating technological information through SAAOs to farmers in order to establish meaningful technology transfer system. The findings of the study would also help in identifying some of the personal and situational characteristics of SAAOs in increasing their communication efficiency.
- ❖ To the academicians, it may help in further conceptualization of the systems model for analyzing the entire agricultural communication system. In addition, the findings of this study may have other empirical evidence to all aspects of communication behavior of extension workers as well as farmers which may be used to build an adequate theory of communication.

1.5 Assumption of the Study

An assumption is the supposition that an apparent fact or principle is true in the light of available evidence (Goode and Hatt, 1952).

The researcher had the following assumptions in mind while undertaking this study:

- Sub Assistant Agricultural Officers were capable of providing proper answer to the questions exerted in the questionnaire.
- Data collected through questionnaire were free from bias.
- The responses furnished by the respondents were valid, reliable and realistic.
- Views and opinions furnished by respondents included in the sample were representative views about problem faced in technology transfer by SAAOs of DAE.
- The respondents were more or less conscious about the use of communication media.

1.6 Limitations of the Study

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

- The study was confined mainly to extent of problems faced in technology transfer by the Sub Assistant Agricultural Officers (SAAOs).
- The study was administered all over Narayanganj district but there were some Sub Assistant Agricultural Officers (SAAOs) who could not provide any information.

- The characteristics of Sub Assistant Agricultural Officers are many and varied but only 08 characteristics were selected for investigation in this study.
- Only data furnished by the Sub Assistant Agricultural Officers (SAAOs) of Narayanganj district were considered for the study.

1.7 Definition of Key Terms

Certain terms had been used in this research which are defined and interpreted as follows for clarity of understanding.

Respondents

Randomly selected individuals, who represent the population of the locale of a study, are termed as respondents. They are the people from whom a social research worker usually gets most data required for his research. In this study the respondents were the Sub Assistant Agricultural Officers of Narayanganj district.

Sub Assistant Agricultural Officer (SAAO)

Sub Assistant agricultural Officer is grass-root level extension agent of Department of Agricultural Extension (DAE) working in the block level for dissemination of agricultural information.

Academic accomplishment

Academic accomplishment is the outcome of education, the extent to which an individual has achieved educational goals. Academic accomplishment was measured by assigning weights on the results of different academic achievement.

Training exposure

Training exposure is referred to the total number of days that a respondent received training in his entire life from different organizations under different training programs. For this study in-service training received by the SAAOs was considered as training exposure.

Job satisfaction

Job satisfaction means the extent of satisfaction or displeasure or frustration derived by an individual with his or her job content and environment of work. The degree of satisfaction of Sub-Assistant agricultural Officers related to the various aspects of their job such as accomplishments in job, scope for using personal initiative, pay and enjoyment from works.

Job performance

Job performance is the degree to which the respondent accomplished and completed his task efficiently and effectively as assigned by the authority. In this study job performance of an SAAO was considered keeping in view a list of activities he had to perform as routine work.

Cooperation from super-ordinates

Cooperation from super-ordinates means providing positive suggestion for the activities of sub-ordinates by super ordinates. In this study cooperation from super-ordinates referred to cooperation from upazilla level agriculture extension personnel to Sub Assistant Agricultural Officers.

Cooperation from local leaders

Cooperation from local leaders means providing necessary support and information to the professional leaders. In this study cooperation from local

leaders referred to provide necessary support to Sub Assistant Agricultural Officers for technology transfer among the farmers.

Cooperation from farmers

Cooperation from farmers means receiving innovative information and informing about their existing problem to the professional leaders. In this study cooperation from farmers referred to receive innovative agricultural information and inform about existing problem faced in the field to Sub Assistant Agricultural Officers.

Use of internet

Use of internet means using internet for sharing the essential information. In this study use of internet referred to use the internet by Sub-Assistant Agricultural Officers to get technological information for the farmers.

Problem faced

Problem faced means how an individual faces difficulties in his / her work-situation. In this study problem faced referred to difficulties faced by Sub Assistant Agricultural Officers in technology transfer.

CHAPTER II

REVIEW OF LITERATURE

The main aim of this chapter is to review of the result of some of the previous studies that were related to the present research work. This study is mainly related with the determination of extent of problem faced by Sub Assistant Agricultural Officers in technology transfer. The researcher tried to collect necessary information by thorough searching of related thesis, literature, journals, periodicals, internet and websites. But unfortunately, both Bangladesh and abroad, such type of work was rarely available. However, review of researches directly or indirectly related to present study has been placed into three sections. The first section is concerned with the problem in technology transfer. The second one deals with the characteristics of change agent. The third section deals with the conceptual framework of the study.

2.1 Problem in Technology Transfer

Ahmed (2012) conducted a study on communication between Department of Agricultural Extension (DAE) and the farmers of Bangladesh. He revealed the following causes of problem in technology transfer:

- Famers' reliability on predominant farming
- Pre-understanding
- Misunderstanding
- Problems within the organization
- Communication on irregular basis
- Due to overlooked of farmers' need
- Unfair and corruption with poor infrastructure
- Lack of sufficient inputs

Tire (2006) revealed that the kind of agricultural research as well as extension services provided to farming communities is still lagging behind due to a number of factors, these include;

- Poor interaction with the farmers in an effort to identify and prioritize their needs
- High level of illiteracy
- Insufficient resources
- Low levels of income and a host of other related problems

Tire (2006) also observed that a common mistake often made by extent agents in convincing farmers to do away with their traditional methods of doing things and their indigenous knowledge, making them look at these as primitive and backwards and urging them to go for the so called new and improved technology.

Adomi *et al.* (2003) reported that problems such as extension officers not being in a position to disseminate information due to problem of staff shortages, literacy level of the farmers and poor infrastructure in most of the rural communities.

According to Omekwu (2003) problem in technology transfer is compounded by scarcity of reliable statistics, data and information. Where information is available there is often the problem of data confusion where different sources feed in different estimates for the same crop and time period.

Coetzee *et al.* (2001) listed five common mistakes that were often committed when developing communication strategy, these are: mistake in choosing a target audience, mistakes in deciding on communication objectives, mistakes in message design, mistakes in choosing the means and media to

get a message across to the audience, and mistakes in organizing communication effectively.

Coetzee *et al.* (2001) recommended the following nine steps to avoid committing the above mistakes:

- Determine issues that are top on the priority list
- List all role players
- Conduct an analysis of the target group
- Formulation of clear objectives
- Design appealing and understandable message elements
- Select the media
- Communication design
- Pre-test material, and
- Develop an action plan for implementation of the strategy

A number of authors, such as Ozowa (1995) and Pickering (1996) identified features of information that could act as barriers to the usefulness of information as a resource for the development of potential users in rural communities. These are *inter alia*:

- Language
- Format
- Acceptability criteria:
 - Credibility
 - Observability
 - Relevance
 - Relative advantage
 - Ease of understanding and installation
 - Compatibility

According to Ozowa (1995) the formulation of policies and laws that reveal inadequate understanding of the transfer process between the developing agent and the small-scale farmer; poor programme planning and management, and a lack of interest in the small-scale farmer's traditional media and communication networks serve as serious barriers in the transfer process.

Aasen et al. (1990) revealed that role players at government level are motivated to transfer information or technology in cases where development-aid funding is available.

Roling (1990) identified a number of constraints within the environment of Agricultural Knowledge and Information System (AKIS) that have to do with policy structures; operational structures (such as markets, input resources and infrastructure); political and bureaucratic structures and external sectors (such as donor agencies, research institutions and commercial firms).

2.2 Characteristics of Change Agent

2.2.1 Academic accomplishment

Tareque (2009) observed that 40.0 percent of the SAAOs had secondary level of education followed by 23.81 percent and 17.14 percent had primary education and above secondary level education, respectively.

Rahman (1991) in his study observed that academic merit score of the Block Supervisors ranged from 4 to 58, with a mean of 32. The respondents were classified into three categories on the basis of their academic merit score. The highest proportion (52 percent) of the respondents had very good merit (scores

of 32 and above) followed by 34 percent of poor merit (score up to 19) and 14 percent of good merit (scores of 20 to 31).

Huque (1986) found that 93 percent of Filipino change agents had education at the bachelors level, 4 percent had above that level and only 3 percent had at the Secondary level.

2.2.2 Training exposure

Tareque (2009) showed that Overwhelming majority (90.48 percent) of the respondents had no to low training exposure group and only 9.52 percent had medium level training. Nobody had high training group under the study area.

Rahman (2007) reported that the majority (38 percent) of the SAAOs had low in service training compared to 36 and 26 percent having medium and high training, respectively.

Rahman (1991) observed that 73 percent of the Block Supervisors had attended training in short duration followed by 16 and 4 percent of the BSs who attended to moderate and long duration of training. 7 percent of respondents had never attended any training courses.

2.2.3 Job satisfaction

Rahman (2007) found that 46 percent of the SAAOs possessed medium job satisfaction compared to 30 and 24 percent of them having low and high job satisfaction respectively.

Ahmed (2007) showed that highest proportion (58.3%) of the SAAOs belonged to medium satisfaction as compared to 25 percent being low satisfaction and 16.7 percent high satisfaction.

Kashem *et al.* (1994) focused on the Block Supervisors roles, perception and job satisfaction revealed that about two thirds (64 percent) of the respondents were highly satisfied their job.

2.2.4 Job performance

Rahman (2007) showed that the majority (50 percent) of the SAAOs had medium job performance compared to 44 and 6 percent having low and high job performance respectively.

Ahmed (2007) observed that medium level of job performance was observed with 66.6% SAAOs. Through the performance of some job items was good, maximum respondents belonged to low and medium job performance (83.4%) which was much below the maximum possible level of performance.

Mishra *et al.* (2006) reported that the overall job performance of the Extension Officers was medium (75.41%), whereas it was also indicated that performance of man (74.29%) and women (76.92%) was medium.

2.2.5 Cooperation from super-ordinates

No review of literature was found on the cooperation from super-ordinates.

2.2.6 Cooperation from local leaders

According to Ozor and Nwankwo (2009) agricultural extension policy must legitimately recognize the potentials of local leaders in agricultural development and partner with them in the overall efforts to provide innovative solutions to the nature of problems in the rural areas.

They also suggested that among the prominent roles played by the local leaders include: making decisions on different issues affecting the farmers that

require integrated approach, acting as liaison between governmental organizations and private sector and the farmers for financial and technical assistance, monitoring and evaluation of projects for proper implementation, and raising funds through levies, donations, launchings, etc to finance agricultural development projects in the area.

2.2.7 Cooperation from farmers

According to Allahyari *et al.* (2009) the increase in farmers' participation in sustainable agricultural development programs and agricultural extension services, decentralizing from activities and facilitating to apply local groups are the most approaches for agricultural extension in future.

2.2.8 Use of internet

According to Baig and Aldosari (2013) particularly for the rural development projects, the extension professionals use cellular phones for immediately delivering extension messages in Bangladesh.

According to Swanson (2011) the SAAOs seldom use their mobile phones for work except to respond to incoming farmer questions. Unless they have smart phones along with some level of government funding support for mobile phone usage, they have 1) no access to available AIS information, 2) limited access and/or willingness to communicate with SMSs and/or researchers about helping farmers solve specific technical, management or marketing problems.

Swanson (2011) also suggested if the SAAOs had the appropriate type of smart phones along with funding for appropriate online charges, then they could quickly access and download rapidly expanding sources of both technical and market information. In addition, they could easily share this needed information directly with small-scale, marginal men and women

farmers. With the appropriate ICT resource, they could begin serving small and marginal farmers across their block with up-to-date technical and market information. While the cost of equipping 12,600 SAAO's with smart-phones (as well as covering their month usage costs) is not trivial, these investment costs would greatly and immediately enhance the capacity and impact of these field extension workers. In short, they would be both empowered and unleashed by using these new tools to provide needed technical and market information, especially for the rural poor.

2.3 Conceptual Framework of the Study

Problem faced by the Sub Assistant Agricultural Officers in technology transfer was the main focus of the study. It may be influenced by the selected characteristics of the Sub Assistant Agricultural Officers like academic accomplishment, training exposure, job satisfaction, job satisfaction, cooperation from super-ordinates, cooperation from local leaders, cooperation from farmers and use of internet.

Based on these above discussion and the review of literature, the conceptual framework of this study has been formulated and shown in figure 2.1.

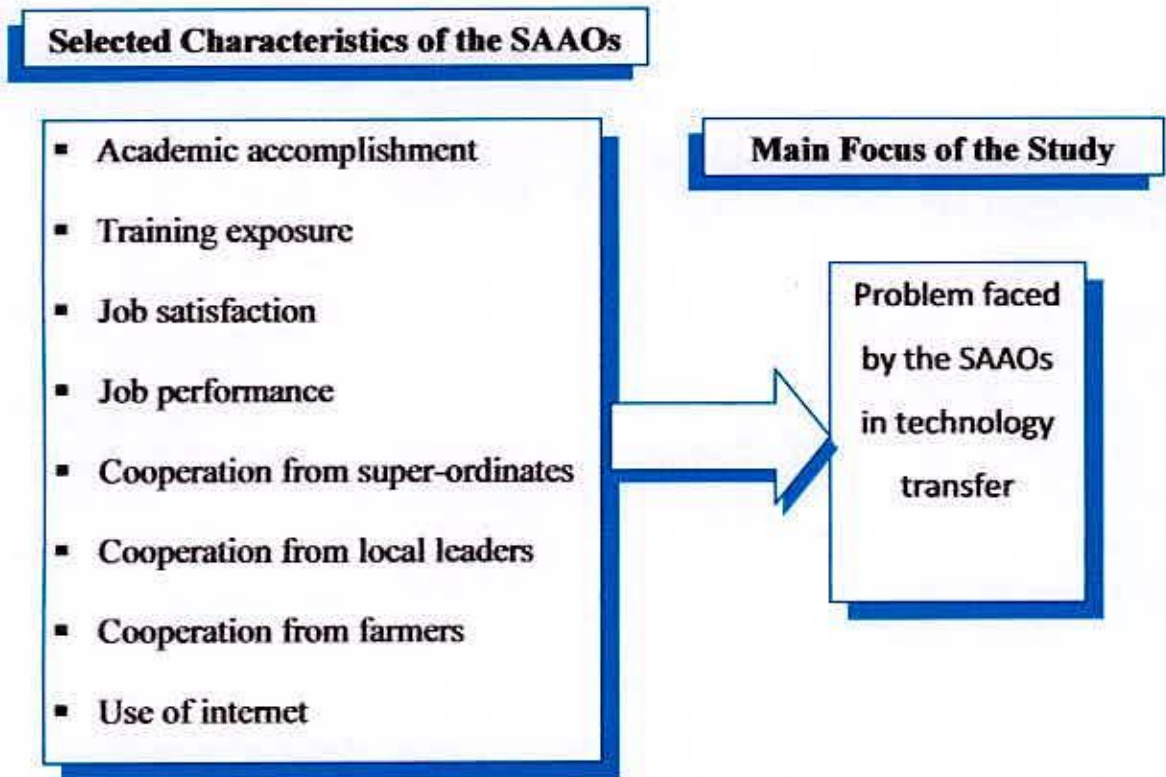


Figure 2.1. Conceptual framework of the study

Chapter III

METHODOLOGY

Methodology is very important in any research. The basic materials for conducting any research are the unbiased information and facts. The purpose of this chapter is to describe the study area, research design and data collection procedure.

3.1 Locale of the Study

The study was conducted in Narayanganj district. There are five upazillas in Narayanganj district namely, Narayanganj sadar, Bandar, Sonargaon, Arai hazar and Rupganj. These five upazillas constituted the locale of the study. For better understanding a map of Narayanganj district is presented in figure.3.1.

3.2 Population and Sample of the Study

A list of 137 SAAOs of five upazillas was collected from District Agriculture Office and Upazilla Agriculture Office of Narayanganj district. This was considered as the population of the study. It was tried to take all the population as the sample. But 8 SAAOs were not available during collection of data. That's why 129 SAAOs constituted as the sample of the study.

3.3 Research Instrument

A previously structured questionnaire was used as data gathering instrument in keeping the objectives of the study in mind. The rough questionnaire was pretested on several SAAOs of Narayanganj district. Pretest was helpful to find out gaps and to locate faulty questions and statements. All alterations and adjustments were made in the questionnaire on the basis of experience of the

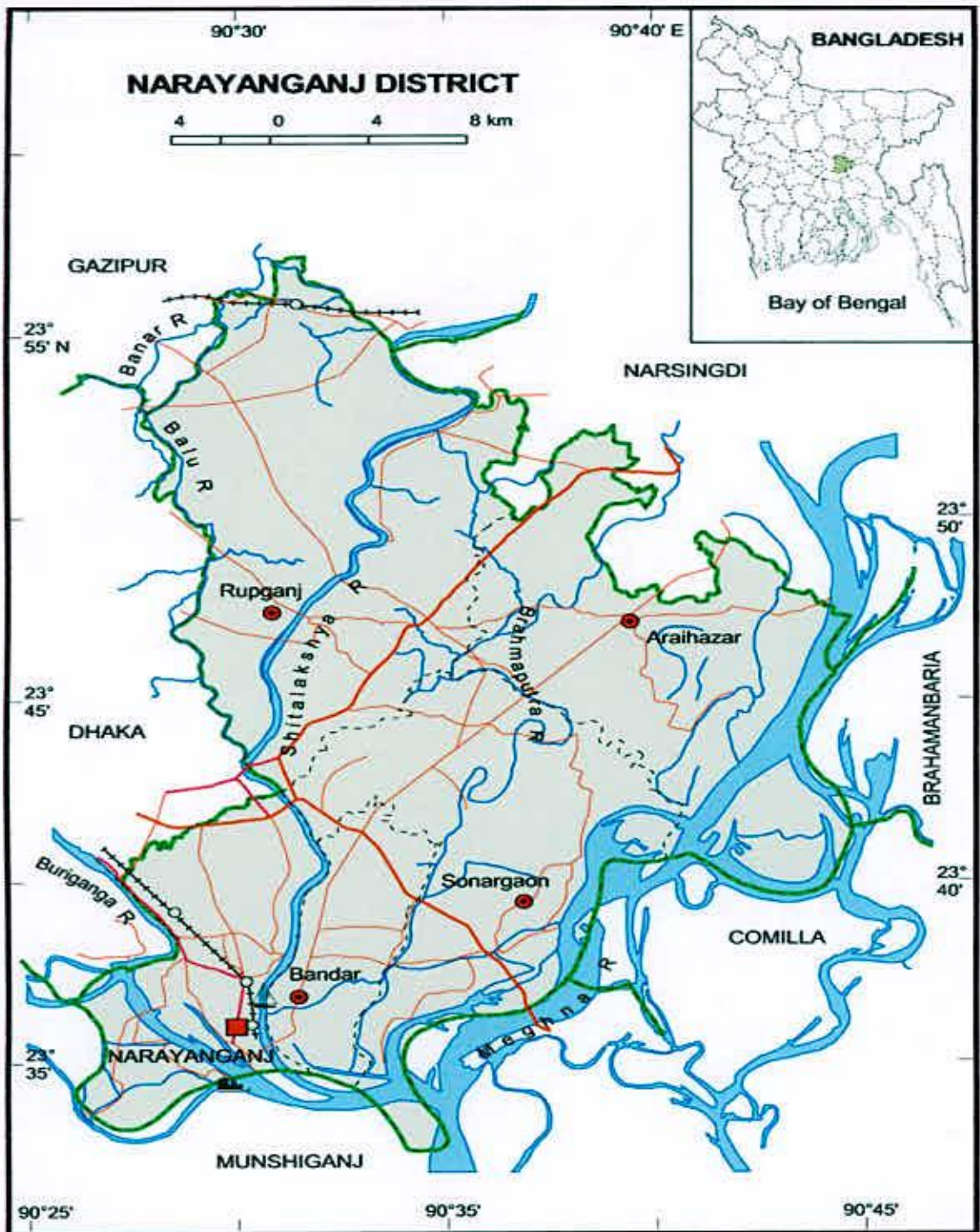


Fig 3.1. A map of Narayanganj district showing the upazillas as the study area

pretest. The questionnaire was then multiplied in its final form for collection of data. The questionnaire was prepared in Bengali for clear understanding of the respondents. Problem faced in technology transfer based questions had been included in the questionnaire along with the selected characteristics of the respondents. English version of questionnaire has been shown in appendix-I.

3.4 Variables of the Study

Problem Faced by Sub Assistant Agricultural Officers in Technology Transfer was the main focus of the study.

3.5 Measurement of Problem Faced By Sub Assistant Agricultural Officers in Technology Transfer

Problem faced by SAAOs in technology transfer was the main focus of the study. It was measured by constructing eight selected items. Each SAAO was asked to indicate the extent of problem faced by him/her against the 08 selected problem items by indicating one of the four alternative responses such high, medium, low, and not at all problem and score assigned as follows:

<u>Extent of problem</u> _	<u>Weights</u>
High	3
Medium	2
Low	1
Not at all	0

Problem faced scores of a respondent ranged from 0 to 24, where 0 indicating no problem and 24 indicating highest problems faced in technology transfer.

3.6 Measurement of variables

The following selected characteristics of the SAAOs were considered that they might have influence on the problems faced by the SAAOs in technology transfer:

- Academic accomplishment
- Training exposure
- Job satisfaction
- Job performance
- Cooperation from super-ordinates
- Cooperation from local leaders
- Cooperation from farmers
- Use of internet

Academic accomplishment

Academic accomplishment is the outcome of education. Based on the result of education, first division, second division and third division were scored as 3, 2 and 1 respectively. Finally, academic accomplishment of an individual was measured by the total score obtained by him from SSC to above level of education.

Training exposure

Training exposure refers to the days of training which an individual received during his service carrier pertaining to his job. The scores obtained in respect of training exposure by an individual respondent which was measured in days. A score of 1 was given for each day of training.

Job satisfaction

Job satisfaction is a pleasurable state of mind of an individual resulting from his value of job. For measuring the job satisfaction scores of a respondent, six job satisfaction items were identified against each item there were four alternative responses namely, high job satisfaction, medium job satisfaction, low job satisfaction and very low job satisfaction and score assigned as follows:

<u>Extent of job satisfaction</u>	<u>Weights</u>
High	4
Medium	3
Low	2
Very low	1

Job satisfaction score was obtained for each respondent by summing up the scores put against all the six job satisfaction items. Thus, job satisfaction scores of the respondents could range from 6 to 24, where 6 indicated very little satisfaction and 24 indicated maximum job satisfaction.

Job performance

For measuring the job performance scores of a respondent, five job performance items were identified against which four alternatives extent of job performance, viz. high job performance, medium job performance, low job performance and very low job performance were mentioned and score assigned as follows:

<u>Extent of job performance</u>	<u>Weights</u>
High	4
Medium	3
Low	2
Very low	1

Job performance score was obtained for each respondent by summing up the scores for his responses against all the five job performance items. Thus, job performance scores of the respondents could range from 5 to 20, where 5 indicated very low job performance and 20 indicated maximum job performance.

Cooperation from super-ordinates

For measuring the cooperation from super-ordinates four cooperation items were identified against each item there were four alternative responses namely, high cooperation, medium cooperation, low cooperation and very low cooperation were stated and score assigned as follows:

<u>Extent of cooperation</u>	<u>Weights</u>
High	4
Medium	3
Low	2
Very low	1



Cooperation from super-ordinates score was obtained for each respondent by summing up the scores for his responses against all the four cooperation items. Thus, cooperation from super-ordinates scores of the respondents could range from 4 to 16, where 4 indicated little cooperation and 16 indicated maximum cooperation.

Cooperation from local leaders

Cooperation from local leaders was measured by assigning scores against three identified cooperation items according to extent of cooperation, viz. high cooperation, medium cooperation, low cooperation and very low cooperation and score assigned as follows:

<u>Extent of cooperation</u>	<u>Weights</u>
High	4
Medium	3
Low	2
Very low	1

Cooperation from local leaders score was obtained for each respondent by summing up the scores for his responses against all the three cooperation items. Thus, cooperation from local leaders scores of the respondents could range from 3 to 12, where 3 indicated little cooperation and 12 indicated maximum cooperation.

Cooperation from farmers

For measuring the cooperation from farmers scores of a respondent, three cooperation items were identified against each item there were four alternative responses namely, high cooperation, medium cooperation, low cooperation and very low cooperation and score assigned as follows:

<u>Extent of cooperation</u>	<u>Weights</u>
High	4
Medium	3
Low	2
Very low	1

Cooperation from farmers score was obtained for each respondent by summing up the scores for his responses against all the three cooperation items. Thus, cooperation from farmers scores of the respondents could range from 3 to 12, where 3 indicated little cooperation and 12 indicated maximum cooperation.

Use of internet

Use of internet was measured by assigning scores against identified three items according to extent of internet use, viz. frequently use, occasionally use, rarely use, never and score assigned as follows:

<u>Extent of use</u>	<u>Weights</u>
Frequently	3
Occasionally	2
Rare	1
Never	0

Internet use score was obtained for each respondent by summing up the scores for his responses against all the three use items. Thus, internet use scores of the respondents could range from 0 to 9, where 0 indicated no use and 9 indicated maximum use.

3.7 Comparative Problems Faced By the SAAOs in Technology Transfer

Eight (8) problems were considered for the study. The SAAOs faced the problems in varying levels. Severities of the problems were compared by the rank order based on descending order of the Problem Faced Index (PFI) of the problem items. The PFI of each problem was determined by using the following formula:

$$\text{Problem Faced Index (PFI)} = P_n \times 0 + P_l \times 1 + P_m \times 2 + P_h \times 3$$

Where,

P_n = Number of SAAOs facing no problem in technology transfer

P_l = Number of SAAOs facing low problem in technology transfer

P_m = Number of SAAOs facing medium problem in technology transfer

P_h = Number of SAAOs facing high problem in technology transfer

Problem Faced Index (PFI) for each of the selected items could range from 0 to 387 where 0 indicated lowest PFI and 387 indicated highest PFI.

3.8 Hypothesis of the Study

The research hypothesis was put forward to test the relationships between the selected characteristics of Sub Assistant Agricultural Officers and the problem faced by them in technology transfer. The selected characteristics of SAAOs were: academic accomplishment, training exposure, job satisfaction, job performance, cooperation from super-ordinates, cooperation from local leaders, cooperation from farmers and use of internet. The main focus of the study was the problem faced by Sub Assistant Agricultural Officers in technology transfer.

The following null hypothesis was formulated to explore the relationship between selected characteristics of the SAAOs and problem faced by them in technology transfer:

“There is no significant relationship between each of the selected characteristics of the Sub Assistant Agricultural Officers and problem faced by them in technology transfer”.

3.9 Collection and Processing of Data

The researcher collected data from the Sub Assistant Agriculture Officers of Narayanganj through questionnaire. Before starting collection of data, the researcher discussed with the Sub Assistant Agriculture Officers of different blocks in order to explain the objectives of the study and requested them to provide necessary help and co-operation in collection of data. Upazilla Agriculture Officers and Agriculture Extension Officers were also approached to render essential help. As a result of all these a good working atmosphere was

created in the study area which was very helpful for collection of data by the researcher.

Data for this study were collected from the SAAOs of five upazillas by using the prepared questionnaire through the consultation with the honorable Supervisor. Before going to the respondents for collection of data, they were informed earlier, so that they would be available in their respective area.

No serious problems were faced by the researcher in collecting data. It was not possible to collect from eight SAAOs out of the 137 SAAOs. They were not available at the time of collection of data. So that the researcher had to collect data from 129 SAAOs. Data collection was started from July and completed in September, 2014.

After completion of field survey the collected data were coded, compiled, tabulated and analysis in accordance with the objectives of the study. The statistical measures such as number and percentage distribution were used for describing the variables. The responses of the respondent contained in the questionnaire were transferred into a master sheet in order to entering data in the computer. SPSS computer package was used for processing and analysis of data.

3.10 Statistical Analysis of Data

Data collected from the respondents were compiled, tabulated and analyzed in accordance with the objectives of the study. The statistical measures used in describing the variables were frequency distribution, range, mean, percentage, standard deviation. Rank order was used for comparing the problems. Tables were used in presenting data for clarification of understanding.

Categories were developed in respect of each of the selected characteristics of the SAAOs and problem faced by SAAOs in technology transfer based on nature of the data and mode of categorization prevailing in the social system. Procedures for categorization have been discussed while describing the SAAOs characteristics in chapter IV.

In order to explore the relationships between the problem faced by Sub Assistant Agriculture Officers in technology transfer and their selected characteristics, Co-efficient of correlation (ρ) was measured. Five percent (0.05) level of significance was used as a basis for rejecting any null hypothesis.

CHAPTER IV

RESULTS AND DISCUSSION

The findings of the study are presented in this chapter in accordance with the objectives. This chapter contains findings of the study and possible interpretation of the recorded information. The chapter has four (4) sections. The first section deals with the problem faced by Sub Assistant Agricultural Officers in technology transfer. The second section deals with the characteristics of Sub Assistant Agricultural Officers (SAAOs). The third section deals with the relationship between selected characteristics of Sub Assistant Agricultural Officers and the problem faced by them in technology transfer. The fourth section deals with comparative problems faced by SAAOs in technology transfer.

4.1 Problem Faced by Sub Assistant Agricultural Officers in Technology Transfer

Tabulated scores of problem faced by Sub Assistant Agricultural Officers (SAAOs) in technology transfer ranged from 5 to 24 against the possible range of 0 to 24 with average of 18.94 and standard deviation of 4.23. Based on the problem faced in technology transfer scores, the respondents were classified into three categories: low problem facing (5-8), medium problem facing (9-16) and high problem facing (17-24).

Table 4.1 Classification of the SAAOs according to their problem faced in technology transfer

Categories	Basis of categorization	Respondents		Mean	Standard deviation
		Number	Percent		
Low problem facing	5 to 8	2	1.60	18.94	4.23
Medium problem facing	9 to 16	36	27.90		
High problem facing	17 to 24	91	70.50		
Total		129	100		

Data contained in Table 4.1 indicating the majority (70.50percent) of the SAAOs faced high level of problem as compared to 27.90 percent and 1.60 percent SAAOs faced medium and low level of problem in technology transfer respectively. Therefore, it could be concluded that the problem faced by SAAOs in technology transfer should be needed to reduce for the improvement of agriculture.

4.2 Characteristics of the Sub Assistant Agricultural Officers

Different interrelated characteristics of Sub Assistant Agricultural Officers (SAAOs) influence the problem faced in technology transfer. It was therefore, hypothesized that the characteristics of SAAOs under the study would have an effect on the problem faced in technology transfer. However, the selected eight characteristics of SAAOs were: academic accomplishment, training exposure, job satisfaction, job performance, cooperation from super-ordinates, cooperation from local leaders, cooperation from farmers and use of internet. The salient features of the characteristics of the SAAOs are presented in Table 4.2.

Table 4.2 Salient features of the selected characteristics of the SAAOs

n=129

Characteristics	Measuring unit	Range		Categories	SAAOs		Mean	SD
		Possible	Observed		Number	Percent (%)		
Academic accomplishment	Scores	Unknown	2-11	Low(2-4)	27	20.90	6.21	1.96
				Medium (5-8)	82	63.60		
				High(9-11)	20	15.50		
Training exposure	Scores	Unknown	0-164	No (0)	21	16.30	21.25	35.25
				Low (1-7)	29	22.50		
				Medium (8-30)	64	49.60		
				High((31-164)	15	11.60		
Job satisfaction	Scores	6-24	6-17	Low(6-11)	56	43.40	11.71	2.93
				Medium (12-17)	73	56.60		
Job performance	Scores	5-20	11-20	Low(11-13)	17	13.20	17.40	2.71
				Medium (14-17)	26	20.10		
				High(18-20)	86	66.70		
Cooperation from superordinates	Scores	4-16	4-16	Low (4-7)	7	5.40	11.81	2.56
				Medium (8-12)	65	50.40		
				High (13-16)	57	44.20		
Cooperation from local leaders	Scores	3-12	3-12	Low (3-5)	23	17.80	8.43	2.61
				Medium (6-9)	59	45.80		
				High (10-12)	47	36.40		
Cooperation from farmers	Scores	3-12	3-12	Low (3-5)	12	9.30	8.07	1.76
				Medium (6-9)	107	82.90		
				High (10-12)	10	7.80		
Use of internet	Scores	0-9	0-4	No (0)	61	47.30	1.05	1.19
				Low (1-2)	46	35.60		
				Medium (3-4)	22	17.10		

4.2.1 Academic accomplishment

The academic accomplishment score of the SAAOs ranged from 2 to 11 with average of 6.21 and standard deviation of 1.96. Based on their academic accomplishment scores, the respondents were grouped into three categories: low academic accomplishment (2-4), medium academic accomplishment (5-8) and high academic accomplishment (9-11).

The data shown in Table 4.2 revealed that the majority (63.60 percent) of the SAAOs had medium level of academic accomplishment while around one fifth (20.90percent) of the total respondent had low level of academic accomplishment and high level of academic accomplishment found in very little proportion (15.50 percent) of the respondent. It is expected that better performance in job may be achieved by better level of academic accomplishment.

4.2.2 Training exposure

Training exposure scores of the SAAOs ranged from 0 to 164 days, with an average of 21.25 and a standard deviation of 35.25. On the basis of their training exposure scores, the SAAOs were classified into four categories: no training exposure (0), low training exposure (1-7), medium training exposure (8-30), high training exposure (31-164).

Data furnished in Table 4.2 indicated that about half (49.60 percent) of the SAAOs received medium training exposure as compared to 22.50 percent of the respondents had low training exposure, 16.30 percent of the respondent received no training and only 11.60 percent of them had high training exposure. Training helps the SAAOs to do their job better. SAAOs obtain knowledge, skill, views or attitudes towards different technologies through training.

4.2.3 Job satisfaction

Job satisfaction scores of the SAAOs ranged from 6 to 17 against the possible range of 6 to 24. The average score was 11.71 with standard deviation of 2.93. On the basis of job satisfaction scores, the SAAOs were classified into two categories: low job satisfaction (6-11) and medium job satisfaction (12-17).

It was found that 56.60 percent of the SAAOs possessed medium job satisfaction as compared to 43.40 percent of them having low job satisfaction. In fact, it is revealed that the observed highest job satisfaction score is only 17 out of possible highest score 24. So, it could be concluded that the SAAOs are not happy with their present job status.

4.2.4 Job Performance

The job performance scores of the SAAOs ranged from 11 to 20 against the possible range of 5 to 20 with an average of 17.40 and a standard deviation of 2.71. On the basis of their job performance scores, the SAAOs were classified into three categories: low job performance (11-13), medium job performance (14-17) and high job performance (18-20).

Findings show that the majority (66.70 percent) of the SAAOs had high job performance as compared to 20.10 and 13.20 percent having medium and low job performance respectively. From the above finding it can be concluded that majority of the SAAOs (86.80 percent) had medium to high job performance although they received minimum job facilities. Therefore, DAE should increase job facilities of the SAAOs in order to get high job performance from the SAAOs.



4.2.5 Cooperation from super-ordinates

Cooperation from super-ordinates scores of the SAAOs ranged from 4 to 16 against the possible range of 4 to 16 with an average of 11.81 and a standard deviation of 2.56. On the basis of their cooperation from super-ordinates scores, the SAAOs were classified into three categories: low cooperation (4-7), medium cooperation (8-12) and high cooperation (13-16).

Data furnished in Table 4.2 indicated that highest proportion (50.40 percent) of the SAAOs got medium cooperation from super-ordinates as compared to 44.20 percent and 5.40 percent of them got high and low cooperation from super-ordinates respectively.

4.2.6 Cooperation from local leaders

Cooperation from local leaders scores of the SAAOs ranged from 3 to 12 against the possible range of 3 to 12 with an average of 8.43 and a standard deviation of 2.61. On the basis of their cooperation from local leader scores, the SAAOs were classified into three categories: low cooperation (3-5), medium cooperation (6-9) and high cooperation (10-12).

Data furnished in Table 4.2 indicated that highest proportion (45.80 percent) of the SAAOs got medium cooperation from local leader as compared to 36.40 percent and 17.80 percent got high and low cooperation from local leaders respectively.

4.2.7 Cooperation from farmers

Cooperation from farmers scores of the SAAOs ranged from 3 to 12 against the possible range of 3 to 12 with an average of 8.07 and a standard deviation of 1.76. On the basis of their cooperation from farmers scores, the SAAOs were

classified into three categories: low cooperation (3-5), medium cooperation (6-9) and high cooperation (10-12).

Data furnished in Table 4.2 indicated that overwhelming proportion (82.90 percent) of the SAAOs got medium cooperation from farmers as compared to 9.30 percent and 7.80 percent of them got low and high cooperation from farmers respectively.

4.2.8 Use of internet

The observed use of internet scores of the SAAOs ranged from 0 to 4 against the possible range of 0 to 9 with an average of 1.05 and a standard deviation of 1.18. On the basis of their use of internet scores, the SAAOs were classified into three categories: no use of internet (0), low use of internet (1-2) and medium use of internet (3-4).

Data furnished in Table 4.2 indicated that highest proportion (47.30 percent) of the SAAOs had no use of internet as compared to 35.60 percent and 17.10 percent had low and medium use of internet respectively.

4.3 Relationship of Selected Characteristics of Sub Assistant Agricultural Officers with Problem Faced by Them in Technology Transfer

Spearman's rank correlation coefficient (ρ) was computed in order to find out the relationship between the problem faced by SAAOs in technology transfer and their selected characteristics.

Results of correlation have been shown in Table 4.3. Spearman's rank correlation matrix might be seen in appendix-II. Pearson's product moment correlation matrix has also been shown in appendix-III.

Table 4.3 Spearman's rank correlation coefficient showing the relationship between the selected characteristics of Sub Assistant Agricultural Officers and problem faced by them in technology transfer

	Selected characteristics of SAAOs	Computed value of co-efficient of correlation ' ρ '
Problem faced by the SAAOs in technology transfer	Academic accomplishment	-0.118 ^{NS}
	Training exposure	-0.312**
	Job satisfaction	-0.494**
	Job performance	-0.086 ^{NS}
	Cooperation from super-ordinates	-0.017 ^{NS}
	Cooperation from local leaders	-0.006 ^{NS}
	Cooperation from farmers	-0.133 ^{NS}
	Use of internet	-0.253**

*Significant at the 0.05 level

** Significant at the 0.01 level

^{NS} Not significant

4.3.1 Relationship between the academic accomplishment of the SAAOs and problem faced by them in technology transfer

Relationship between academic accomplishment of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between academic accomplishment and problem faced in technology transfer was presented in Table 4.3. The coefficient of correlation (ρ) between the concerned variables was found -0.118. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The relationship showed a negative trend between the concerned variables.*
- b. The observed value of " ρ " (-0.118) between the concerned variables was found to be smaller than the tabulated value with 127degrees of freedom at 0.05 level of probability.*
- c. The null hypothesis could not be rejected.*
- d. The relationship between the concerned variables was not statistically significant at 0.05 level of probability.*

Based on the above findings, it was concluded that academic accomplishment of the SAAOs had no significant relationship with the problem faced by them in technology transfer.

4.3.2 Relationship between the training exposure of the SAAOs and problem faced by them in technology transfer

Relationship between training exposure of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between training exposure and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.312. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The relationship showed a negative trend between the concerned variables.*
- b. *The observed value of " ρ " (-0.312) between the concerned variables was found to be greater than the tabulated value with 127 degrees of freedom at 0.01 level of probability.*
- c. *The null hypothesis was rejected.*
- d. *The relationship between the concerned variables was statistically significant at 0.01 level of probability.*

Based on the above finding, it was concluded that training exposure of the SAAOs had significant negative relationship with the problem faced by them in technology transfer. That is, higher the training exposure lower the problem faced in technology transfer.

4.3.3 Relationship between the job satisfaction of the SAAOs and problem faced by them in technology transfer

Relationship between job satisfaction of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between job satisfaction and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.494. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The relationship showed a negative trend between the concerned variables.*
- b. *The observed value of " ρ " (-0.494) between the concerned variables was found to be greater than the tabulated value with 127 degrees of freedom at 0.01 level of probability.*
- c. *The null hypothesis was rejected.*
- d. *The relationship between the concerned variables was statistically significant at 0.01 level of probability.*

Based on the above finding, it was concluded that job satisfaction of the SAAOs had significant negative relationship with the problem faced by them in technology transfer. It means that higher the job satisfaction lower the problem faced in technology transfer.

4.3.4 Relationship between the job performance of the SAAOs and problem faced by them in technology transfer

Relationship between job performance of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between job performance and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.086. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The relationship showed a negative trend between the concerned variables.*
- b. The observed value of " ρ " (-0.086) between the concerned variables was found to be smaller than the tabulated value with 127 degrees of freedom at 0.05 level of probability.*
- c. The null hypothesis could not be rejected.*
- d. The relationship between the concerned variables was not statistically significant at 0.05 level of probability.*

Based on the above finding, it was concluded that job performance of the SAAOs had no significant relationship with the problem faced by them in technology transfer.

4.3.5 Relationship between the cooperation from super-ordinates of the SAAOs and problem faced by them in technology transfer

Relationship between cooperation from super-ordinates of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between cooperation from super-ordinates and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.017. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The relationship showed a negative trend between the concerned variables.*
- b. *The observed value of " ρ " (-0.017) between the concerned variables was found to be smaller than the tabulated value with 127 degrees of freedom at 0.05 level of probability.*
- c. *The null hypothesis could not be rejected.*
- d. *The relationship between the concerned variables was not statistically significant at 0.05 level of probability.*

Based on the above finding, it was concluded that cooperation from super-ordinates of SAAOs had no significant relationship with the problem faced by them in technology transfer.

4.3.6 Relationship between the cooperation from local leaders of the SAAOs and problem faced by them in technology transfer

Relationship between cooperation from local leaders of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between cooperation from local leaders and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.006. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The relationship showed a negative trend between the concerned variables.*
- b. *The observed value of " ρ " (-0.006) between the concerned variables was found to be smaller than the tabulated value with 127 degrees of freedom at 0.05 level of probability.*
- c. *The null hypothesis could not be rejected*
- d. *The relationship between the concerned variables was not statistically significant at 0.05 level of probability.*

Based on the above finding, it was concluded that cooperation from local leaders of SAAOs had no significant relationship with the problem faced by them in technology transfer.

4.3.7 Relationship between the cooperation from farmers of the SAAOs and problem faced by them in technology transfer

Relationship between cooperation from farmers of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between cooperation from farmers and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.133. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The relationship showed a negative trend between the concerned variables.*
- b. The observed value of " ρ " (-0.133) between the concerned variables was found to be smaller than the tabulated value with 127 degrees of freedom at 0.05 level of probability.*
- e. The null hypothesis could not be rejected*
- c. The relationship between the concerned variables was not statistically highly significant at 0.05 level of probability.*

Based on the above finding, it was concluded that cooperation from farmers of SAAOs had no significant relationship with the problem faced by them in technology transfer.

4.3.8 Relationship between the use of internet of the SAAOs and problem faced by them in technology transfer

Relationship between use of internet of the SAAOs and problem faced by them in technology transfer was determined by Spearman's rank correlation coefficient. The coefficient of correlation between use of internet and problem faced in technology transfer was presented in Table 4.3. The coefficient (ρ) of correlation between the concerned variables was found -0.253. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The relationship showed a negative trend between the concerned variables.*
- b. The observed value of " ρ " (-0.253) between the concerned variables was found to be greater than the tabulated value with 127 degrees of freedom at 0.01 level of probability.*
- c. The null hypothesis was rejected.*
- d. The relationship between the concerned variables was statistically significant at 0.01 level of probability.*

Based on the above finding, it was concluded that use of internet of SAAOs had significant negative relationship with the problem faced by them in technology transfer. The use of internet strengthened the base of SAAOs' knowledge. It means that higher the use of internet lower the problem faced in technology transfer.

4.4 Comparative Problems Faced by SAAOs in Technology Transfer

In order to compare the severity of the problems faced by SAAOs in technology transfer, Problem Faced Index (PFI) was determined for each of eight selected problems. Rank order was made on the basis of descending order of the PFI. Severity of the problems was compared based on the rank order.

Table 4.4 Problem Faced Index of the problems and their rank order

Problems	Number of the SAAOs				PFI	Rank order
	Faced High Problem	Faced Medium Problem	Faced Low Problem	Faced No Problem		
Lack of required teaching aid	75	38	16	0	317	1
Lack of transportation facilities	73	43	8	5	313	2
Lack of required technical knowledge	75	39	9	6	312	3
Lack of freedom for planning of own works	69	47	10	3	311	4
Unavailability of internet facility	65	50	12	2	307	5
Lack of functional literacy of farmers	61	51	11	6	296	6
Non-adoptive behavior of farmers about adopting innovation	59	55	7	8	294	7
Lack of required skill to disseminate agricultural information	51	66	8	4	293	8

According to Problem Faced Index (PFI) “lack of required teaching aid” ranked first followed by “lack of transportation facilities” and “lack of required technical knowledge”. “Lack of required skill to disseminate agricultural information” ranked last. Other problems are also presented based on the rank order in Table 4.4.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions and recommendations of this study.

5.1 Summary of Findings

5.1.1 Problem faced by SAAOs in technology transfer

The highest proportion (70.50 percent) of the SAAOs faced high problem in technology transfer while 27.90 percent faced medium problem and the rest 1.60 percent had low problem faced in technology transfer.

5.1.2 Characteristics of the SAAOs

Academic accomplishment

Sub Assistant Agricultural Officers (SAAOs) comprised the highest proportion (63.60 percent) followed by medium academic accomplishment category as compared to 20.90 percent fell under low academic accomplishment category and the lowest proportion were made by high academic accomplishment category(15.50 percent).

Training exposure

The highest proportion (49.60 percent) of the SAAOs fell under category of “medium training exposure” as compared to 22.50 percent and 16.30 percent of

respondents had low training exposure and no training exposure respectively. The rest 11.60 percent of the SAAOs had high training exposure.

Job satisfaction

The medium job satisfaction category constituted the highest proportion (56.60 percent) of the SAAOs while 43.40 percent had low job satisfaction.

Job performance

The highest proportion (66.70 percent) of the SAAOs had high job performance as compared to 20.10 percent had medium job performance and 13.20 percent had low job performance.

Cooperation from super-ordinates

The highest proportion (50.40 percent) of the SAAOs had medium cooperation from super-ordinates as compared to 44.20 percent fell in high cooperation and 5.40 percent in low cooperation group.

Cooperation from local leaders

The highest proportion (45.80 percent) of the SAAOs was in medium cooperation group while 36.40 percent of them had high cooperation and only 17.80 percent had low cooperation from local leaders.

Cooperation from farmers

The overwhelming proportion (82.90 percent) of the SAAOs had medium cooperation from farmers while 9.30 percent had low cooperation and 7.80 percent of the respondents had high cooperation from farmers.

Use of internet

“No use of internet” category constituted the highest proportion (47.30 percent) of the SAAOs while 35.60 percent and 17.10 percent fell in low and medium use of internet category respectively.

5.1.3 Relationship between problem faced in technology transfer and the selected characteristics of the SAAOs

Training exposure, job satisfaction and use of internet had significant negative relationship with the problem faced in technology transfer. Academic accomplishment, job performance, cooperation from super-ordinates, cooperation from local leaders and cooperation from farmers had no significant relationship with the problem faced in technology transfer.

5.1.4 Comparative problems faced by SAAOs in technology transfer

According to Problem Faced Index (PFI) “lack of required teaching aid” ranked first followed by “lack of transportation facilities” and “lack of required technical knowledge”.



5.2 Conclusions

Based on the findings of this study the following conclusions have been drawn:

- The study indicated that 70.50 percent of SAAOs faced high problem in technology transfer in terms of lack of required teaching aid, lack of transportation facilities, lack of required technical knowledge and the like. Conclusion can be drawn that unless the problems faced by the SAAOs could not be mitigated, they would not be able to transfer technology among the farmers effectively.

- Training exposure of the SAAOs had significant negative relationship with their problem faced in technology transfer. But about two-fifths of the respondents had no training and low training. Other three-fifths had medium to high training. Transfer of technology is a gigantic task. It needs intensive training and motivation. Conclusion can be drawn that all the SAAOs should be provided compulsory training.
- There was a significant negative relationship between job satisfaction and problem faced in technology transfer. But the respondents were not highly satisfied according to their responses. Job satisfaction is very much related with pay and allowance, office facilities, training facilities, social recognition etc. For job satisfaction aforesaid items should be ensured.
- Cooperation from super-ordinates had no significant relationship with their problem faced in technology transfer although 50.40 percent of SAAOs had medium cooperation from super-ordinates. It was revealed that the SAAOs generally had discussions with their high officials to identify the field problems and also seek recent agricultural information from them. This means that the higher the cooperation received from super-ordinates the lower problem faced in technology transfer.
- The statistical analysis showed that there was no significant relationship between cooperation from local leaders with the problem faced in technology transfer although majority (45.80 percent) of SAAOs belonged to medium cooperation group. It was identified that local leaders minimized local and social problem as well as influencing farmers to receive information from SAAOs. This leads to the conclusion that

SAAOs with high cooperation from local leaders decreases the problem faced in technology transfer.

- Cooperation from farmers had no significant relationship with their problem faced in technology transfer although 82.90 percent of SAAOs had medium cooperation from farmers. It was revealed that farmers received innovative agricultural information and informed SAAOs about existing problem faced in the field. Therefore, it may be concluded that higher the cooperation from farmers the lower problem faced in technology transfer.
- Findings showed that there was a significant negative relationship between use of internet and problem faced in technology transfer. Increasing the use of internet by SAAOs increases knowledge and get proper information about modern technology. It leads to the conclusion that the use of internet minimizes problem faced by SAAOs in technology transfer.
- The study revealed that the SAAOs faced all the problems at various degrees of severity. From the Problem Faced Index it was concluded that the most severe problem was “lack of required teaching aid” followed by “lack of transportation facilities” and “lack of required technical knowledge”.

5.3 Recommendations

5.3.1 Recommendations for policy implications

Recommendations formulated on the basis of experience, observation and conclusions drawn from the findings of the study and have been prescribed to the concerned authorities, planners and executioners are given below:

- Reasons behind the problem faced by SAAOs in technology transfer need to be identified and necessary attempt should be made.
- Training exposure curtails the problem faced by SAAOs in technology transfer. Therefore, it may be recommended to organize demand led training by Department of Agricultural Extension (DAE) for the increase of management ability as well as lessening problem faced in technology transfer.
- Official facilities increase job performance that minimizes the problem faced by SAAOs in technology transfer. Defined official facilities increase job satisfaction of SAAOs. Therefore, it may be recommended that DAE may undertake proper initiative for the defined official facilities.
- Use of internet is seemed to have great impact in the diffusion of agricultural innovations. The Department of Agricultural Extension (DAE), GOs and NGOs needs to pay more attention to ensure the use of internet by the SAAOs.

- In case of Problem Faced Index it is recommended that the priority for taking necessary steps to minimize the problems should be given according to the rank order of the severity of the problems.

5.3.2 Recommendations for further study

A small and limited research work has been related to the present issue. Further studies may be undertaken on related matters. On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for further study.

- The present investigation explored the relationships between eight selected characteristics of the SAAOs and their problem faced in technology transfer. Besides these, there are other characteristics which may also make problem in technology transfer. Therefore, it is suggested to select other characteristics and establish relationships with problem faced in technology transfer.
- The study was concerned with the SAAOs of Narayanganj District. Similar studies may be replicated in other parts of the country to provide further valuable information.
- In the present study, academic accomplishment, job performance, cooperation from super-ordinates, cooperation from local leaders and cooperation from farmers had no significant relationship with the problem faced in technology transfer. In this condition, further verification is necessary.
- The study investigated only eight items of problem faced by SAAOs in technology transfer. It is necessary to examine the relationship of the

characteristics of the SAAOs with their problem faced in technology transfer in other aspect of problem in transferring technology.

- Research may be undertaken on the effectiveness of agricultural extension service and other related organizations in helping people to solve their agricultural problems.

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Appendix I. Questionnaire

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

Questionnaire for collecting data for the research entitled:

“PROBLEM FACED BY THE SUB ASSISTANT AGRICULTURAL OFFICERS IN TECHNOLOGY TRANSFER”

Sl. No.....

Name of the respondent.....

Block.....Union.....

Upazilla.....District.....

Please answer the following questions

1. Academic accomplishment

Please mention your academic accomplishment as follows:

Sl. No.	Name of examination	Division/Grade
1.	SSC/equivalent	
2.	HSC/equivalent	
3.	Two years training from ATI	
4.	Three years training from ATI	
5.	Four years training from ATI	
6.	B.Ag.Ed	
7.	Others(Specify)	

2. Training Exposure

Please provide information about training attended by you during the tenure of your service

Sl. No.	Name of the training	Duration(days)
1.		
2.		
3.		
4.		

3. Job Satisfaction

Please indicate your extent of job satisfaction by putting tick mark (√) against each item

Sl. No.	Items of job satisfaction	Extent of job satisfaction			
		High	Medium	Low	Very low
1.	Pay & allowance				
2.	Office facilities like mobile, desk, telephone etc				
3.	Training facility				
4.	Social recognition				
5.	Appreciations of my service by the superior officials				
6.	Promotion facility				

4. Job performance

Please indicate your extent of job performance by putting tick mark (√) against each item

Sl. No.	Activities	Extent of performance			
		High	Medium	Low	Very low
1.	Diffusion of innovation of agricultural technology				
2.	Capacity to identify the farmers' problem				
3.	Maintaining a daily diary				
4.	Providing training to the farmers				
5.	Extent of communication with super ordinates				

5. Cooperation from super-ordinates

Please indicate your extent of cooperation from super-ordinates by putting tick mark (✓) against each item

Sl. No.	Items of cooperation	Extent of cooperation			
		High	Medium	Low	Very low
1.	Receiving necessary support for technology transfer				
2.	Getting training				
3.	Obtaining official facilities				
4.	Getting positive suggestion for day to day activities				

6. Cooperation from local leaders

Please indicate your extent of cooperation from local leaders by putting tick mark (✓) against each item

Sl. No.	Items of cooperation	Extent of cooperation			
		High	Medium	Low	Very low
1.	Influencing farmers to receive information from SAAOs				
2.	Informing local agricultural problems				
3.	Minimizing social barrier				

7. Cooperation from farmers

Please indicate your extent of cooperation from farmers by putting tick mark (✓) against each item

Sl. No.	Items of cooperation	Extent of cooperation			
		High	Medium	Low	Very low
1.	Receiving innovative agricultural information				
2.	Informing about existing problem faced in the field				
3.	Eager to take training				

8. Use of internet

Please indicate your extent of use of internet by putting tick mark (√) against each item

Sl. No.	Types of use	Extent of use			
		Frequently	Occasionally	Rarely	Never
1.	Internet in mobile	5 or more days / week ()	3 to 4 days / week ()	1 to 2 days / week ()	0 day / week ()
2.	Internet in office	5 or more days / week ()	3 to 4 days / week ()	1 to 2 days / week ()	0 day / week ()
3.	Internet at home	5 or more days / week ()	3 to 4 days / week ()	1 to 2 days / week ()	0 day / week ()

9. Problem faced in technology transfer

Please indicate your extent of problem confrontation in technology transfer by putting tick (√) mark against each item

Sl. No.	Items of problem	Extent of problem faced			
		High	Medium	Low	Not at all
1.	Non-adoptive behavior of farmers about adopting innovation				
2.	Unavailability of internet facility				
3.	Lack of functional literacy of farmers				
4.	Lack of required technical knowledge				
5.	Lack of required teaching aid				
6.	Lack of freedom for planning of own works				
7.	Lack of required skill to disseminate agricultural information				
8.	Lack of transportation facilities				



APPENDIX II. Spearman's Rank Correlation Matrix

Characteristics	Academic accomplishment	Training exposure	Job satisfaction	Job performance	Cooperation from superordinates	Cooperation from local leaders	Cooperation from farmers	Use of internet	Problem faced in technology transfer
Academic accomplishment	1.00								
Training exposure	.145	1.00							
Job satisfaction	.201*	.375**	1.00						
Job performance	-.094	.100	.080	1.00					
Cooperation from superordinates	.076	-.069	.091	.138	1.00				
Cooperation from local leaders	-.065	-.024	.102	.163	-.081	1.00			
Cooperation from farmers	.074	-.019	.136	.015	.036	.055	1.00		
Use of internet	.126	.162	.313**	-.078	-.032	.019	.149	1.00	
Problem faced in technology transfer	-.118	-.312**	-.494**	-.086	-.017	-.006	-.133	-.253**	1.00

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

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

APPENDIX III. Pearson's Product Moment Correlation Matrix

Characteristics	Academic accomplishment	Training exposure	Job satisfaction	Job performance	Cooperation from superordinates	Cooperation from local leaders	Cooperation from farmers	Use of internet	Problem faced in technology transfer
Academic accomplishment	1								
Training exposure	.296**	1							
Job satisfaction	.195*	.205*	1						
Job performance	-.038	.108	.152	1					
Cooperation from superordinates	.114	-.074	.086	.127	1				
Cooperation from local leaders	-.048	-.037	.193*	.158	-.064	1			
Cooperation from farmers	.048	.038	.205*	.053	-.046	.113	1		
Use of internet	.104	-.005	.299**	-.047	.000	.092	.152	1	
Problem faced in technology transfer	-.070	-.148	-.394**	-.041	-.082	-.034	-.240**	-.229**	1

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

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