



Problems Faced by Sub Assistant Agricultural Officers in Technology Transfer

M. M. Hossain^{1*}, M. S. Ali², R. Afrose³, N. N. Shahinur⁴ and M. S. Alam⁵

¹*Agriculture Information Service, Khamarbari, Dhaka-1215, Bangladesh.*

²*Department of Agricultural Extension and Information System, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh.*

³*Department of Agricultural Extension, Khamarbari, Dhaka-1215, Bangladesh.*

⁴*Department of Agronomy, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh.*

⁵*Department of Entomology, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh.*

Authors' contributions

This work was carried out in collaboration among all authors. Author MMH designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MSA and RA managed the analyses of the study. Authors NNS and MSA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Technology transfer to farmers is essential for the improvement of agricultural production in a country like Bangladesh. In connection this issue, the study was conducted to assess the extent of problems faced by Sub Assistant Agricultural Officers (SAAOs) in technology transfer as well as explore the relationship between the selected characteristics of Sub Assistant Agricultural Officers and problems faced by them in technology transfer. The study was conducted in five sub-districts of Narayanganj district namely, Narayanganj sadar, Bandar, Sonargaon, Arahazar and Rugganj with a sample size of 129 by questionnaire method through a structured questionnaire. Spearman's

Rank Correlation Coefficient was used to test the relationship between the selected eight characteristics of SAAOs and the problems faced in technology transfer. The findings reveal that 70.50% of the SAAOs encounter high problems while 27.90% and 1.60% respondents were in medium and low problem category respectively. Spearman's Rank Correlation Coefficient analysis also revealed that training exposure, job satisfaction and use of the internet showed a negative significant relationship with the problems 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".

Keywords: Agricultural production; sub assistant agricultural officer; technology transfer.

1. INTRODUCTION

An extension worker of the Department of Agricultural Extension (DAE) at the grass-root level has been designated as Sub Assistant Agricultural Officer (SAAO). He or she would be posted at a block with duties and responsibilities of agricultural development including technology transfer to the farmers. The implementation of the plan of action of the Department of Agriculture Extension to support the farmers is the leading task of Sub Assistant Agricultural Officers [1].

The Department of Agricultural Extension (DAE) plays a vital role in accelerating the technological, social and economic development of the country. It provides unified agricultural extension services to farmers throughout the country. To provide high-quality extension services, the DAE employs 12,640 Sub Assistant Agricultural Officers (SAAOs) at the field level [2]. According to the DAE guidelines each SAAO is assigned to provide extension services for farm households. Since the extensive coverage of each SAAO is very large, the success or failure of his/her extension services largely depends on his/her extension skills level in the following areas: working with the group, organizing and running a demonstration, assessing farmers' problems and work planning [3].

Haque [4] reported that the Block Supervisors (now SAAO) could not maintain the fixed visit schedule and generally met 20-25 farmers each fortnight rather than the targeted 80; contact farmers were by vast majority male and resource-rich having more land than other farmers; diffusion was limited as 45-55% of contact farmers failed to pass messages to other farmers. But the Block Supervisors (now SAAO) are responsible for day to day visits in their block; where DAE's target involves all categories of farmers to its extension services [5]. The New

Agricultural Extension Policy says that the participation of all categories of farmers will be ensured and no one's need will be overlooked. On the contrary, the present situation on the ground is such that services provided by DAE do not fulfill the farmers' needs.

Considering 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. In view of the above, the specific objectives of the study were to: assess the selected characteristics of SAAOs; assess the extent of problems faced by SAAOs in technology transfer and explore the relationship between the selected characteristics of SAAOs and problems faced by them in technology transfer.

2. METHODOLOGY

The study was conducted in five upazillas of Narayanganj district namely, Narayanganj sadar, Bandar, Sonargaon, Arahazar and Rupganj. Data collection was started in July and completed in September 2014. Narayanganj district has been consciously selected for the study because of the availability of Sub Assistant Agricultural Officers also as per the convenience and familiarity of the researcher with the study area. A list of 137 SAAOs from the five upazillas was collected from the District Agriculture Office and Upazilla Agriculture Offices of Narayanganj district. All the population constituted the sample size. However, eight (8) of the SAAOs were not available during the collection of data and that reduced the sample size of the study to 129. Data was collected by questionnaire method with a structured questionnaire. The data collected from the respondents was scored, tabulated and analyzed by using suitable statistical tools such as percentage, Mean and SD Spearman's

rank correlation coefficient was computed in order to find out the relationship between the problems faced by SAAOs in technology transfer and their selected characteristics. In addition, Spearman correlation coefficient is based on the ranked values for each variable rather than the raw data while Pearson product moment correlation coefficient evaluates the linear relationship between two continuous variables. For that Spearman correlation coefficient was used instead of Pearson product moment correlation coefficient in this study.

2.1 Selection and Measurement of Explanatory Variables

The explanatory variables of the study were eight (8) selected characteristics of the SAAOs. These were an academic accomplishment, training exposure, job satisfaction, job performance, cooperation from super-ordinates, cooperation from local leaders, cooperation from farmers and use of the internet. The explanatory variables were measured by developing scales based on the raw scores described as follows:

2.1.1 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, the academic accomplishment of an individual was measured by the total score obtained by him from Secondary School Certificate to above level of education.

2.1.2 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.

2.1.3 Job satisfaction

Job satisfaction is a pleasurable state of mind of an individual resulting from his value of the job. For measuring the job satisfaction scores of a respondent, six job satisfaction items were identified against each item there were four alternative responses.

Extent of job satisfaction	Weights
High	4
Medium	3
Low	2
Very low	1

Job satisfaction scores of the respondents could range from 6 to 24, where 6 indicated very little satisfaction and 24 indicated maximum job satisfaction.

2.1.4 Job performance

For measuring the job performance scores of a respondent, five job performance items were identified against four alternatives extent of job performance were mentioned.

Extent of job performance	Weights
High	4
Medium	3
Low	2
Very low	1

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.

2.1.5 Cooperation from super-ordinates

For measuring the cooperation from super-ordinates four cooperation items were identified against each item there were four alternative responses.

Extent of cooperation	Weights
High	4
Medium	3
Low	2
Very low	1

'Cooperation from super-ordinates' scores of the respondents could range from 4 to 16, where 4 indicated little cooperation and 16 indicated maximum cooperation.

2.1.6 Cooperation from local leaders

Cooperation from local leaders was measured by assigning scores against three identified cooperation items according to extent of cooperation.

Extent of cooperation	Weights
High	4
Medium	3
Low	2
Very low	1

'Cooperation from local leaders' scores of the respondents could range from 3 to 12, where 3 indicated little cooperation and 12 indicated maximum cooperation.

2.1.7 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.

Extent of cooperation	Weights
High	4
Medium	3
Low	2
Very low	1

'Cooperation from farmers' scores of the respondents could range from 3 to 12, where 3 indicated little cooperation and 12 indicated maximum cooperation.

2.1.8 Use of the internet

Use of the 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:

Extent of use	Weights
Frequently	3
Occasionally	2
Rare	1
Never	0

Internet use scores of the respondents could range from 0 to 9, where 0 indicated no use and 9 indicated maximum use.

2.2 Measurement of the Problems Faced by Sub Assistant Agricultural Officers in Technology Transfer

The problems faced by SAAOs in technology transfer constituted the main focus of the study. It was measured by constructing eight selected items. Each SAAO was asked to indicate the extent of the problem faced by him/her against the 08 selected problem items by indicating one of the four alternative responses which were; high, medium, low, and not at all problem and scores were assigned as follow:

Extent of problem	Weights
High	3
Medium	2
Low	1
Not at all	0

The problems faced scores of a respondent ranged from 0 to 24, where 0 indicates no problem and 24 indicate the highest problems faced in technology transfer.

2.3 Comparative Problems Faced by Saaos in Technology Transfer

Eight (8) problems were considered for the study. SAAOs faced the problems at varying levels. The Severity of the problems was compared by the rank order based on the descending order of the Problem Faced Index (PFI). 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 the highest PFI.

3. RESULTS AND DISCUSSION

3.1 Characteristics of Sub Assistant Agricultural Officers

The characteristics profile of Sub Assistant Agricultural Officers has been presented in Table 1. Sub Assistant Agricultural Officers (SAAOs) had 63.60% medium academic accomplishment and 49.60% medium training exposure. The major proportion of the SAAOs (56.60%) had medium job satisfaction while 66.70 % of the SAAOs had high job performance. Data also indicate that SAAOs enjoyed medium category cooperation from the

super-ordinates as well as cooperation from local leaders. It was also found that the highest proportion of the respondents (82.90%) had high cooperation from farmers. Data also revealed that about half of the SAAOs (47.30%) had no access to the internet.

3.2 Problems Faced by Sub Assistant Agricultural Officers

Data presented in Table 2 indicate that the majority (70.50%) of SAAOs faced a high level of problem as compared to 27.90% and 1.60% SAAOs who faced a medium and low level of problem in technology transfer respectively.

3.3 Relationship of Selected Characteristics of Sub Assistant Agricultural Officers with the Problems Faced by Them in Technology Transfer

Spearman’s rank correlation coefficient (*r*) was computed in order to find out the relationship between the problems faced by SAAOs in technology transfer and their selected characteristics. The results of correlation have been shown in Table 3.

The findings indicated that training exposure of SAAOs had a significant negative relationship

Table 1. Salient features of the selected characteristics of SAAOs

Characteristics	Categories	SAAOs Percent (%)	Mean	SD
Academic accomplishment	Low(2-4)	20.90	6.21	1.96
	Medium (5-8)	63.60		
	High(9-11)	15.50		
Training exposure	No (0)	16.30	21.25	35.25
	Low (1-7)	22.50		
	Medium (8-30)	49.60		
	High(31-164)	11.60		
Job satisfaction	Low(6-11)	43.40	11.71	2.93
	Medium (12-17)	56.60		
Job performance	Low(11-13)	13.20	17.40	2.71
	Medium (14-17)	20.10		
	High(18-20)	66.70		
Cooperation from super-ordinates	Low (4-7)	5.40	11.81	2.56
	Medium (8-12)	50.40		
	High (13-16)	44.20		
Cooperation from local leaders	Low (3-5)	17.80	8.43	2.61
	Medium (6-9)	45.80		
	High (10-12)	36.40		
Cooperation from farmers	Low (3-5)	9.30	8.07	1.76
	Medium (6-9)	82.90		
	High (10-12)	7.80		
Use of the internet	No (0)	47.30	1.05	1.19
	Low (1-2)	35.60		
	Medium (3-4)	17.10		

Source: Field Survey, 2014

Table 2. Classification of SAAOs according to their problems faced in technology transfer

Categories	Respondents Percent	Mean	SD
Low problem (5-8)	1.60	18.94	4.23
Medium problem (9-16)	27.90		
High problem (17-24)	70.50		

Source: Field Survey, 2014

Table 3. Correlation between explanatory and focus variables

Focus variable	Explanatory variables	Co-efficient of correlation 'r'
Problems faced by 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 the internet	-0.253 ^{**}

NS = Not significant, * = Significant at 0.05 level of probability, ** = Significant at 0.01 level of probability

with the problems faced in technology transfer. Whilst about two-fifths of the respondents had no training and low training. The other three-fifths had medium but no high training which is similar to the findings of Tareque [6]. Transfer of technology is a difficult task and for that matter, SAAOs should be provided sufficient training [7].

There was a significant negative relationship between job satisfaction and problems faced in technology transfer. But the respondents were not highly satisfied according to their responses. These findings are similar to the findings of Rahman [8]. Job satisfaction is very much related to pay and allowance, office facilities, training facilities, social recognition which must be provided to ensure job satisfaction [9].

Cooperation from super-ordinates had no significant relationship with the problems faced in technology transfer although 50.40% of SAAOs had medium cooperation from super-ordinates. SAAOs generally had discussions with their high officials to identify the field problems and also seek recent agricultural information from them [10]. This meant that the higher the cooperation received from super-ordinates the lower the problem faced in technology transfer.

The statistical analysis showed that there was no significant relationship between cooperation from local leaders with the problems faced in technology transfer although about half (45.80%) of SAAOs enjoyed to medium cooperation from local leaders. It was identified that local leaders minimized the local and social problems as well as influencing farmers to receive information from SAAOs. According to Ozor and Nwankwo [11] reported 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 predominated.

Cooperation from farmers had no significant relationship with the problems faced in technology transfer although 82.90% of SAAOs had medium cooperation from farmers. It was revealed that farmers received innovative agricultural information and informed SAAOs about the existing problems faced in the field. According to Allahyari et al. [12], 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 the future.

Findings showed that there was a significant negative relationship between the use of the internet and the problems faced in technology transfer. As a result, if the use of the internet by SAAOs increased, knowledge and proper information about modern technology could increase. With the appropriate ICT resource, SAAOs could begin serving small and marginal farmers across their block with up-to-date technical and market information [13].

3.4 Comparative Problems Faced by Saas 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 the descending order of the PFI. The severity of the problems was compared based on the rank order (Table 4).

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". Ahmed [14]

Table 4. Problem faced index of the problems and their rank order (n=129)

Problems	Number of the SAAOs				PFI	Rank order
	Faced high problem (3)	Faced medium problem (2)	Faced low problem (1)	Faced no problem (0)		
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 the 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

Source: Field Survey, 2014

conducted a study on communication between the Department of Agricultural Extension (DAE) and the farmers of Bangladesh. Ahmed identified the following as problems in technology transfer: farmers' reliability on predominant farming practices, pre-understanding, misunderstanding, problems within the organization, communication on an irregular basis, overlooked of farmers' need, poor infrastructure and lack of sufficient inputs. A common mistake often made by extension agents in convincing farmers to adopt new technologies (which never works) relates to describing farmers as primitive and backward [15]. Extension officers' inability to disseminate information due to the problem of staff shortages, literacy level of the farmers and poor infrastructure in most of the rural communities result in non-adoption of improved technologies [16].

4. CONCLUSION

The result indicated that training exposure, job satisfaction and the use of the internet had a significant negative relationship with the problems faced in technology transfer. Training is essential for SAAOs that coaches how to disseminate technical information among the farmers. Job satisfaction plays a vital role in technology transfer by SAAOs as well as lessening problems faced by them. The Internet is the accumulation of scientific means and resources that provides an opportunity for SAAOs to improve their technical knowledge and disseminate information among the farmers. The study also indicated that SAAOs faced problems in technology transfer in terms of lack of required teaching aid and lack of transportation facilities. Teaching aid is important for transferring farm related information efficiently. Transportation facilities ease SAAOs to reach farmers' door timely with effective & meaningful information. This calls for required teaching aid (whiteboard, flipcharts, multimedia, tablet devices) and convenient transportation facilities (motor-bike) for SAAOs by the Department of Agricultural Extension (DAE).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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