Study on Block Supervisors' Extension Skills in Bangladesh
—A Case of Four *Upazilas* (Sub-District) in Kishorganj District—

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1. Introduction

The Department of Agricultural Extension (hereinafter, DAE) in Bangladesh is the main organization responsible for agricultural extension services in the rural areas. The Block Supervisors (hereinafter, BSs) are the grass-roots level agricultural extension personnel of the DAE mainly for transferring improved farming practices to the intended users, i.e. farmers. Each BS is responsible for providing agricultural extension services to 1,200 farm households. For this purpose, the DAE has invested huge resources to develop the BSs' extension skills so that BSs can motivate and help farmers to adopt new crop variety and improved farming practices leading to more agricultural production and income. A vigorous and well-organized agricultural extension service is also an imperative need for increasing production (Genio & Siddique, 1982). It is also assumed in relation to agricultural production that the work efficiency of farmers is dependent on the BSs' skills on providing extension services. Many farmers, however, were beyond the influence of the agricultural extension services in Bangladesh (R. Reynar & T. Bruening, 1996). Moreover, about 35% of farm information losses were found to take place in the transit between BSs and farmers due to lack of BSs' adequate skills on extension services (Babu & Sinha, 1999). So, the investment of huge resources by the DAE for developing BSs' extension skills could not ensure the need-based agricultural extension services to farmers (Agricultural Extension Manual, 1999). In Bangladesh, BSs have great variation in the total tenure of their services. But, it is still unknown that which category of BSs in relation to their service tenure showed lack of extension skills. Therefore, this study aims: i) to clarify the present levels of BSs' extension skill, referring to a case of Kishorganj district and ii) to estimate the relationships between BSs' service tenure and their extension skill levels.

2. Methodology

In this study, eight extension skills used as BSs' competence assessment by the DAE were selected from the DAEs' Agricultural Extension Manual (1999) such as 1) working with group, 2) organizing and running a field day, 3) organizing and running a demonstration, 4) assessing farmers' problems, 5) problem census, 6) extension planning, 7) work planning, and 8) monitoring and evaluation. A BS may become highly skillful if he shows equal skill levels on the following three basic aspects: i) planning, ii) communication, and iii) evaluation. In this study, BSs' skill levels were evaluated based on these three basic aspects. On the basis of nature, among the eight extension skills communication-based skills included working with group, organizing and running a field day, organizing and running a demonstration, assessing farmers' problems and problem census; planning-based skills included extension planning and work planning.

The necessary survey was conducted by face-to-face interview in Kishorganj district in Bangladesh during April 26th to May 25th in 2006. A set of questionnaires was carefully designed for data collection. Out of 13 *upazilas* (sub-district) in Kishoreganj district 4 *upazilas*, namely *Hossainpure, Pakundia, Kotiadi,* and *Kishorganj sadar* were selected as study area based on the criteria; 1) About half of the BSs in this district are recruited in these 4 *upazilas* and 2) Agricultural extension activities are much more than other *upazilas* because farmers can cultivate different crops through out the year as the selected 4 *upazilas* are non-flooded area. In

total 236 BSs were working in different blocks of Kishoreganj district at the time of survey. In the selected 4 *upazilas*, the total of 111 BSs posted in different blocks were purposively selected as a sample for the study. However, data were collected personally from 92 BSs who were available during the data collection. The survey collected such data on (1) BSs' characteristics such as age, service tenure and educational level and (2) levels of BSs' extension skill.

For data collection, extension skills of a BS were evaluated by 3 Upazila Agricultural Officers (hereinafter, UAOs) who supervised his/her daily activities, 3 skilful BSs senior to him/her, and 3 farmers from the block in his/her charge. UAOs and senior BSs always remain close contact with the BSs. Each UAO and senior BS were directly asked to evaluate the skill levels of all BSs in the assigned *upazila* from 0 point to 100 point using the following criteria: BSs who can provide proper extension services to the farmers will be given 100 point and who have no experience to provide extension services will be given 0 point. Meanwhile, farmers are not aware of all BSs in an *upazila* and so three farmers in a block were asked to evaluate the BS assigned to their block in accordance to the basic criteria, Encouraging farmers to talk to about their problem, Learning from farmers, Building the confidence of farmers, Discussing ideas and sharing options openly with farmers, Assisting farmers to undertake their own planning, and Providing solution to the farmers' problems. Thus, though a BS can be evaluated by 9 persons in total, the level of an extension skill for analysis was measured as an average of all scores of the three type evaluators.

Correlation analysis was conducted to estimate the relationships between BSs' extension skill levels and their service tenure. Regression analysis was conducted to know how much variance of BSs' extension skill levels could be explained by their service tenure. Furthermore, regression curves between BSs' extension skill levels and their service tenure were constructed to examine the "upward or down word nature of the relationships" between BSs' service tenures and their extension skill levels.

3. Characteristics of Block Supervisors (BSs)

Table 1 shows that the BSs' age ranged from 25 to 54 years with an average of 46 years (SD: 5.08) while their service tenure ranged from 2 to 34 years with an average of 23 (SD: 5.89). All of the BSs have agricultural diploma degree. Forty per cent of the BSs have the secondary school certificate while 47% and 13% have the higher secondary certificate and the bachelor degree respectively. After completing secondary school certificate degree a student may enter an Agricultural Training Institute (hereinafter, ATI) through passing an entrance examination. The ATI conducts pre-service

Table 1. Categorization of the BSs according to their selected characteristics in the study area

BSs' characteristics	Observed range	Category of BSs	No. of BSs	% of BSs	Mean	SD
Age (years)	25–54	Young (up to 40 years)	25	25.6	46.30	5.08
		Middle (41–50 years)	59	65.5		
		Old (51 years and above)	8	8.9		
Service Tenure (years)	2–34	Short (up to 10 years)	2	2.2	23.20	5.89
		Medium (11–20 years)	29	31.5		
		Long (21 years and above)	61	66.3		
Education of schooling (years)	10–14	SSC+Agr. diploma	36	40	11.47	1.37
		HSC+Agr. diploma	44	46.7		
		BSc+Agr. diploma	12	13.3		

Source: Authors' survey (2006).

training for diploma level agricultural technicians, who become BSs in the future. But 47% of the BSs entered ATI after completing their higher secondary certificate degree and only 13% have completed bachelor degree after completing their diploma degree from ATI. So, due to lack of higher education most of the BSs are unable to provide advanced technologies to farmers in an understandable way. So, from the beginning there is an institutional constraint in the way of BSs' extension skill formation. In this situation training is essential to improve BSs' extension skill levels.

4. Block Supervisors' Extension Skill Levels in the Study Area

Figure 1 shows that BSs in *Hossainpur* and *Kishorganj sadar upazilas* (sub-district) have low levels of exten-

sion skill compared to the other two *upazilas*, *Pakundia* and *Kotiadi*.

As shown in Table 2, the BSs have more than average skill level (62) for communication-based skills: working with group (mean: 67), organizing and running a field day (mean: 64), organizing and running a demonstration (mean: 66), assessing farmers' problem (mean: 64), and problem census (mean: 63). Planning-based skills such as extension planning (mean: 59), work planning (mean: 61), and monitoring and evaluation skill (mean: 61) have less than average skill level (62).

5. Relationships Between BSs' Service Tenure and Their Extension Skill Levels

As shown in Table 3, BSs' service tenure was significantly correlated with their extension skill levels such
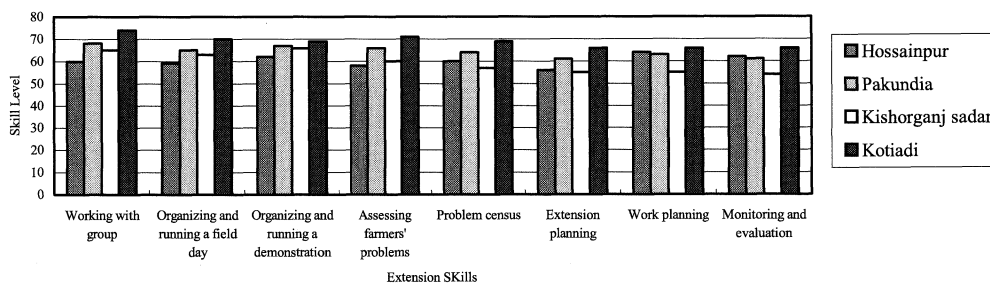

Figure 1. BSs' extension skill levels in the study 4 *upazilas* (sub-district)

Source: Authors' survey (2006).

Table 2. State of BSs' extension skill levels in the study area

Extension skills	Observed range (score)	Mean (score)	SD
Communication-based skills			
1. Working with group	46–84	67	8.93
2. Organizing and running a field day	39–81	64	8.55
3. Organizing and running a demonstration	43–83	66	7.85
4. Assessing farmers' problem	43–86	64	8.81
5. Problem census	45–82	63	8.40
Planning-based skills			
6. Extension planning	39–78	59	8.11
7. Work planning	36–83	61	9.19
Monitoring and evaluation skill			
8. Monitoring and evaluation	36–81	61	9.14

Note: Average of 8 extension skill Levels: 62
Source: Authors' survey (2006).

Table 3. Correlations between BSs' service tenure and their extension skill levels

Extension skills	Correlation coefficient (r)
Communication-based skills	
1. Working with group	−0.400**
2. Organizing and running a field day	−0.415**
3. Organizing and running a demonstration	−0.365**
4. Assessing farmers problems	−0.430**
5. Problem census	−0.452**
Planning-based skills	
6. Extension planning	0.581**
7. Work planning	−0.443*
Monitoring and evaluation skill	
8. Monitoring & evaluation	−0.474**

Note: ** significant at the 0.01 level, * significant at the 0.05 level.

Source: Result of authors' analysis (2006).

as skill on working with group, organizing and running a field day, organizing and running a demonstration, assessing farmers' problems, problem census, extension planning, work planning, and monitoring and evaluation. Although all the relationships were significant but small values of correlation coefficients indicated weak relationships between BSs' extension skill levels and their service tenures. Data also revealed that except BSs' extension planning skill, all the other seven extension skills showed significant negative relationships with their service tenures. It indicates that the longer service tenure of BSs never confirmed the consequent development of their extension skill. Extension planning skill only showed significant positive relationship with BSs' service tenure. It is likely because extension planning needs more theoretical knowledge than the other seven extension skills and senior BSs can gather more theoretical knowledge than junior BSs. On the other hand, except extension planning skill, the rest seven extension skills are closely related to the practical work in the field level. Thus, junior BSs can develop their skills better than senior BSs as the junior BSs have to do more fieldwork with farmers.

6. Nature of the Relationships Between BSs' Service Tenure and their Extension Skill Levels

Regression analysis was conducted to know the nature of relationships between BSs' service tenures and their extension skill levels. Quadratic method was followed for estimating the growth curve of extension skill levels alone with service tenures.

(1) Communication-based skills

The result of regression analysis indicates that 71 per cent ($R^2=0.714$) of the variance in BSs' skill on working with group could be explained by the service tenure. The estimated regression function is: $Y_1=47.5612+(2.4401)\ ST+(-0.0762)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=17$, where $b_1=2.4401$ and $b_2=-0.0762$ (Figure 2).

The result of regression analysis indicates that 64 per cent ($R^2=0.640$) of the variance in BSs' skill on organizing and running a field day could be explained by the service tenure. The estimated regression function is: $Y_2=47.6595+(2.4202)\ ST+(-0.0773)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=17$, where $b_1=2.4202$ and $b_2=-0.0773$ (Figure 3).

The result of regression analysis indicates that 66 per cent ($R^2=0.660$) of the variance in BSs' skill on organizing and running a demonstration could be explained by the service tenure. The estimated regression function is: $Y_3=46.9249+(2.4736)\ ST+(-0.0765)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=17$, where $b_1=2.4736$ and $b_2=-0.0765$ (Figure 4).

The result of regression analysis indicates that 49 per cent ($R^2=0.499$) of the variance in BSs' skill on assessing farmers' problems could be explained by the service tenure. The estimated regression function is: $Y_4=50.6303+(2.1805)\ ST+(-0.0734)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=15$, where $b_1=2.1805$ and $b_2=-0.0734$ (Figure 5).

The result of regression analysis indicates that 64 per cent ($R^2=0.649$) of the variance in BSs' skill on problem census could be explained by the service tenure. The estimated regression function is: $Y_5=47.7479+(2.5203)\ ST+(-0.0823)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=16$, where $b_1=2.5203$ and $b_2=-0.0823$ (Figure 6).

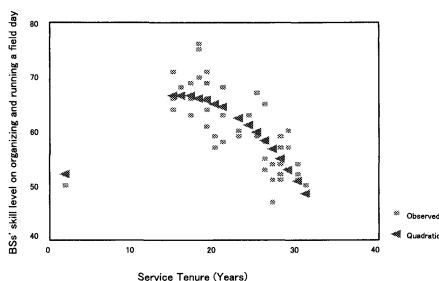Figure 2. BSs' skill on working with group and their service tenure

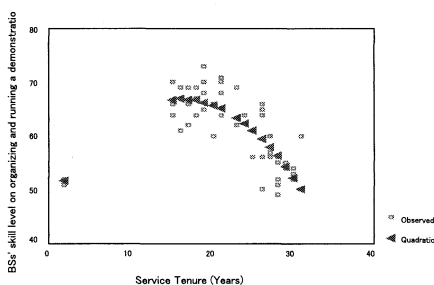Figure 3. BSs' skill on organizing and running a field day and their service tenure

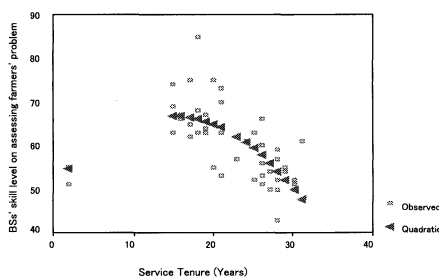Figure 4. BSs' skill on organizing and running a demonstration and their service tenure

Figure 5. BSs' skill on assessing farmers' problems and their service tenure
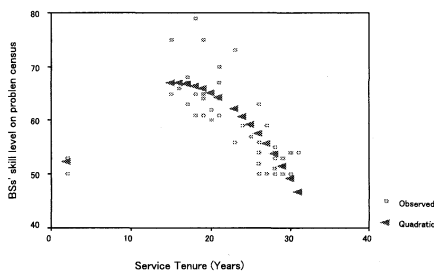

Figure 6. BSs' problem census skill and their service tenure

Thus, all the communication-based skills of the BSs showed a diminishingly increase up to 17 years service tenure and turn to the accelerating decrease (as b_2 values are negative) up to their retirement.

(2) Planning-based skills

The result of regression analysis indicates that 45 per cent ($R^2=0.449$) of the variance in BSs' skill on extension planning could be explained by the service tenure. The estimated regression function is: $Y_6=57.4560+(-0.8541)\ ST+(0.0427)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=11$, where $b_1=$ -0.8541 and $b_2=0.0427$ (Figure 7).

The result of regression analysis indicates that 62 per cent ($R^2=0.619$) of the variance in BSs' skill on work planning could be explained by the service tenure. The estimated regression function is: $Y_7=50.8235+(1.6627)\ ST+(-0.0544)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=15$ where, $b_1=1.662$ and $b_2=-0.0544$ (Figure 8).

In the case of planning-based skills, extension planning skill showed increasing trend, whereas work planning skill showed decreasing trend from 16 years service tenure.

(3) Monitoring and evaluation-based skill

The result of regression analysis indicates that 58 per cent ($R^2=0.581$) of the variance in BSs' skill on monitoring and evaluation could be explained by the service tenure. The estimated regression function is: $Y_8=52.3671+(1.3351)\ ST+(-0.0453)\ ST^2$. Inflection or turning point of the function is: $b_1/-2\ b_2=15$, where $b_1=1.3351$ and $b_2=-0.00453$ (Figure 9). So, monitoring and evaluation skill also showed decreasing trend from
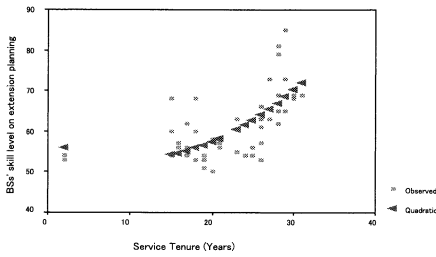
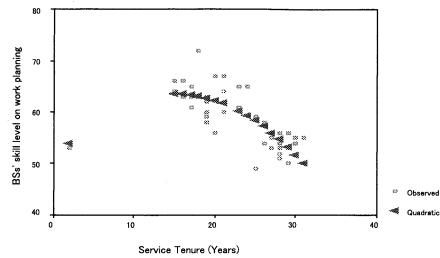Figure 7. BSs' extension planning skill and their tenure

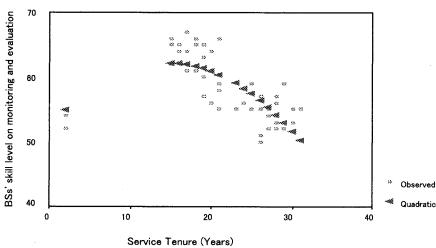Figure 8. BSs' work planning skill and their service service tenure

Figure 9. BSs' monitoring and evaluation skill and their service tenure

15 years service tenure of the BSs.

4. Conclusion

Development of BSs' extension skills is an important issue to provide need-based agricultural extension services to farmers. The findings of this study indicate that low skill levels of BSs regarding planning-based and monitoring and evaluation-based skills are the major challenges faced by the government agricultural extension services in Bangladesh. The dissimilarity among BSs' extension skill levels suggests that there may be significant implications for improving their planning-based and monitoring and evaluation-based skills, particularly in the area of developing appropriate training and supervisory strategies for the BSs.

Data reveal that except BSs' extension planning skill, all the other seven skills showed significant negative relationships with their service tenures. It indicates that the service tenure could not confirm the development of BSs' extension skill. Moreover, the regression curves reveal that the skill levels increase

up to 17 years service tenure and then decrease up to the retirement of the BSs. The finding indicates a difference between BSs of below 17 years service tenure and more than 17 years service tenure in their skill development process. So, in this situation the DAE should provide more efforts to develop the skill of the BSs with more than 17 years service tenure. In this regards the DAE should rethink the planning of providing training and making opportunities to practice learning by doing as a major part of skill development program designed for the BSs of more than 17 years service tenure.

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