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EFFECTIVENESS OF RESULT DEMONSTRATION IN TRANSFER OF BRRI dhan50

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ABSTRACT

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Effectiveness of result demonstration in transfer of technologies is well recognized but empirical measurement of effectiveness is not well focused. The purpose of this study was to ascertain the effectiveness of result demonstration in transfer of BRRI dhan50 and to explore the relationships between effectiveness of result demonstration in transfer of BRRI dhan50 and the selected characteristics of the farmers. The study was conducted in three villages Narikelbaria, Vupotipur and Chando of Jhenaidah Sadar upazilla under Jhenaidah district of Bangladesh. Data were collected from a sample of randomly selected 90 farmers from 1,165 farmers. The data were collected by using a structured interview schedule during 24 July 2014 to 20 August 2014. Pearson's Product Moment co-efficient of correlation (r) was computed in order to explore the relationships between the dependent and independent variables. The findings of the study demonstrated that result demonstration in transfer of BRRI dhan50 was found medium effective among 64.40 percent farmers as compared to low effective and high effective among 28.90 and 6.70 percent farmers respectively. Among twelve characteristics of the farmers, farm size, annual income, training exposure, innovativeness, personality and motivation had significant positive relationships with effectiveness of result demonstration in transfer of BRRI dhan50 which needs special consideration before arranging result demonstration.

Key words: effectiveness, result demonstration, BRRI dhan50, technology transfer

INTRODUCTION

There are a number of teaching methods used by extension service for teaching farmers latest technologies and improved farm practices. Some teaching methods are used for conceptual learning, some are used for skill learning and some are used for changing attitude. Result demonstration is a teaching method which provides farmers simultaneously conceptual learning, skill learning and changing attitude as well. Further it is a method of seeing, hearing and doing. Result demonstration is defined as a method of motivating the people for adoption of a new practice by showing its distinctly superior result. The demonstrations are conducted in the farm or home of selected individuals and are utilized to educate and motivate groups of people in their neighborhood (Ray 2011). This is done by comparing the improved technology and the old practice so that the farm community can see and judge the result of the technology with their own experience. Result demonstration originates from the term "believing by seeing". Farmers believe the benefits of innovation when they see its result.

Department of Agricultural Extension (DAE) is a government extension organization of Bangladesh. The principal function of DAE is to disseminate, educate and motivate farmers about latest technologies evolved from the agricultural research institutes. DAE plays a vital role to conduct result demonstrations in farmer's field for increasing knowledge, changing attitude and enhancing adoption of new rice varieties among farmers. BRRI dhan50 is a long, slender, white and aromatic rice variety that was released by Bangladesh Rice Research Institute (BRRI) in 2008. The other name of BRRI dhan50 is "Banglamoti". It is similar to "Basmati" rice of Pakistan and India, but its yield is double and the size of "Banglamoti" is finer than "Basmati" Rice (Anonymous 2012). The yield of this variety is approximately 6-6.5 ton/ha (Anonymous 2011). BRRI dhan50 is suitable for stress prone environment. It is the blessing for southern region farmers in Bangladesh. Jhenaidah district is located at the southern part of Bangladesh. The DAE, Jhenaidah started result demonstration programs on BRRI dhan50 since 2010. The main objectives of result demonstration on BRRI dhan50 were to increase knowledge, change attitude and enhance adoption of BRRI dhan50 by the farmers of Jhenaidah district. But the extent to which result demonstration program achieves its objectives was not examined systematically. Thus, the researcher was intended to undertake this piece of research entitled, "effectiveness of result demonstration in transfer of BRRI dhan50". The present study was undertaken to answer the following research questions:

- What was the extent of selected characteristics of the Boro rice farmers that made result demonstration program effective in transfer of BRRI dhan50?
- To what extent the result demonstration program was effective among farmers in transfer of BRRI dhan50?
- What were the relationships between the selected characteristics of the farmers and effectiveness of result demonstration program in transfer of BRRI dhan50?

METHODOLOGY

Population and sampling design

To achieve the objectives of the present research, data were collected from Jhenaidah Sadar upazila. Considering the result demonstration program practiced or observed by the farmers, Narikelbaria, Vupotipur and

Chand villages under Narikelbaria and porahati unions of Jhenaidah Sadar upazilla was purposively selected as the locale of the study. The total number of the listed Boro farmers (1,165) in the study area was considered as the population of the study. According to Yamane's (1967) formula, sample size was determined as 90. In calculating sample size from the formula, 10% precision level, 50% degree of variability and value of $Z = 2.57$ at 95% confidence level were chosen. Then 90 farmers were selected by using simple random sampling method. Data were collected through face-to-face interview by using structured interview schedule from the selected respondents of the study area during 24 July 2014 to 20 August 2014. The methodology followed for measuring the dependent and independent variables are described below:

Measurement of independent variables

The selected characteristics of the Boro farmers include: age, education, farming experience, training exposure, farm size, annual income, organizational participation, extension media contact, innovativeness, cosmopolitanism, motivation and personality which were considered as independent variables of the study. The age of a respondent was measured in terms of actual years from her/his birth to the time of interview. Level of education of a respondent was measured on the basis of classes s/he had passed in formal educational institution. Farm size of the respondent was measured as the size of his farm (including rice and other crops) on which s/he continued her/his farm practices during the period of study. Annual income of a respondent was measured in thousand taka on the basis of previous year income by active members of a household from agriculture (rice, wheat, jute, mustard, pulse, vegetables, fruits and flower), livestock, poultry, and fisheries and non-agricultural sector (service, business, labor and other family members' income). In this study, farming experience score of a respondent was measured by the number of years of a respondent had been involved with rice cultivation in her/his entire life. Extension media contact score of the farmers was determined by summing the scores obtained from all the 16 selected extension media by using a four-point (0-3) rating scale. The extension media contact score could range from 0 to 48; where '0' (zero) indicates no extension media contact and '48' indicates very high extension media contact. Agricultural training score of a respondent was measured by the number of days that a respondent had received agricultural training in her/his entire life. Organizational participation of a respondent was measured on the basis of nature of membership in the concerned organizations by using a four-point (0-3) rating scale. Cosmopolitanism of a respondent was measured in term of her/his nature of visits to ten different places external to her/his own social system by constructing a four-point (0-3) cosmopolitanism scale. Innovativeness of a respondent was measured on the basis of the period of adoption of 15 improved agricultural technologies by developing a five-point (0-4) innovativeness scale. For determining the respondent's personality, ten independent characteristics were carefully selected to develop four-point (1-4) personality scale. For determining the respondent's motivation, seven independent statements were carefully constructed to develop four-point (0-3) motivation scale.

Measurement of dependent variable

Effectiveness is defined as the degree to which objectives are achieved and the extent to which targeted problems are solved (BusinessDictionary.com, undated). Effectiveness of result demonstration in transfer of BRRi dhan50 was the dependent variable of this study. The objectives of the result demonstration program were to increase knowledge, attitude and adoption of the farmers regarding BRRi dhan50 cultivation. These knowledge, attitude and adoption dimensions were used for measurement of effectiveness of result demonstration program. The effectiveness of result demonstration program in transfer of BRRi dhan50 was measured by combining and averaging knowledge, attitude and adoption scores of the farmers and expressed as percentage. The effectiveness of result demonstration in transfer of BRRi dhan50 for each respondent was calculated by using the following formula:

$$ES = \frac{1}{3} \times \left(\frac{O_K}{P_K} + \frac{O_{At}}{P_{At}} + \frac{O_{Ad}}{P_{Ad}} \right) \times 100$$

Here, ES= Effectiveness score, O_K = Observed knowledge score, P_K = Possible knowledge score,

O_{At} = Observed attitude score, P_{At} = Possible attitude score, O_{Ad} = Observed adoption score and

P_{Ad} = Possible adoption score

Each of the dimensions was measured by developing concerned scale. Knowledge on BRRi dhan50 of a respondent was measured by asking 10 questions related to BRRi dhan50 cultivation which could range from 0 to 20. Attitude was measured by using Likert-type scale which contained 10 statements out of which 5 statements were positive and 5 statements were negative. Scores were assigned to these five alternate responses as 5, 4, 3, 2, and 1, respectively for each positive statement. In case of negative statements, the reverse scores were assigned. Attitude score of a respondent could range from 10 to 50. The adoption of BRRi dhan50 score was calculated by multiplication of score of area coverage and score of time. Area coverage score was measured on the basis of percentage of land allotted for BRRi dhan50 and then score of 0, 1, 2, 3 and 4 were given for 0.00%, 1-25%, 26-50%, 51-75% and 76-100%, respectively. For determining time score the respondent was asked how many years s/he had been cultivating BRRi dhan50 and then score of 0, 1, 2, 3 and 4 were given for

no cultivation, up to 1 year, >1 to 2 years, >2 to 3 years and \geq 4 years cultivation. So, the adoption of BRRI dhan50 score of a respondent could range from 0 to 16. Thus, the values of ES could range from 6.60 to 100.00%, where 6.60% indicates very low effectiveness and 100.00% indicates very high effectiveness of result demonstration in transfer of BRRI dhan50.

RESULTS AND DISCUSSION

Selected characteristics of the farmers

In this section, the findings on the farmers' selected characteristics have been discussed and a summary profile of these characteristics is presented in Table 1. Table 1 indicates that an overwhelming majority (83.40%) of the respondents belonged to young to middle aged categories. The highest proportions of the respondents were illiterate (53.34%) and owner of small farm (70.00%). The findings indicate that most of the farmers in the study area were in low to medium income group (82.30%) and had medium to high farming experience (81.20%).

Table 1. A summary profile of the selected characteristics of the farmers

Characteristics	Range		Respondents			Mean	S.D
	Possible	Observed	Category	Number	Percent		
Age	-	27-58	Young (Up to 35 yrs.)	23	25.60	41.17	8.58
			Middle (36-50 yrs.)	52	57.80		
			Old (Above 50 yrs.)	15	16.70		
Education	-	0-12	No education (0)	48	53.34	3.04	3.35
			Primary level (1-5)	22	24.44		
			Secondary level (6-10)	19	21.11		
			Above Secondary (>10)	1	1.11		
Farm size	-	0.28-2.60	Small (0.21-1.0 ha.)	63	70.00	0.92	0.49
			Medium (1.01 -3.0 ha.)	27	30.00		
Annual income	-	40-220	Low (Up to 60)	32	35.60	86.60	45.96
			Medium (61-120)	42	46.70		
			High (Above 120)	16	17.80		
Farming experience	-	7-38	Low (Up to 9 yrs.)	17	18.90	17.67	8.33
			Medium (10-18 yrs.)	32	35.60		
			High (Above 18 yrs.)	41	45.60		
Extension media contact	0-48	9-39	Low (Up to 10)	27	30.00	13.91	5.35
			Medium (11-20)	57	63.30		
			High (Above 20)	6	6.70		
Training exposure	-	0-7	No training (0 days)	23	25.60	1.72	1.58
			Short (1-3 days)	58	64.40		
			Medium (4-7 days)	9	10.00		
Organizational participation	0-30	2-21	Low (Up to 10)	76	84.40	6.21	4.21
			Medium (11-20)	12	13.30		
			High (Above 20)	2	2.20		
Cosmopolitaness	0-30	0-16	Very low (Up to 6)	40	44.44	8.63	3.83
			Low (7-10)	32	35.55		
			Medium (Above 10)	18	20.00		
Innovativeness	0-60	3-41	Low (Up to 15)	41	45.60	15.83	9.42
			Medium (16-30)	47	52.20		
			High (Above 30)	2	2.20		
Personality	1-40	9-35	Weak (Up to 15)	21	23.30	20.02	5.89
			Medium (16-30)	59	65.60		
			Strong (Above 30)	10	11.10		
Motivation	1-21	0-23	No motivation (0)	12	13.33	9.57	4.92
			Low (1-7)	21	23.33		
			Medium (8-14)	51	56.67		
			High (Above 14)	6	6.67		

An overwhelming majority (93.30%) of the respondents had low to medium extension media contact whereas almost two-third (64.40%) of the respondents had short training exposure. It was observed that an astounding majority (97.70%) of the respondent had low to medium organizational participation. On the other hand, the highest proportion (79.99%) of the respondents was very low to low cosmopolite. The findings reveal that majority (97.80%) of the respondents of the study area were innovative from less to moderate extent while

majority (65.60%) of the respondents had medium personality. The findings also reveal that four-fifth (80.00%) of the respondents in the study area had low to medium motivation.

Effectiveness of result demonstration in transfer of BRR1 dhan50

Three dimensions were used for measurement of effectiveness of result demonstration viz. (a) knowledge on BRR1 dhan50 cultivation (b) attitude of farmers towards BRR1 dhan50 (c) adoption of BRR1 dhan50. The findings are discussed into four sub-sections as follows:

(a) Knowledge on BRR1 dhan50 cultivation

The observed knowledge score of the respondents ranged from 2 to 20 with mean and standard deviation of 9.98 and of 3.92, respectively. On the basis of knowledge scores, the respondents were classified into three categories as shown in Table 2.

Table 2. Distribution of the respondents according to their knowledge on BRR1 dhan50 cultivation

Categories	Frequency	Percent	Mean	SD
Poor (Up to 8)	26	28.90	9.98	3.92
Medium (9-14)	57	63.30		
High (Above 14)	7	7.80		
Total	90	100.00		

The findings revealed that the highest proportion (63.30%) of the farmers had fair knowledge on BRR1 dhan50 cultivation. Uddin (2008) also found almost similar finding in his study. Possession of comparatively medium knowledge on BRR1 dhan50 cultivation is likely to be contributory to the effectiveness of result demonstration in transfer of BRR1 dhan50.

(b) Attitude of farmers towards BRR1 dhan50

In this study 'Likert Scale' was used to determine the attitude of farmers towards BRR1 dhan50. The observed attitude scores of the respondents ranged from 10 to 45 with a mean and standard deviation of 35.52 and of 7.83, respectively. On the basis of attitude scores, the respondents were classified into three categories as shown in Table 3.

Table 3. Distribution of the respondents according to their attitude towards BRR1 dhan50

Categories	Frequency	Percent	Mean	SD
Low favorable	9	10.00	35.52	7.83
Moderate favorable	30	33.33		
High favorable	51	56.67		

The findings reveal that an overwhelming majority (90%) of the respondents had moderate favorable to high favorable attitude towards BRR1 dhan50 cultivation. This might be for their easy access to quality seed, suitable soil and farming environment, higher yield and profit of cultivating this variety. Besides, observing other farmers successful farming is also responsible to build up favorable attitude towards BRR1 dhan50 cultivation. Therefore, it can be assumed that majority of the farmers of the study are showed interest to participate in BRR1 dhan50 cultivation.

(c) Adoption of BRR1 dhan50

The adoption of BRR1 dhan50 scores was calculated by multiplication of score of area coverage and score of time. The observed adoption scores of the respondents ranged from 0 to 9 with a mean and standard deviation of 2.79 and of 2.68, respectively. On the basis of adoption scores, the respondents were classified into four categories as shown in Table 4.

Table 4. Distribution of the respondents according to their adoption score

Categories	Frequency	Percent	Mean	SD
No adoption	28	31.10	2.79	2.68
Very low adoption	24	26.70		
Low adoption	18	20.00		
Medium adoption	20	22.20		
Total	90	100.00		

Data presented in Table 4 indicate that only 22.20 percent of the respondents had medium adoption of BRR1 dhan50. A mentionable percent (31.10%) had no adoption of BRR1 dhan50 while 46.70% of the respondents had very low to low adoption of BRR1 dhan50. In the study area, result demonstrations had been arranged for last four years. Most of the respondents were passing early stages of innovation-decision process. For this reason, rate of adoption was still low.

Effectiveness of result demonstration

The effectiveness of result demonstration in transfer of BRRI dhan50 was measured by averaging knowledge, attitude and adoption scores of the farmers and expressed as percentage. Observed effectiveness of result demonstration scores of the farmers ranged from 11.66 to 74.16% with a mean and standard deviation of 44.29 and of 16.10, respectively. On the basis of effectiveness of result demonstration scores, the respondents were classified into three categories as shown in Table 5.

Table 5. Distribution of the respondents according to the effectiveness of result demonstration in transfer of BRRI dhan50

Categories	Frequency	Percent	Mean	SD
Low effective (Up to 33.33%)	26	28.90	44.29	16.10
Medium effective (33.34-66.66%)	58	64.40		
High effective (>66.66 %)	6	6.70		
Total	90	100.00		

The findings indicate that result demonstration program in transfer of BRRI dhan50 was found medium effective among almost two third (64.40%) of the farmers in the study area. Bhuiyan (2006) also found similar finding in his study. During measuring of effectiveness of result demonstration, it was noticed that though knowledge on BRRI dhan50 and attitude towards BRRI dhan50 of the farmers were quite enthusiastic but their adoption rate was not comprehensive and satisfactory. So, there should be needed more visionary and stimulating extension works to increase adoption of BRRI dhan50 by the farmers at the selected study areas.

Relationships between the selected characteristics of the Boro rice farmers and effectiveness of result demonstration in transfer of BRRI dhan50

An attempt was made to find out the relationships between the selected characteristics of the respondents and effectiveness of result demonstration in transfer of BRRI dhan50 which is shown in Table 6.

Table 6. Co-efficient of correlation of the selected characteristics of the farmers and the effectiveness of result demonstration in transfer of BRRI dhan50

Dependent variable	Independent variables	Correlation coefficient values (r)
Effectiveness of result demonstration in the transfer of BRRI dhan50	Age	0.027
	Level of education	0.106
	Farm size	0.687**
	Annual family income	0.601**
	Farming experience	0.096
	Extension media contact	0.132
	Training exposure	0.617**
	Organizational participation	0.088
	Cosmopoliteness	0.113
	Innovativeness	0.432**
	Personality	0.453**
	Motivation	0.765**

**Significant at 0.01 level

Table 6 shows that among the twelve selected characteristics of the respondents, farm size, annual family income, training exposure, innovativeness, personality and motivation had significant positive relationship with effectiveness of result demonstration in transfer of BRRI dhan50. Large farmers get more scope than the small farmers to gain knowledge, form attitude and adopt innovations as they can invest land for trial as well as attract extension agents which ultimately increase effectiveness of result demonstration in transfer of BRRI dhan50. Bhuiyan (2006) and Roy *et al.* (2008) observed similar findings in their respective studies. Economic factors are the important determinants for adoption of innovation. Farmers who have comparatively higher annual income can bear costs and take risk and uncertainty in case of adoption of innovation. Training exposure of the farmers had a positive significant relationship with the effectiveness of result demonstration in transfer of BRRI dhan50. Training exposure plays a vital role in acquiring knowledge, forming attitude which ultimately enhances adoption of innovations. The result reflects that effectiveness of result demonstration in transfer of BRRI dhan50 was observed better among those farmers who had higher level of innovativeness. Higher level of innovativeness enables farmers to gather knowledge, form positive attitude, and prompt them to adopt new practices which eventually increase effectiveness of result demonstration. Effectiveness of result demonstration in transfer of BRRI dhan50 was observed more effective among those farmers who had better personality. According to Rogers (1995), the decision to adopt an innovation is predicted, in part, by the perceived attributes of an innovation, and the personality of the potential innovator. Consumer innovativeness is strongly influenced

by personality traits (Hussain and Rashidi, 2005). Better personality influences individual to learn and adopt innovations than persons who have weak personality. Motivation makes individuals active to take and implement innovation-decision which might affect result demonstration effective among those farmers who had higher level of motivation towards BRRi dhan50. According to Saeed *et al.* (2014), functional needs, the motivations to get functional benefits from the new product and to create more utility, is at the top for adoption of innovations.

CONCLUSION

Farm size, annual income, training exposure, innovativeness, personality and motivation of the farmers had significant positive relationship with effectiveness of result demonstration in transfer of BRRi dhan50. Therefore, it may be concluded that any arrangement made to increase those characteristics of the farmers would ultimately increase effectiveness of result demonstration. Knowledge and attitude of the farmers were impressive but adoption rate was not satisfactory which hindered effectiveness of result demonstration in transfer of BRRi dhan50. To overcome the situation, more training followed by result demonstrations should be arranged by DAE. This will enable farmers about understanding benefits of cultivating aromatic rice like BRRi dhan50. Besides, to increase motivation of the farmers towards BRRi dhan50, grass root level extension workers of DAE should enhance their contact with farmers through individual and group contact method like farm and home visit, group discussion, field day etc. Frequent contacts with farmers will remove mental uncertainty of the farmers towards BRRi dhan50 which virtually help to set-up mind to adopt BRRi dhan50.

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