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A scale to measure the role performance of subject matter specialists of Krishi Vigyan Kendras

PANKAJ KUMAR and PRABHJOT KAUR

Department of Extension Education
Punjab Agricultural University, Ludhiana 141004 Punjab
Email for correspondence: shelleypankaj@pau.edu

ABSTRACT

Krishi Vigyan Kendras (KVKs) sponsored and funded by ICAR have range and capacity needed to find solutions to existing and emerging challenges posed to agriculture development. No scale is present to measure the role performance of the subject matter specialists (SMSs) of Krishi Vigyan Kendras. The Likert technique of scale construction was found to be most suitable for the construction of this scale. In the present study role of SMSs was divided into 11 major segments viz organization of trainings, on-farm trials, frontline demonstrations, programme planning and execution, subject matter authority, communication and feedback, evaluation, management, services and supplies, office work and reporting and supporting activities. A total of 110 items were finalized for the pre-testing of the scale. For pre-testing the role items were administered to the 40 respondents who had worked as SMSs at KVKs sometime in past. All possible role items were measured on five point continuum in terms of must do, should do, may or may not do, should not do and must not do and assigning them score of 5, 4, 3, 2 and 1 respectively. After applying the 't' test 96 items whose 't' value was more than 1.75 were retained for final scale. This scale was tested for reliability and a reliability coefficient of 0.891was achieved. Content validity of the scale was established. The scale developed on role performance would make clear the different roles performed by SMSs and in this way a better role performance of the SMSs in KVKs could be achieved.

Keywords: Role performance; subject matter specialists; Krishi Vigyan Kendras; Likert scale

INTRODUCTION

The agricultural development strategy pursued in the country is recognized and appreciated world over. The integration of agricultural research with quality education and a properly planned extension education system has been one of the fundamental foundations of this developmental strategy which also led to revolution in many other sectors of agriculture and allied enterprises. Indian Council of Agricultural Research has developed a strong network of Krishi Vigyan Kendra (KVKs) in the country to disseminate agricultural technologies and innovations (Kumar et al 2009). In the beginning the mandate of KVKs was

confined only to provide skill based training to the farmers, farm women and rural youth in agriculture as a whole and other allied vocations such as apiculture, mushroom cultivation etc. With the consolidation of other frontline extension projects of the Council during the Eighth Five Year Plan the mandate was enlarged and revised to take up on-farm testing, long term vocational trainings, in-service trainings for grass root extension workers and frontline demonstrations on major cereal, oilseed and pulse crops and other enterprises (Venkatasubramanian et al 2009). In addition to this various extension activities such as field demonstrations, field days, farmers' fairs, exhibitions, radio/TV talks, film shows, publication of farm literature etc are also carried out for creating awareness and to disseminate the latest agricultural technology. Krishi Vigyan Kendra an emerging extension model ultimately aims at the socialization of agro-technology with a view to uplift the socio-economic condition of the people with the help of eco-friendly agro-technology in a sustainable manner along with a system approach (Pradhan and Mukherjee 2012). The subject matter specialists (SMSs) of KVKs are responsible for successful execution of the mandates of KVKs. Although these mandates are clear but different roles performed by SMSs to execute the mandates most of the time vary greatly due to one or the other factor. Keeping these points under consideration it was decided to construct a scale to measure the role performance of SMSs of KVKs.

METHODOLOGY

Likert technique was used to construct a scale to measure the role performance. The role items were collected by consulting the experts, literature, reports etc. These items were classified into 11 major role segments viz organization of trainings, on-farm trials, frontline demonstrations, programme planning and execution, subject matter authority, communication and feedback, evaluation, management, services and supplies, office work and reporting and supporting activities. All possible role items were measured on five point continuum in terms of most often, often, sometimes, seldom and never and assigned the score of 5, 4, 3, 2 and 1 respectively. These items were pre-tested among the faculty who had worked in the KVKs sometimes earlier. Reliability of the scale was worked out by using the split half technique. The content validity of the scale was ensured with the help of experts' opinion.

RESULTS and DISCUSSION

Functioning of the KVKs was thoroughly analysed by consulting the administrators, SMSs of KVKs, literature, annual reports of KVKs etc. After analysing the functioning the whole work of KVKs was divided into eleven major dimensions which were termed as role segments. These eleven role segments were organization of trainings, on farm trials, frontline demonstrations, programme planning and

execution, subject matter authority, communication and feedback, evaluation, management, service and supplies, office work and reporting and supporting activities.

As nature of role performance is different from the attitude therefore while consulting the all possible scale construction techniques it was considered that the Likert technique of scale construction was most appropriate for the construction of role performance scale.

Collection of items: The various items under each component were formulated after thorough observation of the functioning of the KVKs. A vast review of literature on KVKs was also carried out and a list of 125 items was prepared. The items thus prepared were screened further for their appropriateness, simplicity, clarity and correctness based on procedure advocated by Edwards (1969). These items were discussed with 10 experts of Punjab Agricultural University, Ludhiana and the list was finalized. So out of 125 items collected initially 110 items were retained after screening.

Selection of respondents for pre-testing of scale: A list of the scientists was prepared who had worked in the KVKs at least for two years. From this list 40 respondents were selected randomly for testing of the scale.

Scientists' response: The scientists' response/rating was primarily used to ascertain the aspects and items under various categories. The selected 110 statements were administered to 40 selected scientists who were asked to give response on five point continuum- most often, often, sometimes, seldom and never. A score of 5, 4, 3, 2 and 1 were given to most often, often, sometimes, seldom and never respectively. Response from all the 40 selected scientists was received.

Item analysis and selection of items for the final scale: The responses obtained from scientists were tabulated and were utilized for the calculation of 't' values under each item. The scoring of response was done for each statement and scores were summed up for all statements for every individual respondent. 25 per cent of the subjects with the highest total score and 25 per cent of the subjects with the lowest total score were taken which provided the criterion groups to evaluate the individual statement. The 't' value for each item was worked out using the formula:

$$t = \frac{\bar{X} - \bar{X}}{\sqrt{\frac{\Sigma(XH-XH)+\Sigma(XL-XL)}{2a}}}$$

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{s_H^2}{n_H} + \frac{s_L^2}{n_L}}}$$

where

$\bar{X}_H$ = the mean score on a given statement for the high group

$\bar{X}_L$ = the mean score on the same statement for the low group

s_H^2 = the variance of the distribution of responses of the high group to the statement

s_L^2 = the variance of the distribution of responses of the low group to the statement

n_H = the number of subjects in the high group

n_L = the number of subjects in the low group

The value of 't' is a measure of the extent to which a given item differentiates between the high and low groups. Based on the table value (1.75) any 't' value equal to or greater than 1.75 was considered as indicating the average response and which differentiates high and low group statements significantly. So the items/statements with 't' value of equal or greater than 1.75 were selected for the scale items. Thus 96 out of 110 statements were selected for inclusion in the final scale on the basis of their 't' values (Table 1).

Reliability of the scale: Reliability is the precision of the scale constructed for any purpose. It is otherwise called the extent to which repeated measure produces the same results. In any social science research newly constructed scale has to be tested for its reliability before it is used. In the present study the reliability of role expectation/perception scale was determined by split-half method. The scale was administered to 40 respondents in the non-sample area. The scale was divided into two halves based on odd and even numbered statements and the two sets of scores obtained from the same respondents were correlated.

The Spearman Brown prophecy formula is used to estimate the reliability coefficient of the entire test/scale. If the two halves of test/scale are not parallel the Spearman Brown prophecy formula is:

$$\rho_{XX'} = 2\rho_{YY'} / 1 + \rho_{YY'}$$

Gebotys (2003)

The reliability test value was calculated as 0.891 and the scale was found to be reliable as the reliability value was more than 0.75.

Validity of the scale: In the present study content validity of the scale was worked out. The scale items selected for inclusion in the scale were based on extensive discussion with experts and review of literature.

Table1. Role items selected under different role segments for role performance scale

Item (#)	Role item	't' value
Organization of trainings		
1.	Assessment of the training needs of the farmers of the district	8.14
2.	Careful selection of the trainees for a training programme	6.49
3.	Developing need based curriculum	3.674
4.	Use of proper AV aids	3.320
5.	Preparing and distributing the training material amongst farmers and extension staff	5.02
6.	Delivering well prepared lectures to the trainees	1.25
7.	Organizing discussion session for the better understanding of subject matter	3.29
8.	Arranging field trips to the demonstration sites, experiment fields and other relevant places	10.29
9.	Measuring the impact of training programme	5.83
10.	Modifying training programme on the basis of feedback received on-farm trials	4.24
11.	Finding out location specific problems	5.66
12.	Carrying out experiment on his own initiation in the field which is neglected one	5.69
13.	Stating the objectives of the research clearly	7.20
14.	Laying out the experiments properly	6.0
15.	Critically observing and recording data of trials	5.75
16.	Applying appropriate statistical tools to analyse the data	5.27
17.	Carrying out research on the farmers' fields to refine the research	10.09
18.	Publishing the findings of the on-farm research trials	12.75
Frontline demonstrations		
19.	Introducing new technologies through progressive farmers	4.81
20.	Demonstrating improved technologies of agriculture on the farmers' fields	3.10
21.	Developing a comprehensive plan for organizing the demonstrations	4.67
22.	Proper selection of site for demonstration	2.58
23.	Conducting survey to ascertain the socio-economic conditions of farmers and the farming situations under which the crop is grown	1.80
24.	Conducting survey to find the existing level of adoption of technologies and the productivity	8.57
25.	Analysing agro-economic constraints of the representative farmers sample to identify the critical factors/inputs for the adoption of technologies	8.57
26.	Organizing a orientation training for all the participating individuals/agencies about all aspects of technologies and methodologies to be demonstrated	4.33
27.	Informing all participating agencies/persons well in advance about the date and venue prior to the launching of the demonstrations	4.43
28.	Supervising and guiding all important farm operations carried out by the demonstrating farmers	4.43
29.	Organizing field days	3.67
30.	Keeping records of various expenses incurred and yields for deriving cost benefits	5.31
31.	Monitoring on continuous and regular basis through visits to FLD plots, recording observations, getting the feedback from the farmers and extension workers	4.30
32.	Facilitating the monitoring teams comprising of senior scientists/officers of the ICAR system/SAUs	3.59

33.	Documenting, reporting and circulating the results of demonstration among all the concerned personnel and demonstrating farmers	6.74
34.	Publishing the success stories in popular extension journals, newspapers and magazines	3.59
Programme planning and execution		
35.	Collecting and analyzing the facts pertaining to the agricultural production problems of the farmers	4.67
36.	Drawing up of a suitable plan of work	8.57
37.	Implementing or helping in implementation of plan of work	2.50
38.	Reconsidering the plan in the light of results of evaluation of the programme	3.67
39.	Development of strategic research and extension plan of the district	5.66
Subject matter authority		
40.	Maintaining close association/links/contacts with parent department	6.0
41.	Keeping close contacts with other technical departments	4.70
42.	Keeping oneself professionally up to date	2.69
43.	Selecting, interpreting and making solutions to the specific problems	3.15
44.	Attending professional meetings, conferences, seminars and workshops	4.74
45.	Attending refresher training courses to update the subject matter knowledge	4.74
46.	Reading periodicals, journals, magazines and other literature to know the latest research developments	2.32
Communication and feedback		
47.	Identifying the key communicators	2.28
48.	Using key communicators in the diffusion and adoption of agricultural innovations	1.94
49.	Giving feedback regarding the non-availability of certain inputs which hinder the adoption of new technology	3.21
50.	Giving feedback regarding cultural difficulty and attitude of farmers in adoption of new technology	2.28
51.	Informing the insect/pest outbreaks/attacks and other calamities which need emergency reporting to concerned authorities	1.75
Evaluation		
52.	Actively involving himself in evaluation of programme	2.97
53.	Self-evaluation	3.54
54.	Evaluating the different individual activities of KVK	3.32
55.	Impact analysis of KVK	8.50
Management		
56.	Observing the norms and standards set by the organization/authorities	3.54
57.	Developing and maintaining good relations with superiors, subordinates and associates	2.25
58.	Developing contact with progressive farmers	3.21
59.	Keeping informed all concerned associates about what has been decided at organizational level	3.67
60.	Establishing working relationships with small and marginal farmers and financial institutions	4.12
61.	Effectively supervising the execution of the plan	3.83
Services and supplies		
62.	Helping farmers in marketing the produce	5.69

63.	Providing services in collecting soil and water samples	7.06
64.	Providing diagnostic services	3.10
65.	Providing specialized services about seed multiplication programme	4.63
66.	Submission of indents well in time to ensure the supply of inputs	4.63
67.	Ensuring the delivery of technical inputs to farmers before planting/sowing season	5.31
68.	Helping farmers in difficult situation eg pest attack, epidemics, draught, flood, etc	3.21
69.	Collaborating with other departments such as Markfed, IFFCO, KRIBHCO, Dept of Agric etc providing services to farmers	8.57
70.	Paying advisory visits to farms and homes	3.35
71.	Launching a special programme in case of epidemic	2.45
72.	Procuring and supplying fruit plants, seed etc as per the demand of the farmers	2.47
73.	Joint touring with agriculture extension officers for the solution of agricultural problems	5.31
74.	Providing technical guidance and other specialized services to the farmers in establishing individual projects	5.48
Office work and reporting		
75.	Preparation and timely submission of various periodic reports prescribed by university and Zonal Project Directorate, ICAR	3.67
76.	Preparing and submitting special reports like survey report, FLD report as per requirement	3.10
77.	Attending visiting farmers and other visitors and dealing politely with them	2.45
78.	Attending the visits of the superiors	1.97
79.	Ensuring timely replies to the correspondence from superior officers, farmers and other departments	2.45
80.	Ensuring timely submission of financial statements to authorities concerned	6.0
81.	Assisting office in the preparation of budget and the other day to day work	3.10
82.	Proper use of vehicle according to instructions/guidelines	3.21
Supporting activities		
83.	Arranging ex-trainee meet	4.12
84.	Arranging film shows for farmers	4.58
85.	Participating in short duration trainings/workshops organized by different agencies	3.21
86.	Holding agricultural fairs	3.08
87.	Organization of exhibitions	4.74
88.	Arranging farm tours	5.66
89.	Organizing campaigns to solve the problems of masses	3.29
90.	Assisting the Programme Coordinators in holding SAC meetings	4.12
91.	Delivering invited lectures	3.67
92.	Delivering TV/radio talks	3.09
93.	Publishing the research/extension publications	9.80
94.	Holding the special days like world food day, world environment day etc	3.80
95.	Organizing technology weeks	4.71
96.	Facilitating the formation of self-help groups, farmers' club etc	6.71

CONCLUSION

The KVKs are of prime importance in the present agricultural policy. By looking at its success the government has opened opening at least one KVK in each district of the country. Although the mandates of the KVKs are clear but variability is always there as far as the role performance of the scientists of the KVKs is concerned. The scale developed on role performance will make clear the different roles performed by SMSs. Moreover on the lines of this scale a better role performance of the SMSs in KVKs can be achieved.

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