RESEARCH NOTE

A Scale to Measure Attitude of Extension professionals towards technology dissemination system of State Department of Agriculture (SDA)

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ABSTRACT

The failure of the various extension delivery approaches in our country to effectively engineer significant and sustainable agricultural growth has become a major concern to all stakeholders, including the funding agencies and donor community. The midsts of these challenges extensionists are grappling with the question of how best to harness technology dissemination system of SDA (State Department of Agriculture) to benefit the farming community. There was no scale available to measure extension professionals' attitude towards technology dissemination system of state department of agriculture. The present study was contemplated to develop and standardize the same. Out of 50 statements, 18 statements were retained on the final scale. The reliability and validity of the scale indicates its precision and consistency of the results. This scale can be used to measure extension professionals' attitude beyond the study area with suitable modifications.

Key words: *Attitude scale; Technology dissemination; Likert's summated rating; Item analysis; Reliability; Validity;*

Transfer of technology to the different levels of farmers is not a onetime exercise because new farm technology is being constantly evolved. A continuous flow of technologies in an appropriate manner is vital to provide quick benefit of such development to the farmers. There has been a technological explosion in the field of agriculture. This demands that the farmer has to know all the aspects of technology prior to its adoption. The concerns have been fuelled lately by the wave of pluralism, market liberalization, globalization sweeping across the world and giving rise to initiatives that will enhance efficiency and effectiveness of not only the sub-components of extension delivery but the entire system of technology generation, dissemination and use. Agricultural extension workers of State Department of Agriculture are personnel who are responsible for meeting the goals of extension system. The effectiveness of extension services is highly dependent on the ability of extension workers who are competent because the entire extension process is dependent on them to transfer information from extension organizations to the clients. Attitudes are acquired through experience and exert a directive influence on subsequent behavior and moreover, help individuals to interpret new information and to make decisions more efficiently than would otherwise be the case (*Baron and Byrne 1991*). Evaluation of the extension professionals' attitude, in most cases, has focused on performance effectiveness of extension personnel of State Department of Agriculture (*Agbarevo et al., 2013*). Hence, the present study was contemplated to develop and standardize a scale for measuring extension professionals' attitude towards technology dissemination system of SDA.

METHODOLOGY

Attitude is an organized predisposition to think, feel, perceive and behave towards a cognitive object. Attitude is the degree of positive or negative effect associated with some psychological object. According to Thurstone, "psychological object" means any symbol, phrase, slogan, idea, person and institution towards which people can

differ with respect to positive or negative affect.

Attitude in this study was operationalised as the degree of positive or negative feeling of farmers towards technology dissemination system of State Department of Agriculture (SDA). The method of summated rating suggested by *Likert (1932)* was followed in the development of scale. The following points were considered for measuring the attitude of extension professionals' towards technology dissemination system of State Department of Agriculture (SDA).

Collection and editing of statements: Fifty eight statements, expressing the attitude of extension professionals towards the technology dissemination system of State Department of Agriculture (SDA) have been collected from available literature, in consultation with the specialists in the field of extension and they were edited on the basis of criteria suggested by *Thurstone (1946), Likert (1932)* and *Edward (1957).* Out of 58 statements, 50 statements were retained after editing. These statements were found to be non-ambiguous and non-factual.

Relevancy test: It was possible all the statements collected may not be relevant equally in measuring the attitude of extension professionals towards the technology dissemination system of State Department of Agriculture (SDA). Hence these statements were subjected to scrutiny by an expert panel of judges to determine the relevancy and screening for inclusion in the final scale. For this all the fifty statements list was then send to panel of judges. Judges comprised experts in the field of agricultural extension of Kerala Agricultural University; Tamilnadu Agricultural University, Acharya N G Ranga Agricultural University and ICAR institutes. The statements were sent to 60 Judges with request to critically evaluate each statement for its relevancy to measure attitude of extension professionals towards technology dissemination system of State Department of Agriculture. The judges were requested to give their response on a five point continuum viz, highly relevant, relevant, neutral, irrelevant and highly irrelevant with scores 5,4,3,2 and 1 respectively. Out of 60 judges only 40 responded in a time span of two months. The relevancy score of each item was ascertained by adding the sores on rating scale for all the 40 judges' responses. From this data relevancy percentage, relevancy weightage and mean relevancy scores were worked out for all the statements by using the following formulae.

Relevancy percentage: Relevancy percentage was worked out by summing up the scores of highly relevant, relevant and neutral categories, which were converted into percentage.

$$RP = \frac{\text{Frequency score}}{\text{Number of Respondents}}$$

RP   = Relevancy percentage

Frequency score = Frequency score of highly relevant, relevant and neutral

The calculated values of RP were found in the range of 47.5 (minimum) to 100 (maximum) percentages.

Relevancy weightage (R.W.): Relevancy weightage was obtained by the formula.

$$RW = \frac{HRR + RR + NR + IR + HR}{MPS}$$

Mean relevancy score (M.R.S.): M.R.S. was obtained by the following formula.

$$MRS = \frac{HRR + RR + NR + IR + HR}{N}$$

HRR   = Highly relevant response (X5)

RR   = Relevant response (X4)

NR   = Neutral response (X3)

IR   = Irrelevant response(X2)

HR   = Highly irrelevant (X1)

MPS   = Maximum possible score ($40 \times 5 = 200$).

N   = Number of judges (40).

Using these three criteria the statements were screened for their relevancy. Accordingly, statements having relevancy % >75, relevancy weightage >0.75 and mean relevancy score > 3.5 were considered for final selection of statements. By this process, 29 statements were isolated in the first stage, which were suitably modified and rewritten as per the comments of judges.

Calculation of 't' value (Item analysis): These 29 statements were subjected to item analysis to delineate the items based on the extent to which they can differentiate the respondent with high attitude than the respondent with low attitude towards technology dissemination system of State Department of Agriculture (SDA). For this 40 farmers were selected from non-sample area. The respondents were asked to indicate their degree of agreement or disagreement with each statement on the five-point continuum ranging from "strongly agree" to "strongly disagree". The scoring pattern adopted was 5 to 1, in which, 5 weighs to strongly agree response, 4 to agree response, 3 to undecided

response, 2 to disagree response and 1 to strongly disagree response for positive statement and for negative statement, the scoring pattern was reversed.

Based upon the total scores, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by *Edwards (1957)*. Thus out of 40 farmers to whom the items were administered for the item analysis, 15 farmers with lowest, 15 with highest scores were used as criterion groups to evaluate individual items.

The critical ratio, that is the 't' value which is a measure of the extent to which a given statement differentiates between the high and low groups of the respondents for each statements was calculated by using the formula suggested by *Edward (1957)*.

$$t = \frac{X_H - X_L}{\sqrt{\dfrac{\Sigma (X_H - X_H)^2 + (X_L - X_L)^2}{n(n-1)}}}$$

Where:

" $(X_H - X_H)^2$ = " $X_H^2 - (“X_H)^2$
" $(X_L - X_L)^2$ = " $X_L^2 - (“X_L)^2$

X_H = The mean score on given statement of the high group

X_L = The mean score on given statement of the low group

" X_H^2 = Sum of squares of the individual score on a given statement for high group

" X_L^2 = Sum of squares of the individual score on a given statement for low group

" X_H = Summation of scores on given statement for high group

" X_L = Summation of scores on given statement for low group

n = Number of respondents in each group

Σ = Summation

Selection of attitude statements for final scale: After computing the 't' value for all the items, 18 (Table 1) with highest 't' value equal to or greater than 1.75 were finally selected and included in the attitude scale. Thus, 9 positive and 9 negative statements with highest 't' values were selected for the final scale as they differentiate between highest and lowest groups.

Standardization of the scale: The validity and reliability was ascertained for standardization of the scale. Reliability was measured by test-retest method.

Reliability:

Test-retest method: The final set of the 18 statements, which represent the attitude of extension professionals towards technology dissemination system of State Department of Agriculture (SDA), was administered on five-point continuum to a fresh group of 40 extension personnel, which were not included in the actual sample. After a period of 15 days the scale was again administered to the same respondents and thus two sets of scores were obtained. The correlation coefficient for the both the sets were worked out. The 'r' value (0.796) was significant at 0.01 level of probability indicating the attitude scale was highly suitable for administration to the extension professionals as the scale was stable and dependable in its measurement.

Validity of the scale:

Content validation: The content validity of the scale was tested. The content validity is the representative or sampling adequacy of the content, the substance, the matter and the topics of a measuring instrument. This method was used in the present scale to determine the content validity of the scale. As the content of the attitude was thoroughly covered the entire universe of technology dissemination system of State Department of Agriculture (SDA) through literature and expert opinion, it was assumed that present scale satisfied the content validity. As the scale value difference for almost all the statements included had a very high discriminating value, it seemed reasonable to accept the scale as a valid measure of the attitude. Thus ensuring a fair degree of content validity.

RESULTS AND DISCUSSION

The final scale consists of 18 statements. The responses had to be recorded on a five point continuum representing strongly agree, agree, undecided, disagree, and strongly disagree with scores of 5,4,3,2 and1 for positive statements and vice-versa for negative statements. The attitude score of each respondent can be calculated by summing the scores obtained by him on all the items.

The attitude score on this scale ranges from 18 to 90. The higher score indicates that respondent had more favourable attitude towards technology dissemination system of State Department of Agriculture (SDA) and vice-versa.

Table 1. Statements selected for inclusion in the final scale

Statements	SA	A	UD	DA	SDA
I am confident enough to deliver agricultural information through SDA					
I feel motivated in my work when using innovative technologies used by SDA for advisory services					
Usage of technology delivery methods developed by SDA in advisory service increases my learning.					
Information from technology dissemination system of SDA to the farming community is timely.					
Technology delivery methods developed by SDA are location specific.					
Technology dissemination system of SDA helps me to share resource specific information					
Information communication technologies are effectively utilized by SDA in technology dissemination					
Information from technology dissemination system of SDA is credible source to farmers.					
Technology delivery methods of SDA are easy to understand.					
Forward and backward linkages are weak in technology dissemination system of SDA					
Technology delivery methods of SDA needs improvement					
There is less flexibility in the present technology delivery methods of SDA					
Organisational structure of SDA is not perfect for technology dissemination system					
I do not want to use latest technology delivery methods developed by SDA in my advisory services.					
Technology dissemination system of SDA is not up to date					
Technology dissemination system of SDA has not lessoned the problems of farmers.					
Technology dissemination system of SDA is not essential for technology transfer					
Farmers' achievement has not increased on using technology delivery methods of SDA.					

SA: Strongly agree A: Agree UD: Undecided DA: Disagree SDA: strongly disagree

CONCLUSION

The reliability and validity of the scale indicated the precision and consistency of the results. This scale can be used to measure the farmers' attitude beyond the study area with suitable modifications.

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