



A Scale to Measure Attitude of Farmers Towards Information and Communication Technologies (ICTs) Use

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ABSTRACT

A scale was developed to measure the attitude of farmers towards ICTs use based on Likert's method of summated rating. A tentative list of 60 statements each expressing the attitude of farmers towards ICTs use was collected and edited in the light of the informal criteria as suggested by Thrustone, Likert and Edward. These statements were framed such that they expressed the positive or negative attitude. The respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from strongly agree to strongly disagree. The score of each individual item on the scale was calculated by summing up the weights of the individual items. On the basis of the total score, 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 that these two groups provide criterion groups to evaluate individual items. In order to find out the discriminating index for each item, 't' value was calculated using the formula and procedure given by Edwards. The scale so developed finally consisted of 27 statements (17 positive and 10 negative).

Key words : Attitude scale, ICTs use.

In social research, attitude of a person or group towards social problems or any psychological object is of a paramount importance. Edwards (1957) defined attitude as the "degree of positive or negative affect associated with some psychological object". Kretch *et al.* (1962) considered attitude as an enduring system of positive or negative evaluations, emotional feelings and pro and con action tendencies with respect to social objects. Information and Communication Technologies (ICTs) are the basket of technologies which assist in storage, processing and dissemination of the information. ICT includes any communication device or application encompassing radio, television, mobiles, internet, kiosks, call centres, satellite systems etc. Farmers are information hungry and they need information on all aspects of agriculture right from sowing of seeds to marketing. The extension staff strength is not adequate to provide information to each and every farmer. In this context, Information and Communication Technologies (ICTs) plays an

important role in reaching the unreached and supplement extension efforts. In order to measure the attitude of farmers towards ICTs use there is a need to develop attitude scale and with this objective an attempt was made to develop an attitude scale to measure the attitude of farmers towards ICTs use.

MATERIAL AND METHODS

The research was conducted during the year 2011 in Guntur district of Andhra Pradesh. For measuring the attitude, different types of scales are available but Likert Summated rating scale was used in the present study because of the following reasons.

- a) Hall (1934) had indicated that the likert type of scales with fewer statements will give high reliability coefficients.
- b) In this scale each item was judged on a five point continuum rather more rejection of the item as in Thrustone's scale (1946). By this method, we get more information about the item than Thrustone's scale.
- c) No judges are required to rank the items

Table I. Scale developed for measuring the attitude of farmers towards ICTs use

S.No	Statements	't' value
1.	ICTs reach the farmers in a short period of time.	2.678
2.	ICTS provide right solution for the problems faced by the farmers.	3.178
*3.	Use of ICTs cannot enhance the overall efficiency of agriculture production system	2.514
4.	ICTs can be accessed all the time (24hrs/7days).	3.464
5.	ICTs do not have geographical barriers.	2.464
*6.	Sustainability of agriculture would not depend on its access to information	2.392
7.	ICTs are fastest way to exchange information among various client groups	4.571
8.	Use of ICTs is cost effective.	2.142
9.	Getting information on agriculture and allied fields through ICTs saves time.	2.535
10.	ICTs are the best means to collect latest information regarding weather, cultivation practices, market prices etc;	2.607
*11.	Farmers get confused with lot of information obtained from ICTs	2.750
12.	Use of ICTs enhances the transfer of technology.	2.928
13.	ICTs empower the farmers in taking decisions on cultivation practices, pest and disease management etc;	2.142
*14.	ICT based extension would not evolve as major means of technology dissemination	2.464
15.	ICTs use enlarges the social communications of farmers.	2.178
*16.	ICTs cannot provide instant solution to a problem faced by a farmer	2.142
17.	ICTs reach the unreached farmers.	2.178
18.	ICTs can contribute towards the overall development of farmers.	2.214
*19.	Farmers could not access market information of different locations using ICTs	2.607
20.	ICTs supplement and complement the present public extension system.	3.321
*21.	There is no area in agriculture where IT has a role to play	2.921
22.	The information available through ICTs is reliable and adequate	2.914
*23.	ICT usage requires skills	2.250
24.	ICTs bring rural communities closer to the global economic system.	3.285
*25.	The ICTs infrastructure is costly and difficult to maintain.	4.142
26.	ICTs help in improving the Research-Extension-Farmer-Market linkage.	2.500
*27.	The farmers need assistance from the extension agents for using ICTs.	3.285

(*) Indicates the negative attitude statements.

as in case of Thrustone's scale. This saves time, labour, and money and also simplifies the procedure.

- d) It is relatively simple and easier than equal appearing interval scale which have been claimed by Likert (1932) and supported by Hall (1934).
- e) The item on a Likert scale provide data of the individual about the specific issue covered by the single item as well as total score on the attitude dimension being studied.

Collection of the statements

The first step in the construction of attitude scale was to collect and select a set of statements covering the entire universe of ICTs use. As such, large number of statements were collected from available literature, expert opinions and feelings, in consultation with the ICT experts and were edited according to the criteria laid down by Likert (1932) and Edwards (1957). Out of 60 statements, 54 were retained on the draft scale after editing, out of which 32 were positive and 22 were negative.

RESULTS AND DISCUSSION

Item Analysis

The retained 54 attitude statements were administered to 40 judges having expertise in psychology and ICTs use. Responses for the items were obtained on a five-point continuum viz., ‘Strongly agree,’ ‘Agree’, ‘Undecided’, ‘Disagree’, and ‘Strongly disagree’ with the scores of 5,4,3,2,and 1 respectively and the scoring pattern was reversed for negative statements. Attitude scores of the respondents were obtained by summing up the scores of all items.

For item analysis, the respondents were arranged in debending order based on their total attitude score. Twenty five per cent with lowest total scores and another twenty five per cent with highest scores were selected. These two groups were considered as the criterion groups. For these t-value was calculated by using the formula:

$$t' = \frac{\bar{X}_H - \bar{X}_L}{\frac{\sqrt{(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}}{n(n-1)}}$$

where,

$$\sum (X_H - \bar{X}_H)^2 = \sum X_H^2 - (\sum X_H)^2 / n$$

$$\sum (X_L - \bar{X}_L)^2 = \sum X_L^2 - (\sum X_L)^2 / n$$

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

\bar{X}_L = the mean score on a given statement for the low group

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

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

$\sum X_H$ = Summation of scores on a given statement for high group

$\sum X_L$ = Summation of scores on a given statement for low group

n = Number of respondents for in each group

\sum = Summation

The value of ‘t’ is a measure of the extent to which a given statement differentiates between the high and low groups. Based on item analysis (‘t’ value = 1.75) 27 items which significantly differentiated the criterion groups were finally retained in the scale to measure the attitude of farmers towards ICTs use (Table I).

Standardization of the scale

The scale developed was standardized by testing its reliability and validity.

Reliability of the scale:

The same attitude scale was administered to the 40 farmers of non sample area after a lapse of 20 days. The two sets of scores obtained before and after 20 days were correlated. The co-efficient of correlation between two sets of scores was obtained (r=0.889) and found to be highly significant at 1 per cent level of probability. Hence, the attitude scale is highly stable and dependable for the measurement of attitude of farmers towards ICTs use.

Validity of the scale:

The validity of the present scale was tested through Content Validity. Content Validity is the representativeness or sampling adequacy of the content, the substance, the matter, the topics of a measuring instrument (Kerlinger, 1983). The contents of attitude scale were derived from various literature, expert opinions, and feelings and discussions with the ICT experts. The suggestions and remarks of the judges were given due consideration and incorporated into the scale. Care was taken to include all the statements which represented the universe of content of attitude of farmers towards ICTs use and thus content validity was ensured.

The scale was found to be reliable and valid. Therefore, it can correctly measure the attitude of farmers towards ICTs use and can yield consistent results when used in different situations involving the same/different subjects.

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