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A Scale to Measure the Attitude of Famers towards ICTs

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ABSTRACT

The aim of this study is to develop an attitude scale to measure the attitude of farmers towards ICTs. It has been a long time need for a proper scale to measure the attitude of farmers towards ICTs, it was thought necessary to construct a scale for the purpose. Keeping this in view, an attempt has been made to develop a scale for measuring the attitude of farmers towards ICTs. Method of summated rating scale, by Likert (1932) was used. Thirty four statements were selected from 66 statements for which 't' values were worked out, whose values were highest i.e., with t-values more than 1.75.

***Keywords:** ICTs, Farmers, Attitude Scale, Likert*

INTRODUCTION

The farmers as producers of food must have an enabling environment for access to know-how and do-how for realizing the full potential of modern agricultural technology and should be empowered in taking initiatives and decisions which will only help in shaping the future of farmer's economy. In the present scenario of Indian agriculture, the public extension cannot possibly provide additional qualified manpower to adequately address the complex demand of the farmers by reaching the millions of farmers.   Farmer's needs are much more diversified and the knowledge required to address them is beyond the capacity of the grass root level extension functionaries.   These weaknesses or draw backs focus on the use of alternative means of value added and demand-driven information to farming community. The need of the hour is the use of modern and quick communication channels like ICTs to disseminate and create awareness about latest farm technologies among rural mass. There are umpteen ways in which ICTs can be useful to small and marginal farmers in India. The effective awareness campaign on ICT use, involvement of local self governments, value added information and combination of services provision proved as strategic factors behind success of ICT initiatives. Hence there is a need to study the attitude of farmers towards ICTs. Edwards defines attitude as the degree of positive and negative affect associated with some psychological object. Attitude in this study was operationally defined as the degree of positive or negative feeling of farmers towards ICTs.

MATERIALS AND METHODS

To measure the attitude of farmers towards ICTs a scale has been developed by the following procedure. Method of summated rating scale, by Likert (1932) was used to construct the attitude scale of farmers towards ICTs.

The steps used in construction of attitude scale are as follows:

I. Collection of Statements

Eighty statements each expressing the attitude of farmers towards ICTs were collected from available literature, in consultation with the specialists in the field of ICTs and they were edited on the basis of criteria as suggested by Thurstone and chave (1929), Likert (1932) and Edward (1957).

Out of eighty statements, sixty six statements were retained after editing. These statements were administered to 100 judges taken as respondents having expertise in psychology and ICTs.

The judges were asked to indicate their degree of agreement or disagreement with each statement on a five point continnum ranging from strongly agree to strongly disagree. The scoring pattern adopted was a score of 5 was given to strongly agree, 4 to agree, 3 to undecided, 2 to disagree and 1 to strongly disagree for a positive statement and for negative statement, the scoring pattern was reversed *viz.,* 'strongly disagree' response with a score of 1, 'agree' with 2, 'undecided' with 3, 'disagree' with 4 and 'strongly disagree' with 5. Their responses were recorded and total score for each respondent was arrived by summing up the scores on all the statements.

The scores of the individual statements were summed up to get the total scores of the respondents. Based on the total scores obtained, the respondents were arranged in descending order. Then the top 25 percent of the respondents with the highest scores and the bottom 25 percent of the respondents with the lowest scores were considered as criterion groups to evaluate individual statements. The middle 50 percent of the respondents were deleted for further analysis. The top 25 percent was considered as high group and bottom 25 percent was considered as low group to calculate the critical ratio *i.e.* 't' value for each statement. The calculated 't' value for each statement will measure the extent to which the statement differentiates between the respondents of high group and low group. The 't' values were calculated by using the formula suggested by Edwards[1] (1957). The 't' value for each statement was calculated by using the formula.

$$t = \frac{(\bar{X}_H - \bar{X}_L)}{\sqrt{\Sigma(X_H - \bar{X}_H)^2 + \Sigma(X_L - \bar{X}_L)^2}/\sqrt{n(n-n)}}$$

where,

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

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

$\Sigma(X_H - \bar{X}_H)^2 = \Sigma X_H^2 - \dfrac{\Sigma(X_H)^2}{n_H}$

$\Sigma(X_L - \bar{X}_L)^2 = \Sigma X_L^2 - \dfrac{\Sigma(X_L)^2}{n_L}$

$\bar{X}_H = \dfrac{\Sigma X_H}{n_H}$

$\bar{X}_L = \dfrac{\Sigma X_L}{n_L}$

$n = n_L = n_H$

II. Selection of attitude statements for final scale

After computing 't' values for all the items ,statements comprising of twenty five positive and nine negative statements with t value equal to or greater than 1.75 were finally selected and included in the attitude scale.

III. Reliability of the scale

A scale is reliable when it will consistently produce the same results when applied on the same sample Goode and Hatt[2] (1952). For testing the reliability, split half method was employed. The attitude scale of 34 statements was distributed to thirty farmers in non sample area for their responses.

After getting back the responses, the scale was divided into two halves, all odd statements into one half and all even statements into another. Then the co-efficient of reliability was calculated between the two halves. The correlation coefficient for both the sets was worked out. The correlation coefficient (r=0.82) was significant at 0.01 level indicating the attitude scale was highly suitable for administration to the farmers.

IV. Validity of the scale

The validity of the scale means ability of any instrument to measure what it intended to measure. The developed scale was tested for content validity. According to Kerlinger (1987), content validity of scale is the representative or sampling adequacy of the content, the substance, the matter and the topics of a measuring instrument. The content validity of the scale was determined through a group of experts. Since the items selected were from the universe of content, it was ensured that items covered the various aspects of attitude of the farmers towards ICTs.

The content validity was applied to test whether the developed scale could discriminate between the individuals who have favourable attitude towards ICTs and those who do not. The pilot testing exposed that the scale could differentiate the individuals having favourable attitude from that of unfavourable attitude towards ICTs. As the scale value difference for almost all the statements included had a high discriminating value, it seemed reasonable to accept the scale as valid measure of the attitude. Thus it ensured a fair degree of validity.

V. Administration of the scale:

The scale thus meet the reliability and validity test satisfactorily indicated its ability as an instrument for measuring attitude of farmers towards ICTs.

Table 1: List of attitude statements towards ICTs with their respective 't' value

S.No	Statements	't' value
1.	ICTs provide suitable solutions to the present agriculture problems	1.965*
2.	ICTs cannot meet the location specific needs of the farmers (-)	0.953
3.	ICTs are potential tools to reach the needy farmers	5.178*
4.	Farmers feedback is fast through ICTs than traditional methods	2.229*
5.	Illiteracy will not deter farmers in availing ICT services	2.293*
6.	ICTs cannot deliver personalized information (-)	0.640
7.	ICT based extension services assist the farmer in planning and decision making aspects in agriculture	0.680
8.	ICT services is a distant dream for resource poor farmers(-)	1.330
9.	Farmers can get remunerative prices to their produce through ICT based market intelligence	0.808
10.	Expert advice makes the farmers enterprise/activities productive	1.979*
11.	All kinds of information exchange are possible only through ICTs(-)	2.770*
12.	Existing infrastructure of ICTS is not enough to meet the needs of the farming community	1.007
13.	Only resourceful farmers can get the benefit of the ICTs (-)	1.732
14.	Access to information kiosk at village level is boon to the farming community	2.165*

15.	Phone-in-live with scientists gives firsthand information about queries immediately	0.126
16.	ICTs alone would solve the problems of farmers(-)	-0.498
17.	ICT based pest/disease outbreak warning system facilitate farmers to take preventive measures	0.719
18.	ICT teaches home economics to improve farmers livelihood	0.780
19.	ICTs based extension services provide new opportunity to build a skilled and knowledgeable society	0.781
20.	ICT is a valuable tool, but it will never influence farmers own decision making(-)	1.626
21.	Weather forecasting through ICTs assists farmers in making timely decisions	2.190*
22.	On some issues, ICT based extension services are good alternativesto the present extension system	3.214*
23.	Cell phones does not facilitate networking among the farming community(-)	2.828*
24.	The number of information kiosks are scanty in rural areas(-)	3.077*
25.	Cell phone is the cheapest source for information exchange	0.281
26.	ICTs does not provide information in local language(-)	0.894
27.	Due to busy network of ICT farmers have to wait for long time for getting the advices from experts (-)	3.356*
28.	ICTs can reduce vulnerability of crop losses due to extreme weather incidents	2.343*
29.	ICTs facilitate resource management and mitigation of environmental risk	6.041*
30.	Mobile phones leads to greater social cohesion and improved social relationships among farmers.	0.657
31.	ICT provides new methods for solving field problems	1.338
32.	ICT provides fair amount of information for the query farmers ask	2.033*
33.	ICT based extension services avoid the personal extension contact	4.987*
34.	ICTs save farmers time in access to information related to crop loans	3.755*
35.	For instant information ICTs are always helpful	1.513
36.	ICT s reach the unreached farmers	2.837*
37.	ICTs reach the farmers in a short period of time	1.068
38.	ICTs provide right solutions for the problems of post harvest losses	2.578*
39.	ICTs can be accessed all the time	2.820*
40.	It is very difficult to enhance the overall efficiency of agriculture production system with the use of ICTs	0.504
41.	ICTs can be accessed from any part of the globe without any geographical barrier	1.632
42.	Sustainability of agriculture is independent of access to information to the ICTs (-)	2.629*
43.	ICTs are fastest way to exchange information among client groups	1.428
44.	Use of ICT is cost effective	4.861*
45.	Getting information on agriculture and allied fields through ICTs saves time	2.221*
46.	ICTs are best means to get latest information regarding latest technologies, market prices etc.	1.584
47.	Farmers get confused with lot of information obtained from ICTs	4.431*
48.	Use of ICTs enhances the transfer of technology	1.426
49.	ICTs empower the farmers in decision making on recommended practices, pest and disease management	5.171*

50.	ICT based extension would not evolve as major means of technology dissemination	2.776*
51.	ICTs use enlarges the social communication of farmers	1.725
52.	ICTs cannot provide instant solution to a problem faced by a farmer instantly (-)	1.097
53.	ICTs can contribute towards the overall development of farmers	4.381*
54.	Farmers could not access market information of different locations using ICTs (-)	0.295
55.	ICTs supplement and complement the present public extension system	0.890
56.	There is no area in agriculture where ICTs has a role to play (-)	1.044
57.	The information available through ICTs is reliable and adequate	5.705*
58.	ICT usage require skills on the part of farmer	3.973*
59.	ICTs bring rural communities closer to the global economic system	1.095
60.	The ICTs infrastructure is costly and difficult to maintain (-)	2.170*
61.	ICTs help in improving the Research-Extension-Farmer-Market linkage	3.924*
62.	The farmers need assistance from the extension agents for using ICTs	1.643
63.	ICTs are more accessible to only rich and upper class people (-)	3.286*
64.	Interactive discussion is possible through ICTs	1.680
65.	Socio cultural barriers can be overcome through ICT	2.277*
66.	Farmers need to be educated in the utilizationof ICTs	2.193*

*Statements which were selected for the study
(-) Negative statements

CONCLUSION

This study aims at constructing a scale to measure the attitude of farmers towards ICTs. The affective aspect of attitude scale consists of 34 statements, with high reliability, and more predictive validity. This scale can be used in future studies on perceptions and feeling about the farmers towards ICTs. It will be helpful to the policy makers and administrators to develop suitable strategies towards ICTs by knowing the attitude of farmers towards ICTs.

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