Scale Construction to Measure the Attitude of Farmers towards Agricultural Diversification

India

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Abstract

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Attitude plays a crucial role in influencing one's behaviour with respect to a particular psychological object. The attitude of farmers' may influence their decision to adopt different practices to diversify their farms. Therefore, present study has been conducted to develop a reliable and valid instrument to measure the farmers' attitude towards Agricultural Diversification. A step by step procedure of developing standardized attitude scale was followed using Likert's summated rating approach. A total 67 statements reflecting feelings of the farmers towards agricultural diversification were collected and out of 67 statements, 50 statements were retained after editing.The statements were sent to 80 Judges to evaluate its relevancy. Based on the relevancy test 35 statements were selected. After calculating t-values, 18 statements were finalized in which 11 were positive statements and 7 were negative statements. The reliability was checked using split half method and validity was examined with the help of content validity. The reliability coefficient was found to be 0.82 which indicates that the scale is reliable. This standardized scale can be used by other academicians of related fields with or without modifications to measure attitude of farmers towards different Agricultural Diversification.

Key Words: Attitude, Agricultural Diversification, Item analysis, Reliability, Validity.

Introduction

Generally agriculture is synonymous with risk and uncertainty all over the world because farming is subject to vagaries of nature like flood, drought and cyclone. Meanwhile the carrying capacity of the agricultural sector is declining day by day as a result of increasing population growth with limited farm sizes [1]. It has been established that 1% GDP growth in agriculture in developing countries increases the expenditures of the poor at least 2.5 times more than the growth emanating from other sectors [2]. Evidently, the importance of agriculture in the lives of rural people can never be underestimated. In present scenario India is facing the most complex challenge of decreasing land man ratio, poor socio-economic condition of farmers, vagaries nature of agriculture, changing food habit of

consumers, market shift, rapid changing market due to globalization and livelihood security of its majority of people besides the growing problems of population and unemployment. This situation also worsen by new challenges include declining investment in the agriculture sector, degradation of natural resources and climate change. Climate change has amplified the importance of crop diversity conservation since genetic diversity is essential to ensuring food security under changing agro-climatic conditions [3, 4, 5]. As diversified farms are more resilient to market shift, provide protection against climate change and proved the most important sources for poverty reduction with increases income of the farmers. In this context, agricultural diversification provided one way to overcome these overriding problems in a more competitive environment as a strategy to ensure livelihood security through employment generation, poverty alleviation and conservation of natural resources [6, 7, 8].

The farmers' decision to adopt environment friendly diversified agricultural practices depends upon their favourable attitude. Unquestionably, attitude plays an important role in adoption of recommended practices by farmers leading to secure livelihood and profitable farming. An attitude is a personal disposition common to individuals but possessed in different degrees. This impels them to react to objects, situations or propositions in ways that can be called favourable or unfavourable [9]. Attitude measurement will help researchers in providing an adequate explanation on farmers' perception towards diversification in agricultural and can be used on developing strategies and policies related to these issues. Therefore, in present article describes the development of scale to measure attitude of farmers towards animal welfare.

Materials and Methods

Attitude refers to the "degree of positive or negative feelings associated with some psychological object''[10]. In the present study attitude is conceptualized as positive or negative feelings of farmers towards the agricultural diversification for understanding its positive and risky aspects. To measure this, researcher has developed and standardized the attitude scale. Among the techniques available, Likert's technique [11] of summated rating was used in the present study. The details of the steps followed in the construction of scale method to measure the attitude of farmers towards agricultural diversification discussed below:

Item collection

The items of attitude scale are called as statements. In initial stage of developing the scale, total 67 statements reflecting feelings of the farmers towards agricultural diversification were collected from relevant literature and discuss with extension experts. The collected statements were edited according to the criteria laid down by Edward and Kilpatrick [12]. Out of 67 statements, 50 statements were retained after editing. These statements were found to be non-ambiguous and non-factual.

Item analysis

It may possible that all the collected statements may not be appropriate equally in measuring the attitude of farmers. Hence these statements were subjected to scrutiny by judges comprised of extension experts, professors and social scientists to determine their appropriateness. For this the list of statements had sent to selected judges.

The statements were sent to 80 Judges with request to critically evaluate each statement for its relevancy to measure attitude of farmers towards agricultural diversification. The judges were requested to give their response on a five point continuum *viz*, strongly agree, agree, undecided, disagree and strongly disagree with scores 5,4,3,2 and 1 respectively. Out of 80 judges 64 had responded in time. The relevancy score of each item was ascertained by adding the sores on rating scale for all the 64 judges' responses. The following formulas were used for calculation of relevancy score.

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Relevancy test:

The data received from the judges were subjected to relevancy test to know the relevancy of the selected statements. For this purpose relevancy percentage, relevancy weightage and mean relevancy scores were worked out for all the 50 statements by using following formulae.

a. **Relevancy percentage*:***Relevancy percentage was worked out by summing up the scores of all categories, which were then converted into percentage.

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

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

c. 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=Highlyirrelevant(X1)

MPS=Maximumpossiblescore(40×5=200).

N=Numberofjudges(40).

Using these three criteria the statements were screened for their relevancy. Accordingly, statements having relevancy % >70, relevancy weightage >0.70 and mean relevancy score > 3.5 were considered for final selection of statements. By this process, 35 statements were isolated in the first stage, which were suitably modified and rewritten as per the comments of judges.

Calculation of 't' values:

These 35 statements were subjected to item analysis to delineate the items based on the extent to which they can differentiate the farmers with high attitude than the respondent with low attitude towards agricultural diversification. 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 25.00 per cent of the respondents with their total scores were considered as the high group and the bottom 25.00 per cent as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by (Edward, 1969). Thus out of 40 farmers to whom the items were administered for the item analysis, 10 farmers with lowest, 10 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, 1969):

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

Where:

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

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

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

ΣX = Sum of squares of the individual score on a given statement for low group

ΣX_H = Summation of scores on given statement for high group

ΣX_L^2 = Summation of scores on given statement for low group

n = Number of respondents in each group

t = Extent to which a given statement differentiate between the high and low group.

After computing the t- value for all the items, 18 statements with highest 't' value equal to or greater than 1.75 were finally selected and included in the attitude scale.

List 1 : List of statements and their t-values

Sr. No.	**Statement**	**t- value**
1	Agricultural diversification provides possible solutions to almost all problems of farmers.	2.903
2	It ensures round the year employment to the family members.	2.922
3	It especially gives income sustainability to the farmers.	2.145
4	Only resourceful farmers can get the benefits of Agricultural diversification. **(–ve)**	1.852
5	The family demand of food, fodder and fuel can be met by agricultural diversification.	2.570
6	Diversification can helps to overcome unpredictable failures of any enterprise through sustaining with other enterprises	3.114
7	Agricultural diversification is a way to help farmers to deal with climate change.	1.847
8	Agricultural diversification has a good effect on environment in long run.	2.616
9	It is not successful due to lack of market facilities. **(–ve)**	4.312
10	It helps to reduce dependency on other sources for the livelihood.	3.396
11	Agricultural diversification is a labour intensive strategy. **(–ve)**	1.830
12	Farmer needs technical and financial assistance to adopt agricultural diversification. **(–ve)**	1.955
13	Agricultural Diversification leads to risk management.	2.618

14	Managing various types of enterprises is very tedious job. **(–ve)**	2.060
15	Only educated farmers can get the benefits of Agricultural diversification. **(–ve)**	2.158
16	Conventional farming is more profitable than diversified one. **(–ve)**	1.847
17	It helps to reduce the input cost by utilizing product/by product of one enterprise as input in another enterprise.	2.133
18	Agricultural diversification helps to get maximum profit in minimum investment.	2.394

Reliability of the scale

A scale is reliable when it gives consistently the same results when applied to the same sample. The designed attitude scale for the study was tested for its reliability by using the split half method. It was introduced to 30 farmers of non sample area. Co-efficient of reliability between these two sets of score will be calculated by Rulon's formula [9].

$$r_{tt} = 1 - \frac{\sigma^2 d}{\sigma^2 t}$$

Where,

Rtt = Coefficient of reliability

$\sigma^2 d$ = Variance of those differences

$\sigma^2 t$ = Variance of the total scores

The coefficient of reliability between two sets of score between was found to be 0.8206 which was found to be significant at 1 per cent level, thereby testifying the reliability of the scale.

Validity of the scale

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 agricultural diversification 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.

Result 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 agricultural diversification. The Attitude scale developed is a contribution to the body of knowledge in the field of social sciences and behavioural science. The standardized attitude scale will fill the gap in the literature related to assessment of attitude of farmers towards agricultural diversification.

Conclusion:

As diversified farms are more resilient to market shift, provide protection against climate change and proved the most important sources for poverty reduction with increases income of the farmers. The preference of farmers for agricultural diversification largely depends on their attitude. This scale has been devised to help the researcher, policy makers and promoting organizations to work out farmer's attitude of a particular area towards agricultural diversification. Farmers with negative and neutral attitude towards agricultural diversification can be targeted for awareness building and training to develop favourable attitude towards agricultural diversification. Further, the scale can be used to measure farmer's attitude beyond the study area with suitable modifications.

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