Scale Construction to Measure the Attitude of Farmers towards Agricultural Diversification

Abstract

Attitude plays animportant role in persuasion of one's behaviour in respect to a particular psychological object. The attitude of farmers' may influence their decision to adopt different practices to diversify their farms. Therefore, theinvestigationwas carried out to expanda reliable and suitablemechanismto measure the farmers' attitude towards Agricultural Diversificationin their areas. The "Likert's summated rating approach" was followed for a step by step procedure of developing uniform attitude degree. A total 67 statements reflecting belief of the farmers towards agricultural diversification were collected and out of which, 50 statements were retained after editing.The statements were sent to eighty Judges to judge its properrelevancy. Based on the relevancy test of 50 statements, only 35 statements were selected. The 18 statements were retainedafter the't' test where11were positive and 7 were negative statements. The reliability of the scale was confirmedby the use of split half method while validity was studiedby content validity. The reliability coefficient was found to be 0.82 which showed the reliability of the scale.Thereforeother academicians and researchers can be usingthis identicalmagnitude with or without modifications to measure attitude of farmers headed forAgricultural 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 ability of the agricultural division is declining day by day as a result of increasing population growth with limited farm sizes [1]. It has been well-known fact that one percent GDP growth in agriculture of developing countries increases at least 2.5 times more expenditures of the poor than the other sectors growth[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 declining land man ratio, poor socio-economic condition, vagaries nature of agriculture, changing consumers' food habit, market shift, rapid market fluctuation 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 which include climate change, degradation of natural resources and

failinginvestment in the agriculture sector. Since genetic diversity is essential to ensuring food security under changing agro-climatic conditions and climate change. It has amplified the importance of conservation of crop diversity" [3, 4, 5]. "As diversified farms are more resilient to market shift, proved the most important sources for poverty reduction with increases income and also provide protection against climate change. 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, conservation of natural resources and poverty alleviation"[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

The concept of attitude, as defined by researchers, pertains to the "degree of positive or negative feelings associated with some psychological object [10]." In this study, attitude specifically encompasses the positive or negative sentiments of farmers towards agricultural diversification, aiming to realize both its advantages and risks. To quantify these attitudes, the researcher has devised and standardized an attitude scale.Among the various techniques accessible, the Likert's technique [11] of summated rating was employed. The subsequent sections delineate the methodological steps taken in constructing this scale to measure the attitude of farmers towards agricultural diversification, which is given below:

Item collection

The components comprising the attitude scale are termed as statements. In the preliminary phase of scale development, a total of 67 statements capturing farmers' sentiments regarding agricultural diversification were comprehensive from pertinent literature and deliberated with extension experts. These statements underwent editing based on the criteria delineated by Edward and Kilpatrick [12], resulting in the retention of 50 statements. Subsequent scrutiny revealed these statements to be devoid of ambiguity and factual content.

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 had asked 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. Total 64 judges out of 80 judges had responded timely. 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.

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.): It was obtain by the following formula**.**

$$\text{Relevancy Weightage (RW)} = \frac{\text{HRR} + \text{RR} + \text{NR} + \text{IR} + \text{HR}}{\text{MPS}}$$

c. Mean relevancy score (M.R.S.): It was obtain by the following formula.

$$\text{Mean Relevancy Score (MRS)} = \frac{\text{HRR} + \text{RR} + \text{NR} + \text{IR} + \text{HR}}{\text{N}}$$

Where, 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)]; and 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% of the respondents with their total scores were considered as the high group and the bottom 25%as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements" as suggested by [12]. 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 [12]:

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

Where, X H is the mean score on given statement of the high group; X L is the mean score on given statement of the low group; ΣX_H^2 issum of squares of the individual score on a given statement for high group; ΣX is sum of squares of the individual score on a given statement for low group; ΣX_H is summation of scores on given statement for high group; ΣX_L^2 is summation of scores on given statement for low group; n is the number of respondents in each group; and t is the Extent to which a given statement differentiate between the high and low group.

Following the computation of the t-value for each item, 18 statements demonstrating the highest 't' values, equal to or exceeding 1.75, were ultimately chosen and incorporated into 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

When a scale gives consistently the same results after applied to the same sample will only considered as reliable. 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. Rulon's formula was used to calculate Co-efficient of reliability between these two sets. [9].

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

Where,Rtt is a coefficient of reliability; $\sigma^2 d$ is the variance of those differences; and $\sigma^2 t$ is the variance of the total scores. Thus, 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

Content validity of a measuring instrument refers to the adequacy of sampling the content, substance, matter, or topics it encompasses. In this scale, this method was employed to assess its content validity. Given the comprehensive coverage of agricultural diversification through literature and expert opinion, it was presumed that the scale effectively satisfied the content validity criteria.Given that nearly every statement on the scale had a very high discriminating value, it seemed plausible to trust the scale as an accurate indicator of attitude. Therefore, it's crucial to guarantee a reasonable level 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" [13, 14, 15, 16]. "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" [17, 18, 19]. The standardized attitude scale will fill the gap in the literature related to assessment of attitude of farmers towards agricultural diversification.

Conclusion:

Given that diversified farms exhibit greater resilience to market shifts, offer protection against climate change, and serve as significant contributors to poverty reduction by augmenting farmers' incomes, the inclination of farmers towards agricultural diversification predominantly depends on their attitude. This scale has been formulated to aid researchers, policymakers, and advocacy organizations in assessing the attitudes of farmers in specific regions towards agricultural diversification. Farmers displaying negative or neutral attitudes can be targeted for awareness campaigns and training initiatives aimed at fostering a more favourable disposition towards agricultural diversification. Moreover, with appropriate modifications, the scale can be adapted to evaluate farmers' attitudes beyond the study area.

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