Optimization of implementation Scale to Measure the Attitude of Farmers toward Jalyukt Shivar Campaign

ABSTRACT

Adoption behaviour for a particular technology is mainly affected by the attitude held by intended farmers towards it. The present study aimed at developing and standardizing attitude scale on Jalyukt Shivar Campaign based on Likert's technique of summated rating.The steps included item collection, item edition and selection, relevancy test, item analysis and calculation of "t" value, testing reliability and validity.A total of 45 items (statements) were pooled initially covering various aspects of Jalyukt Shivar Campaign and were subjected to item relevancy checking to 90 experts through email, WhatsApp and handed over personally by visiting to the experts. Based on the 90 experts responses, 28 items were screened out for item analysis. The reliability of the scale was measured by using test-retest method and the reliability coefficient was found to be 0.88 which was satisfactory. The validity of the scale was examined with the help of content validity. The scale developed finally consisted of 27 items. This standardized scale can be used by academicians with or without modifications to measure attitude of farmers towards Jalyukt Shivar Campaign and other water conservation programmes.

Keywords:Attitude scale, Jalyukt Shivar Campaign, Water conservation programme, Item analysis, Reliability, Validity, Likert's Summated Rating

1. INTRODUCTION

"Water is critical input for agricultural production and plays an important role in food security. Water scarcity is expected to intensify as a result of climate change. On an average 55 million people around the world are affected by droughts every year. In view of the increasing global demand for water; global water withdrawal is expected to increase by 55 per cent by 2050; droughts increase the pressure on our natural freshwater resources, thus exacerbating water scarcity caused by humans"[1]. "Drought threatens people's livelihoods, increases the risk of disease and death, and fuels mass migration. Water scarcity impacts 40 per cent of the world's population and as many as 700 million people are at-risk of being displaced as a result of drought by 2030"[2].

"In Maharashtra state, nearly 52 per cent area under state is a drought-prone area, especially its region of Vidarbha and Marathwada. Inconsistency of rains in the very times of crop growth and discontinuity of rains create drought like situation. As per the Government Resolution (GR), dated 25 November, 2014, government of Maharashtra has declared drought like situation in 19059 villages of 22 districts. There is need to recharge ground water and create decentralized water bodies to overcome the water scarcity problem in rainfed area of the state" [3]. This plan centered on the restoration, repair, rejuvenation, and creation of local water bodies; when possible, it also linked to surrounding rivers, allowing for a constant, uninterrupted flow of water for local agricultural needs. To combat drought in Maharashtra, the state government initiated the Jalyukt Shivar Campaign in December 2014. Efforts were made to make the state self-sufficient in terms of water supply for

drinking and cultivation. The [4] relates “attitude as a multifaceted component of personality, beliefs, values, behaviours, and motivations. It is the critical and prime factor for participation of beneficiaries in any developmental programme. The success or failure of any agricultural development programme to a great extent depends on the attitude of its clientele towards the planned programme. Proper understanding of attitude of intended beneficiaries towards a particular technology, practices, schemes or organization helps in effective implementation of the programme. It is a good predictor of human behaviour. Therefore, it becomes essential to study people's attitude towards development programme as it involves both belief and emotional component of human personality”.

Based on this attitude-behaviour relationship, people may develop positive or negative attitude towards implementation of development programme. Keeping this in view, this study was conducted to develop and standardize the attitude scale of the beneficiary farmers towards Jalyukt Shivar Campaign. There were many soil and water conservation programmes taken place in India as well as Maharashtra state. Researchers had developed and standardized different scales to measure attitude of beneficiaries towards water conservation programmes. But with the advancement in time applicability of these scales became less due to uniqueness of upcoming programmes. Jalyukt Shivar Campaign is unique in its operation. Earlier there was no any attempt made by any research to develop and standardize scale to measure attitude towards JalyuktShivar Campaign, hence attempt was made to do so.

2. METHODOLOGY

The standardized attitude scale was taken up by using Likert’s Summated Rating scale method [5]. The procedure of this method followed in the study is adopted from [6]. The details of the procedure followed and standardisation of the scale to measure the attitude of beneficiary farmers towards Jalyukt Shivar Campaign is as follows,

2.1 Collection and editing of items

About 53 items representing the attitude of beneficiary farmers towards Jalyukt Shivar Campaign were collected initially from various sources viz., relevant literature, discussion with experts, research guide and extension personnel. The items, thus selected were edited on the basis of 14 criteria for attitude scale construction proposed by [7], [8], [9]. At last, 45 items were selected as they were found to be non-ambiguous.

2.2 Item relevancy test

All the items collected may not be relevant equally in measuring the attitude of beneficiary farmers towards Jalyukt Shivar Campaign. The selected 45items were subjected to scrutiny by an expert panel to determine the relevancy and screening for inclusion in the final scale. For this, the list of scrutinized 45 items were sent to a panel of 90 experts with request to critically evaluate each item for its relevancy to measure attitude of beneficiary farmers towards Jalyukt Shivar Campaign. The

experts were requested to give their response on a three-point continuum viz, most relevant, relevant and not relevant with scores 3, 2 and 1, respectively. Out of 90 experts only 53 responded in a time span of two months.

The relevancy score of each item is ascertained by adding the scores on rating scale for all the 53 experts responses. From this data, relevancy percentage, relevancy weightage and mean relevancy scores were worked out for all the items by using following formulae.

2.2.1 Relevancy percentage (RP)

Relevancy percentage was worked out by summing up the frequency score of most relevant, relevant, and not relevant categories i.e. number of judges who rated the items most relevant, relevant, and not relevant, which were converted into percentage.

$$RP = \frac{FS}{MPS} \times 100$$

2.2.2 Relevancy weightage (RW)

Relevancy weightage is obtained by the formula

$$RW = \frac{MR+R+NR}{MPS}$$

2.2.3 Mean relevancy score (MRS)

This is obtained by the following formula

$$MRS = \frac{MR+R+NR}{N}$$

Where,

FS	=	Frequency score	MPS	=	Maximum Possible Score (53 x 3 = 159)
MR	=	Most Relevant	N	=	Number of Judges (53)
R	=	Relevant			
NR	=	Not Relevant			

Accordingly, the items having relevancy percentage >80, relevancy weightage >0.80 and mean relevancy score >2.39 were considered for final selection of items. By this process, out of 45 items, 28 items have relevancy percentage >80, relevancy weightage >0.80 and mean relevancy score >2.39 were isolated in the first stage of screening, suitably modified and rewritten as per the comments of experts. Thus, finally about 28 items were selected after the relevancy test.

2.3 Item analysis and calculation of "t" value

The selected 28 items were subjected to item analysis to demarcate the items based on the extent to which they can differentiate the respondents with high attitude and low attitude towards Jalyukt Shivar Campaign. Thus, scrutinized items representing the attitude of beneficiary farmers towards Jalyukt Shivar Campaign were administered to 32 respondents from non-sampling area. The respondents from non-sampling area were asked to indicate their degree of agreement or

disagreement with each item on a five-point continuum ranging from strongly agree to strongly disagree, the scoring given was 5 weightages to strongly agree responses, 4 to agree, 3 to undecided, 2 to disagree and 1 to strongly disagree responses for favourableitems. For negative attitude items the reversed score was assigned. The respondent responses were recorded and the summated score for the total items of each respondent was obtained.

For each respondent the maximum possible score for 28 items was 140 and the minimum was 28. The scores of the respondents were then arranged in a descending order. The 25 per cent from highest scores (high group) i.e. eight respondents and 25 per cent from lowest scores (low group) i.e. eight respondents were taken for the item analysis. These responses were subjected to item analysis for selection of the items that constitute the final attitude scale.

The critical ratio i.e., t-value which is a measure of the extent to which a given item differentiates between the high and low groups of respondents for each item was calculated by using the formula proposed by [7].

$$t = \frac{\overline{X}_H - \overline{X}_L}{\sqrt{\frac{S2H}{n_H} + \frac{S2L}{n_L}}}$$

Where,

$\overline{X}_H$ = Mean score on a given item for the high group
$\overline{X}_L$ = Mean score on a given item for the low group
S^2_H = Variance of the distribution of the responses of the high group to the item
S^2_L = Variance of the distribution of the responses of the low group to the item
n_H = Number of respondents in the high group
n_L = Number of respondents in the low group

After calculating the t- values for all the items of the attitude scale using the formula, the values of the items were arranged in descending order from the highest to the lowest and 27 items out of 28 items were selected from the scale whose values were highest i.e., with t- values more than 2.14 @ 5 per cent level of significance, for both positive and negative items. The remaining one item, whose t-value was less than 2.14 @ 5 per cent level of significance, was deleted. Thus, finally 27 items were selected. The scale developed was further standardized by measuring its reliability and validity.

2.4 Reliability and validity of attitude scale

According to [10]"reliability is the accuracy or precision of a measuring instrument. A scale is reliable when it consistently produces the similar results when applied to the same sample". It helps to assess the homogeneity of items in scale. Reliability of the present scale was calculated by using test-retest method. Final 27 items were administered to a new group of 32 beneficiary farmers of non-sample area twice to the same sample with 15 days interval. Reliability quotient "r'' was worked out by

rank correlation method i.e. 0.88. Hence, the constructed scale is reliable as the reliability quotient is greater.

According to [11]"content validity of scale is the representative or sampling adequacy of the content, the substance, the matter and the topics of a measuring instrument. Validity means ability of any instrument to measure what one intended to measure. The developed scale was tested for content validity. As the scale was developed with the help of 25 judges who reviewed all the revised items and the experts recommendations were implemented into the scale. The developed scale could discriminate between the individuals who have favourable attitude towards Jalyukt Shivar Campaign 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 Jalyukt Shivar Campaign. As the scale value difference for almost all the items included had a very high discriminating value, it seemed reasonable to accept the scale as valid measure of the attitude".

3. RESULTS AND DISCUSSION

3.1 Finalizing of attitude items on the basis of relevancy test and item analysis

Selection of relevant items was done after relevancy testing, the item showing result relevancy percentage >80, relevancy weightage >0.80 and mean relevancy score >2.39 were considered for final selection. Also repetition and duplication type items opined by judges were relooked. By this process out of 45 items, 17 itemswhich is marked with star (*) were discarded and finally 28 items remained for further item analysis which is depicted in Table 1.

Table 1. Mean Relevancy Score (MRS), Relevancy Weightage (RW), Relevancy Percentage (RP) of the items

Sr. No.	Items	MRS	RW	RP
1	Jalyukt Shivar Campaign (JSC) has come as a boon to farmers in drought prone area.	2.64	0.88	88.05
2	It is an innovative approach in disseminating technology and services to farmers.	2.26*	0.75	75.47
3	It is participatory in its approach.	2.41	0.80	80.50
4	It has increased people participation in different activities.	2.58	0.86	86.16
5	Only educated people can participate in this campaign efficiently.	1.41*	0.47	47.16
6	Non-Government Organizations (NGO) play important role in effective implementation of campaign.	2.32*	0.77	77.35
7	It is well thought approach for the upliftment of the drought prone area farmers.	2.66	0.88	88.67
8	Jalyukt Shivar Campaign is a political stunt.	2.51	0.83	83.64
9	Activities selected under this campaign are according to the needs of the farmers.	2.57	0.85	85.53
10	Farmers take benefit from this campaign.	2.49	0.83	83.01
11	It is possible to give protective irrigation to crops and save them during water stress.	2.57	0.85	85.53
12	It increases area under irrigation.	2.79	0.93	93.08
13	Area under horticultural crops increases due to availability	2.41	0.80	80.50

	of water for farming.			
14	There is increase in total production as a result of this campaign.	2.47	0.82	82.38
15	The problem of drinking water is completely solved.	2.53	0.84	84.27
16	Campaign makes the farmers worried less about water availability for farming.	2.07*	0.69	69.18
17	Jalyukt Shivar Campaign reduces the demand for tankers.	2.21*	0.73	73.58
18	It has provided an opportunity to farmers for self-employment**.**	2.45	0.81	81.76
19	The work of this campaign is done very little in the village.	1.94*	0.64	64.77
20	The funds of the programme are not properly used for the implementation of activities.	2.09*	0.69	69.81
21	It is not running well as the officials have no time to support the activities.	2.21*	0.73	73.58
22	There is lack of proper coordination between Jalyukt Shivar Campaign officials and beneficiaries.	2.09*	0.69	69.81
23	Only contractors are benefited under this campaign.	2.49	0.83	83.01
24	Jalyukt Shivar Campaign is useless effort due to its ineffective working pattern.	2.32*	0.77	77.35
25	There is not enough awareness among the farmers about this campaign.	1.96*	0.65	65.40
26	It encourages people for tree plantation.	2.55	0.84	84.90
27	Efficient utilization of water for farming is the best way to restore water resources.	2.68	0.89	89.30
28	Water conservation measures have helped the farmers to cover the irrigation water crisis.	2.57	0.85	85.53
29	Jalyukt Shivar Campaign is better than other water development programmes in the area.	2.23*	0.74	74.21
30	Implementation of this campaign is necessary to overcome recurrent droughts in the region.	2.66	0.88	88.67
31	It makes the farmers self-sufficient and raises their income level.	2.43	0.81	81.13
32	It helps in raising socio-economic status of farmers.	2.45	0.81	81.76
33	It has improved farmers participation and interest in different activities.	2.36*	0.78	78.61
34	Farmers are interested in this campaign and wish to further strengthen it.	2.28*	0.76	76.10
35	Non beneficiary farmers are also benefited under this campaign.	2.17*	0.72	72.32
36	So far this campaign has not been able to succeed in convincing the farmers.	2.30*	0.76	76.72
37	This campaign failed due to unscientific implementation.	2.45	0.81	81.76
38	There is no need of the Jalyukt Shivar Campaign as this is not useful in reducing drought.	2.38*	0.79	79.24
39	It provides sustainable livelihood security to farmers.	2.53	0.84	84.27
40	It should seek feedback of the people for improvement.	2.47	0.82	82.38
41	It is the best gift of the government to the drought-prone areas.	2.53	0.84	84.27
42	Awareness is created among people about judicious use of water.	2.58	0.86	86.16

43	It has helped to harvest maximum rainwater in the surrounding of village.	2.53	0.84	84.27
44	Increasing groundwater level under Jalyukt Shivar Campaign is a myth.	2.47	0.82	82.38
45	Jalyukt Shivar Campaign has helped in increasing water storage capacity of existing and dysfunctional water sources.	2.49	0.83	83.01

*****Discarded items

Table 2 depicts that selection of items for final scale was done after calculating the t value for all items, the items with t-values equal to or greater than 2.14 @ 5 per cent level of significance, for both positive and negative itemsfinally selected and included in the attitude scale. It was observed that 27 items were found to be having values more than 2.14 on item analysis and only one item was discarded from the list due to their lower value which is marked with star (*). The range of the values were ranging between 1.71 (lowest) and 5.65 (highest). The t- value above 2.14 of items having high discriminating power which could be placed in the final attitude scale. Therefore, the attitude scale consisted of 27 (22 positive and 5 negative) items which were finally included in the scale.

Table 2. List of attitude statements towards Jalyukt Shivar Campaign with their respective 't' value(n=28)

Sr. No.	Items	t value
1	Jalyukt Shivar Campaign (JSC) has come as a boon to farmers in drought prone area.	4.58
2	It is participatory in its approach.	1.71*
3	It has increased people participation in different activities.	3.32
4	It is well thought approach for the upliftment of the drought prone area farmers.	2.64
5	Jalyukt Shivar Campaign is a political stunt.	4.29
6	Activities selected under this campaign are according to the needs of the farmers.	3.10
7	Farmers take benefit from this campaign.	3.41
8	It is possible to give protective irrigation to crops and save them during water stress.	3.32
9	It increases area under irrigation.	5.65
10	Area under horticultural crops increases due to availability of water for farming.	3.86
11	There is increase in total production as a result of this campaign.	3.38
12	The problem of drinking water is completely solved.	4.24
13	It has provided an opportunity to farmers for self-employment**.**	3.47
14	Only contractors are benefited under this campaign.	3.33
15	It encourages people for tree plantation.	2.70
16	Efficient utilization of water for farming is the best way to restore water resources.	4.27
17	Water conservation measures have helped the farmers to cover the irrigation water crisis.	2.70
18	Implementation of this campaign is necessary to overcome recurrent droughts in the region.	3.86
19	It makes the farmers self-sufficient and raises their income level.	2.54
20	It helps in raising socio-economic status of farmers.	3.90
21	This campaign failed due to unscientific implementation.	2.82
22	It provides sustainable livelihood security to farmers.	2.25
23	It should seek feedback of the people for improvement.	3.98
24	It is the best gift of the government to the drought-prone areas.	3.41
25	Awareness is created among people about judicious use of water.	2.82
26	It has helped to harvest maximum rainwater in the surrounding of village.	3.78
27	Increasing groundwater level under Jalyukt Shivar Campaign is a myth.	3.77
28	Jalyukt Shivar Campaign has helped in increasing water storage capacity of existing and dysfunctional water sources.	3.10

*****Discarded item

The reliability of the scale is determined by test-retest method. Reliability quotient "r'' was worked out by rank correlation method i.e. 0.88 which is significant at 5 per cent level of probability. Finally, 27 items were considered to assess farmers attitude towards the Jalyukt Shivar Campaign and they were structured in such a way that positive and negative items appeared at random to avoid bias answer. Against each of 27 items there are five columns representing a five-point continuum of agreement or disagreement to the items as followed by [5]. The points on continuum are strongly agree, agree, undecided, disagree and strongly disagree with respective weightage of 5, 4, 3, 2 and 1 respectively for favourable (positive) items and with score of 1, 2, 3, 4 and 5 respectively for unfavourable (negative) items. Therefore, the overall possible attitude score of the individual respondent towards Jalyukt Shivar Campaign could range from 27 to 135. The high score of scale will represent the favourable attitude of beneficiary farmers towards Jalyukt Shivar Campaign.

4. CONCLUSION

The Jalyukt Shivar Campaign is flagship programme of State Government of Maharashtra aim to make state drought free and ensuring availability of water for farming as well as drinking. The measurement tool standardized and developed to assist researchers, policymakers and other investigators interested in determining attitude of farmers towards Jalyukt Shivar Campaign in Maharashtra state. As well as researchers can use same scale to measure attitude of farmers towards other water conservation programmes on different locations with suitable modifications.

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