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Scale construction for measuring the attitude of farmers towards Rastriya Krishi Vikas Yojana programme

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Abstract

The study aimed at constructing of an attitude scale to measure the attitude of farmers towards various components/ interventions under RKVY programme. Likert's Summated Rating Scale Technique was followed for development of the scale. The validity of the scale was examined with the help of face and content validity. Split half method was used for testing reliability of the scale and the reliability coefficient was 0.89. The scale thus met the reliability and validity test satisfactorily indicated its ability as an instrument attitude of farmers towards various components/ interventions under RKVY programme. The scale was developed finally consists of 28 statements including 13 positive and 8 negative statements.

Keywords: attitude, interventions, RKVY, validity, reliability

Introduction

The Gross Domestic Product (GDP) of agriculture increased annually at more than 3 per cent during the 1980s. Since the Ninth Five-Year Plan (1996 to 2001-02), the actual achievement has been much below the target. More than 50 per cent of the workforce of the country still depends upon agriculture for its livelihood. A major cause behind the slow growth in agriculture is the consistent decrease in investments in the sector by the state governments. While public and private investments are increasing manifold in other sectors such as infrastructure. Hence the need for incentivizing states that increase their investments in the agriculture and allied sectors has been felt. With this backdrop, the National Development Council (NDC), in its 53rd meeting held on 29th May, 2007 resolved that a special Additional Central Assistance Scheme that is Rastriya Krishi Vikas Yojana (RKVY) be launched and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture. The NDC reaffirmed its commitment to achieve 4 per cent annual growth in the agricultural sector during the 11th plan with following objectives.

- To incentivise the states so as to increase public investment in Agriculture and allied sectors.
- To provide flexibility and autonomy to states in the process of planning and executing Agriculture and allied sector schemes.
- To ensure the preparation of agriculture plans for the districts and the states based on agro-climatic conditions, availability of technology and natural resources.
- To ensure that the local needs/crops/priorities are better reflected in the agricultural plans of the states.
- To achieve the goal of reducing the yield gaps in important crops, through focused interventions.
- To maximize returns to the farmers in Agriculture and allied sectors.
- To bring about quantifiable changes in the production and productivity of various components of Agriculture and allied sectors by addressing them in a holistic manner.

During 11th and 12th five-year plan period tremendous changes has been occurred in agriculture and allied sector in the state due to RKVY programme from past several years by providing crores of funds allocated to the states for increasing an annual agriculture growth rate by effective implementation of various interventions available under various schemes of RKVY in Telangana state based available resources.

RKVY play vital role in ensuring the farmers to information access on various inputs and utilization of various technologies/ interventions in agriculture and allied sectors under RKVY to maximization of yields, income of the farmers and improving socio-economic conditions of the farmers by timely adoption of the interventions.

Edwards (1957) [1] defines attitude as the degree of positive or negative affect associated with some psychological object.

Attitude in this study was operationally defined as degree of positive or negative feeling of farmers towards RKVY and its components.

Methodology

Selection of type of attitude scale

Method of summated rating scale, by Likert (1932) [3] was used to construct the attitude scale of farmers towards Rastriya Krishi Vikas Yojana components / interventions. The steps used in construction of attitude scale are as follows:

Collection of statements

A set of 100 statements representing the attitude of farmers towards Rastriya Krishi Vikas Yojana components or interventions were collected initially from various sources viz., literature and interaction with experts.

Editing the statements: Each statement was edited considering the 14 informal criteria suggested by Thurstone & Chave (1929) [4] and Edwards and Kilpatrick (1948) [2]. The statements which were ambiguous, irrelevant and not conforming to the suggested criteria were deleted. Finally, 80 statements were retained after the editing for scale construction. The list of statements is provided in Appendix I.

Selection of statements

For the preparation of final scale, 80 statements consisting of 52 positive and 28 negative statements were administered to 120 respondents. For this purpose, Nagarkurnool, Nirmal and Jangoan districts of Telangana state was selected randomly from non sample area. 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” and score of 4 to 0 was assigned for favorable attitude statements and for unfavorable attitude statements the scoring pattern was reversed as strongly agree response with 0 score, agree with 1, undecided with 2, disagree with 3 and strongly disagree with 4 score in that order. The responses were recorded and the summated score for all the statements was obtained. For each individual, the maximum possible score on 80 statements was 320 and the minimum possible score was 0. The scores of the respondents were arranged in descending order. The highest 25 per cent and the lowest 25 per cent scores were taken for the item analysis that means 30 respondents from the high group and 30 from the low group. These responses were subjected to analysis for selection of the statements that constituted the final attitude scale.

The critical ratio, i.e., t-value which is a measure of the extent to which a given statement differentiates between the high and low groups of respondents for each statement, was calculated by using the formula suggested by Edwards (1957).

$$t = \frac{\bar{x}_H - \bar{x}_L}{\sqrt{\frac{S^2_H}{n_H} + \frac{S^2_L}{n_L}}}$$

Where, x_H = the mean score on a given statement for the high group.

x_L = the mean score on a given statement for the low group.

S^2_H = the variance of the distribution of the responses of the high group to the statement

S^2_L = the variance of the distribution of the responses of the low group to the statement

n_H = the number of respondents in the high group.

n_L = the number of respondents in the low group.

As n_H was equal to n_L , the modified formula for calculating the t- values of the statements was used. The formula was:

$$T = \frac{(\bar{X}_H - \bar{X}_L)}{\sqrt{\frac{(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}{n(n-1)}}}$$

Example: The calculation procedure of t –value for the statement No.1, i.e. “In my view this programme increases the farmers economic and social status”.

High Group					Low Group					
Response categories					Response categories					
	SA	A	UD	DA	SDA	SA	A	UD	DA	SDA
f	18	12	0	0	0	05	12	05	01	07

High Group					Low Group				
F	X	fx	x ²	fx ²	f	x	fx	x ²	fx ²
18	4	72	16	288	5	4	20	16	80
12	3	36	9	108	12	3	36	9	108
0	2	0	4	0	5	2	10	4	20
0	1	0	1	0	1	1	1	1	1
0	0	0	0	0	7	0	0	0	0
30		108		396	30		67		209

$$\bar{X}_H = \frac{fx}{f} = 3.6$$

$$\bar{X}_L = \frac{fx}{f} = 2.233333$$

$$\bar{X}_H - \bar{X}_L = 1.366667$$

$$(X_H - \bar{X}_H)^2 = \frac{396 - (108)^2}{30} = \frac{396 - 11,664}{30} = \frac{396 - 388.8}{30} = 7.2$$

$$(X_L - \bar{X}_L)^2 = \frac{209 - (67)^2}{30} = \frac{209 - 4,489}{30} = \frac{209 - 149.633333}{30} = 59.366667$$

$$t = \frac{1.366667}{\sqrt{\frac{7.2 + 59.366667}{30(30-1)}}} = \frac{1.366667}{\sqrt{\frac{66.566667}{870}}} = \frac{1.366667}{\sqrt{0.07651}} = \frac{1.366667}{0.276604} = 4.940872$$

$$t = 4.940872 = 4.94$$

After calculating the t- values for all the statements, the statements were arranged in descending order of ‘t’ values from the highest to the lowest and 28 statements were selected for final attitude scale whose values were highest i.e., with t-values more than 1.75, for both positive and negative statements.

Table 1: T- values of statements

S. No	Statements	T values
1	I feel that RKVY programme is instrumental in strengthening of farming community by providing financial assistance to farmers.	2.51
2	I feel that RKVY programme is not helpful to the farmers in getting year-round income.	2.96
3	I don't think under RKVY there is subsidy provision.	1.30
4	In my opinion RKVY programme is providing critical inputs to the farmers.	3.20
5	I feel that RKVY programme is facilitating adoption of location specific technologies.	1.334
6	I feel that RKVY technologies are technically feasible and practically applicable in field level.	4.02
7	In my view RKVY programme is not being implemented effectively.	1.53
8	In my view farmers are not getting any help/ service in adopting innovative technologies in agriculture under RKVY.	0.25
9	Subsidy provision under RKVY is a boon to farmer.	1.83
10	In my opinion RKVY programme has established strong linkage between farmers and extension personnel.	4.63
11	In my view subsidy provided under RKVY helped to improve farm implements/ machinery status of the farmers.	2.13
12	In my opinion RKVY programme don't have any input distribution activity/ component.	1.37
13	I feel that RKVY programme has given more focus on infrastructure development.	0.87
14	I feel that this programme is very useful to small and marginal farmers.	3.73
15	In my opinion RKVY components are not helpful to farm women.	4.07
16	In my view this programme aims at improvement in the farmers economic and social status.	1.25
17	In my opinion RKVY programme has given importance to distribution of seed to the farmers.	1.69
18	RKVY programme did not do any seed distribution programme.	1.09
19	In my opinion RKVY is one of the best programmes compared to earlier agriculture development programmes.	2.84
20	I feel that RKVY programme is not useful to big farmers.	1.63
21	I feel that most of the farmers are unaware about RKVY programme.	0.45
22	RKVY programme motivated the farmers to go for insuring their crops.	1.153376
23	I feel that RKVY programme has created awareness among the farmers on marketing facilities.	0.39
24	Agri entrepreneurship has gained momentum due to RKVY in my village.	1.25
25	I feel that RKVY components were successfully implemented in the state.	1.58
26	I feel that every farmer is getting maximum benefits under RKVY programme.	4.49
27	In my opinion farmers are not satisfied with available benefits under RKVY programme.	1.58
28	I believe that RKVY has reduced yield gaps in agriculture.	4.70
29	In my view most of the farmers are mostly adopting the technologies/ interventions/ practices under RKVY.	3.02
30	The technologies promoted under RKVY are more complex leading to non-adoption of the farmer.	0.95
31	I feel that RKVY programme motivated the farmers to go for organic farming.	0.69
32	In my view crop diversification sector under RKVY has encouraged the farmers to adopt the Integrated farming systems in their farm.	2.65
33	In my opinion RKVY programme did not encourage the farmer to go for diversified cropping in large level.	1.13
34	There is no scope to rural youth to become as an entrepreneur in agriculture and allied sectors under RKVY programme.	4.28
35	One of the themes of RKVY programme is showcasing the technologies.	0.27
36	In my view farmers income has not increased due to interventions of RKVY in our village.	1.64
37	In my opinion RKVY programme is not implemented effectively in my village from last five years.	2.77
38	I feel that RKVY programme improved farm productivity to a great extent in our village.	2.09
39	I feel that the funds were utilized properly under RKVY programme.	1.43
40	I feel that RKVY programme funds were not utilised properly.	0.56
41	In my view soil fertility status has improved due to adoption of organic farming in my village.	1.64
42	In my opinion RKVY programme is not useful to organic farmer.	0.22
43	RKVY programme don't have any credit facilities to farmers during last five years.	3.53
44	RKVY benefits are reaching even to remotest farmer in the state.	0.25
45	Farmers of remote areas did not get benefits under RKVY programme.	2.27
46	I feel that farmers are effectively utilizing the various interventions of RKVY.	2.66
47	Farmers are not satisfied with infrastructure facilities created under RKVY.	4.81
48	I feel that RKVY programme is helpful to the farmers in adopting the new technologies.	1.12
49	In my view agriculture and allied sectors both were given more importance under RKVY programme.	3.38
50	RKVY programme is not useful to tenant farmers.	1.74
51	RKVY programme has brought quantifiable changes in farming aspects.	1.94
52	RKVY programme has improved the living standards of farmers in rural area.	2.73
53	I feel that RKVY programme was not implemented in resource poor areas.	1.29
54	RKVY programme main aim is increasing net income of the farmers.	2.88
55	In my opinion RKVY programme has created awareness on sustainable farming among the farmers.	1.02
56	I believed that RKVY programme has motivated the farmers to go for diversified farming.	3.75
57	I feel the RKVY programme has not provided need-based information regarding optimum utilization of agricultural inputs, low-cost technologies.	1.25
58	In my opinion quality inputs were distributed in our village under RKVY programme.	1.89
59	In my view RKVY programme don't distributed quality materials to the farmers.	1.26
60	I feel that under RKVY programme there was no creation of market facilities.	2.91
61	In feel that RKVY programme has not given importance to irrigation technologies.	0.42
62	Soil testing is being encouraged under RKVY and resulted in maintenance of soil health.	1.54
63	I feel that under RKVY programme exposure visits to the farmers on modern farming were not organised.	0.57

64	I feel that RKVY programme has created awareness on fish rearing technologies among the farmers in our village.	1.22
65	I feel that RKVY programme has encouraged the farmers to adopt soil conservation techniques.	1.66
66	In my opinion quality seed stocks were distributed to fish farmers under RKVY programme.	0.26
67	I feel that RKVY programme ahs helps to fish farmers for society formation or group formation.	1.55
68	RKVY programme has motivated the farmers to take up horticulture crops for higher returns.	1.25
69	New suitable cropping patterns are being encouraged under RKVY to increase farmers income.	0.76
70	I feel that RKVY programme has not organised campaigns on alarming issues in agriculture and allied sectors.	0.95
71	I feel that sericulture activities are being encouraged under RKVY.	0.92
72	I feel that RKVY programme has created awareness on vaccination of livestock's among the farmers in our village.	3.01
73	In my opinion distribution of quality kitchen garden kits to farmers under RKVY for nutritional security.	0.94
74	I feel that RKVY programme did not helps to farmers in getting timely need-based information.	1.28
75	In my view value addition of vegetable/ pulses are being encouraged under RKVY for higher returns.	0.85
76	In my view RKVY programme has provided subsidy facilities on pandal systems to horticulture farmers.	0.56
77	In my view RKVY Programme has distributed quality vegetable seeds to farmers in our village.	0.96
78	In my opinion polyhouse and mulch technologies were encouraged under RKVY in our village.	1.24
79	In my view RKVY programme has organised animal health camps in our village.	1.36
80	In my view RKVY programme has distributed chaff cutter and fodder seed to the farmers on subsidy basis.	1.61

Reliability of attitude scale

According to Kerlinger (1973) "Reliability is the accuracy or precision of the measuring instrument". To know the reliability of the attitude scale Split half method was used.

Split half method

The selected 28 statements were administered to 120 respondents in non sample area and responses were obtained. Then scores of respondents against statement were calculated and statements were divided into to two nearly equal halves. The common way of splitting is by odd-even method. Under Split half method Rulon and Flanagan formulae was used to estimate the Internal consistency reliability. Both provided the reliability of whole test. The formula estimates the reliability coefficient on the basis of proportion of error variance in total variance of the test. The lesser the variance the greater will be the reliability.

Rulon Formula

$$\text{The formula is } r_{tt} = 1 - \frac{\sigma_d^2}{\sigma_t^2}$$

Where r_{tt} = reliability coefficient

σ_d^2 = variance of the difference between two half scores for each farmer.

σ_t^2 = Variance of the total score.

Flanagan formula

$$\text{The formula is } r_{tt} = \frac{2(1 - \sigma_1^2 + \sigma_2^2)}{\sigma_t^2}$$

Where r_{tt} = reliability coefficient

σ_1^2 = variance of scores of the first half

σ_2^2 = variance score of the second half

σ_t^2 = variance of the total score.

Both formulae yielded the same reliability coefficient i.e 0.89, indicating that the attitude scale was highly suitable for administration to the farmers.

Validity of attitude scale

Content validity: The validity of the test depended on the fidelity with which it measures what is expected to measure. The validity of the scale was examined with the help of "content validity" by determining how well the contents of the scale represented the subject matter under study. As all the possible items covering the universe were selected by discussion with extension experts and research experts, the scale satisfied the content validity.

Final Attitude Scale: Farmers will have different opinion towards various components/ interventions of the RKVY programme. The following statements represents the diverse opinion on various components/ interventions of the RKVY programme. Please indicate by putting tick (✓) mark in the appropriate box whether you strongly agree (SA), Agree (A), Undecided (UD), Disagree (DA) and Strongly Disagree (SDA) with these statements.

Table 2: Final Attitude Scale

S. No	Statements	Response categories				
		SA	A	UD	DA	SDA
1*	Farmers are not satisfied with infrastructure facilities created under RKVY.					
2	In my opinion RKVY programme has established strong linkage between farmers and extension personnel.					
3*	In my opinion RKVY components are not useful to farm women.					
4	I feel that RKVY technologies are technically feasible and practically applicable in field level.					
5	I feel that this programme is very useful to small and marginal farmers.					
6	In my view agriculture and allied sectors both were given more importance under RKVY programme.					
7	I feel that RKVY programme has created awareness on different components among the farmers in our village.					
8*	I feel that RKVY programme is not helpful to the farmers in getting year-round income.					
9	In my opinion RKVY is one of the best programmes compared to earlier agriculture development programmes.					
10*	In my opinion RKVY programme is not implemented effectively in my village from last five years.					
11	I feel that RKVY programme is instrumental in strengthening of farming community by providing financial assistance					

	to farmers.					
12*	Farmers of remote areas did not get benefits under RKVY programme.					
13	I feel that RKVY programme improved farm productivity to a great extent in our village.					
14	In my opinion quality inputs were distributed in our village under RKVY programme.					
15	In my view RKVY is a boon to farmer.					
16	I believe that RKVY has reduced yield gaps in agriculture/ horticulture/ animal husbandry/fisheries.					
17	I feel that every farmer is getting maximum benefits under RKVY programme.					
18*	There is no scope for rural youth to become an entrepreneur in agriculture and allied sectors under RKVY programme.					
19	I believe that RKVY programme has motivated the farmers to go for diversified farming.					
20*	RKVY programme there is no provision for linking components with formal credit facility.					
21	In my opinion RKVY programme is providing critical inputs to the farmers.					
22	In my view most of the farmers are adopting the technologies/ interventions/ practices recommended under RKVY.					
23	I feel that under RKVY programme there was no provision for market.					
24	RKVY programme main aim is increasing net income of the farmers.					
25	RKVY programme has improved the living standards of farmers in rural area.					
26*	I feel that RKVY programme did not help farmers in getting timely need-based information.					
27	In my view subsidy provided under RKVY helped to improve farm implements/ machinery status of the farmers.					
28	RKVY programme has brought quantifiable changes in farming.					

* Negative statements

Administration of the scale: People can use this scale who is conducting the study on the attitude of farmers towards various components/ interventions under RKVY programme, after administering this scale total attitude score of each respondent may be calculated and categorized with the help of class interval into high, medium, low categories. Accordingly, strategies for further effective planning, implementation and execution of various components/ interventions under RKVY programme.

Conclusion

The study aimed at developing a scale to measure the attitude of farmers towards various components/ interventions under RKVY programme. The affective aspect of attitude scale consisted of 28 statements, with high reliability, and more predictive validity. This scale can be used in future studies on attitude and feeling of farmers about the RKVY components / interventions. It will be helpful to the policy makers and administrators to develop suitable strategies towards successful implementation of the RKVY programme by knowing the attitude of farmers towards various components/ interventions under RKVY programme.

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