

RESEARCH ARTICLE

Analysing Attitude of the Farmers Towards IARI Pusa Extension Approaches

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ABSTRACT

Attitude is the individual's reaction or feeling about someone, something, or some circumstance. The objective of the present study was to assess the attitudes of the farmers towards the selected extension approaches of IARI viz., IARI- National Extension Programme (NEP), IARI- Voluntary Organisation's (VOs) collaborative programme and IARI Model Village (IMV). The study was conducted in Uttar Pradesh in which 120 farmers and 30 stakeholders were selected using the Stratified Multistage Sampling technique. It was found that an equal number of farmer respondents had unfavourable attitude, favourable attitude and highly favourable attitude respectively towards IARI-NEP extension approach, while majority of farmer respondents had favourable attitude towards IARI-VOs partnership extension approach and majority of farmers had neutral attitude towards IMV extension approach. The results also revealed that the farmer respondents of IARI-VO adopted village had more favourable attitude towards IARI extension approach compared to the farmer respondents of IARI model village. It was found that the independent variables family size, land holding, economic motivation and scientific orientation were positively and statistically significantly correlated with attitude of the farmers towards IARI-NEP and IARI-VO extension approaches while land holding, estimated annual income, innovativeness, economic motivation and scientific orientation were found positively and statistically significantly correlated with attitude of the farmers towards IARI model village (IMV) extension approach. Multiple regression analysis elicited that innovativeness and economic motivation had a positive and significant contribution to the attitude of the farmers of IARI-NEP adopted village, while economic motivation had a positive and significant contribution to the attitude of the farmers of IARI-VO adopted village.

Key words: Attitude; Extension approaches; IARI-NEP; IARI-VO; IMV; Uttar Pradesh.

Attitude is a learned predisposition to respond in a favourable or unfavourable manner toward people, an object, an idea or a situation (Fishbein, 1975). Attitude is the prime cause for the growth of an individual and will have great impact on the way we think, the way we perceive and the way we do the things. It is the determining factor for the success or failure of any vibrant endeavour. (Patel and Sharma, 2022). A person's attitude is how they react or feel about someone, something, or some circumstance. Hogg (2007) defined attitude as a negative or positive evaluation of an object which influence human's behaviour toward that object. Kaur et al. (2014) revealed that majority of farmers had favourable

attitude towards privatization of extension services. They also found that socio-economic status of farmers was significantly and positively related with attitude of farmers towards privatization of agricultural extension services.

The Extension Approach is the style of action, embodying the philosophy of an extension system which, by and large determines the direction and nature or style of the various aspects of that system, such as its structure, leadership, program, methods and techniques, resources and linkage (Axinn, 1988). The Indian Agricultural Research Institute (IARI) developed different innovative extension approaches for transfer of technologies to the farmers since its

establishment in 1905. Since 2008 IARI has initiated and implemented different innovative extension approaches like IARI-National Extension Programme (NEP) Extension Model through IARI-ICAR & SAUs Collaboration, IARI-VOs Partnership Extension Model and IARI Model Villages (IMV) for technology dissemination to the farmers located in remote areas. These approaches already completed fourteen years since initiation. The beneficiary farmers are getting the benefits of these extension approaches since last fourteen years. It became necessary to know what attitude the farmers are posing towards these extension approaches of IARI. Keeping this in view the present study was undertaken to comparatively assess the attitude of the farmers towards IARI-NEP, IARI-VO and IMV extension approaches.

METHODOLOGY

The study was conducted purposively in the state of Uttar Pradesh as all the approaches under the study are in operation at different locations of this state. For selecting districts, villages and farmers, stratified multistage sampling method was employed. As a control district, another district was randomly selected where these approaches are or were not being employed. Thus, the selected adopted districts were Saharanpur (IARI-NEP), Chitrakoot (IARI-VO) and Aligarh (IMV). The Non adopted or control district was Baghpat. Further, for every extension approach, one adopted village was randomly selected from each district. At the last stage of sampling, from each of the adopted villages, 30 beneficiary farmers were selected randomly. 30 non-beneficiary farmers were selected from the non-adopted village. Thus, the total sample size of farmer respondents was 120. In addition, from each of the three extension approaches of IARI under study, 10 stakeholders (scientists and officials of involved organizations) were selected as respondents for the study. So, total sample size of the study was 150 (120+30); N=150.

In the present study attitude can be operationally defined as the degree of positive or negative predisposition of the farmers and other stakeholders towards the selected extension approaches of IARI. To measure the attitude of the farmers and other stakeholders towards the selected extension approaches of IARI, the scale developed by *Singh (2017)* was used with modification for the study which was constructed based on the method of summated rating suggested

by *Likert (1932)*. Suitable descriptive statistics (like frequency, mean, per cent, standard deviation etc.) and inferential statistics (like correlation, regression, Kruskal-Wallis H test, Mann-Whitney U test etc.) were used and the collected data were analysed using IBM-Statistical Package for Social Sciences (IBM-SPSS 25) and MS-Excel 2019 software.

RESULTS AND DISCUSSION

Attitudes of the farmers towards selected extension approaches of IARI: The Table 1 revealed that an equal number of farmer respondents (23.33%) had unfavourable attitude, favourable attitude and highly favourable attitude respectively towards IARI-NEP extension approach, while majority (46.67%) of farmer respondents had favourable attitude towards IARI-VO partnership extension approach and majority (40%) of farmers had neutral attitude towards IMV extension approach. The mean attitude score of the farmer respondents of IARI-NEP adopted village, IARI-VO adopted village, IARI model village were 87.7, 91.43 and 85.93 respectively. As IARI-VO is a public-private partnership extension approach, and as majority of the farmers had more favourable attitude towards IARI-VO partnership extension approach compared to other extension approaches of IARI, this finding was in line with the findings of *Hanchinal et al. (2001)* and *Kaur et al. (2014)*, who reported that majority of the farmers had favourable attitude towards privatization of agricultural extension services. The finding is also in consonance with

Table 1. Distribution of farmer respondents according to the level of attitude towards selected extension approaches of IARI

Attitude of the farmers	Adopted farmers					
	IARI-NEP		IARI-VO		IMV	
Mean	87.7		91.43		85.93	
Category	No.	%	No.	%	No.	%
Highly unfavourable (<73.95)	4	13.33	1	3.33	4	13.33
Unfavourable (73.95-83.42)	7	23.33	1	3.33	6	20
Neutral (83.42-91.27)	5	16.67	10	33.33	12	40
Favourable (91.27-96.63)	7	23.33	14	46.67	7	23.33
Highly favourable (>96.63)	7	23.33	4	13.33	1	3.33
Total	30	100	30	100	30	100

Oladosu (2006) and *Umar et al. (2014)* who reported that majority of the farmers were satisfied with the quality of extension services in Nigeria and they had favourable attitude towards the demand-driven extension services in Niger state of Nigeria.

Distribution of farmers based on ranking of attitude statements: The mean score for each statement of the

attitude scale were calculated for the respondents of IARI-NEP adopted village, IARI-VO adopted village and IARI model village. Higher mean score indicates more favourable attitude of respondents towards that particular statement. Based on the mean scores for all the items ranks were assigned. The statement with highest mean score got the first rank and the statement

Table 2. Distribution of farmers based on ranking of attitude statements

Statements	IARI-NEP		IARI-VO		IMV	
	MS	Rank	MS	Rank	MS	Rank
Programme helps to increase awareness of farmers about quality seeds and improved varieties. (+)	4.63	III	4.5	VIII	4.57	II
Programme has enhanced the linkage of farmers with research institute and other development agencies. (+)	4.43	VI	4.27	XII	4.47	V
The programme facilitates in quick and easy dissemination of quality seeds of newly developed varieties. (+)	4.67	II	4.63	V	4.43	VI
The programme has improved farmers' participation and interest in extension programme. (+)	4.43	VI	4.5	VIII	4.5	IX
Programme helped in increasing the production and productivity of crops by supplying quality seeds of improved varieties to the farmers. (+)	4.1	XII	4.43	IX	4.33	VIII
It is better to remain away from this programme due to poor availability of improved quality seed. (-)	4.63	III	4.77	III	4.6	I
The programme has helped in reduction in cost of cultivation in farming. (+)	3.03	XVI	2.13	XVI	3.63	XII
Staff are not concerned about feedback and response of farmers. (-)	4.13	XI	4.73	IV	4.6	
I think, programme is partial towards rich/ progressive farmers. (-)	3.6	XIV	4.83	I	4.47	V
Participatory Workshop organized by Programme helps in resource management at farm level. (+)	4.4	VII	4.07	XIII	4.27	IX
Farmers are interested in programme and wish to further strengthen it. (+)	4.5	V	4.6	VI	4.53	III
Programme is actively engaging in promoting technologies which helps in drudgery reduction in agriculture. (+)	3.3	XV	3.53	XV	2.47	XVI
The programme is an innovative approach in disseminating technology and services to farmers. (+)	4.7	I	4.63	V	4.47	V
Programme helps in diffusion of climate resilient technologies which helps the farmers to cope up with the climatic variability. (+)	4.1	XII	4.4	X	3.67	XI
Provision of suitable information in the programme helps in managing pest and disease problems at the farmer's field. (+)	4.3	VIII	4.73	IV	4.57	II
Programme has given emphasis on supply of seed and neglects other aspects of package of practice. (-)	3.03	XVI	3.87	XIV	3.07	XV
Technology supplied through this programme are economically viable and ecologically sound thus enhances the overall sustainability of farm. (+)	4.23	X	4.37	XI	3.73	X
Training provided by staff to farmers is not based on needs and interest of farmers. (-)	4.27	IX	4.57	VII	3.37	XIII
The demonstration conducted by programme has done little in motivating the farmers. (-)	3.93	XIII	4.27	XII	3.3	XIV
Programme is participatory in its approach. (+)	4.6	IV	4.8	II	4.4	VII
Programme helps in diffusion of good agricultural practices among beneficiaries' farmers. (+)	4.67	II	4.8	II	4.5	IV

with lowest mean score got the last rank. The positive statements which had higher mean scores showed the favourable attitude of farmers, while the negative statements which had higher mean scores showed the unfavourable attitude of farmers towards the IARI extension approaches respectively.

Data from Table 2 indicate that rank wise, in case of IARI-NEP extension approach, *The programme is an innovative approach in disseminating technology and services to farmers* was at Rank I, followed by *The programme facilitates in quick and easy dissemination of quality seeds of newly developed varieties* and *Programme helps in diffusion of good agricultural practices among beneficiaries' farmers* (II Rank), *Programme helps to increase awareness of farmers about quality seeds and improved varieties* and *It is better to remain away from this programme due to poor availability of improved quality seed* (III Rank). *Programme is actively engaging in promoting technologies which helps in drudgery reduction in agriculture* (Statement 12) and *the programme has helped in reduction in cost of cultivation in farming* (Statement 7) were at the last rung of XV and XVI respectively. In case of IARI-VO partnership extension approach, *I think, programme is partial towards rich/progressive farmers* was at Rank I, *Programme is participatory in its approach* and *Programme helps in diffusion of good agricultural practices among beneficiaries' farmers* (II Rank), *It is better to remain away from this programme due to poor availability of improved quality seed* (III Rank). *Programme is actively engaging in promoting technologies which helps in drudgery reduction in agriculture* (Statement 12) and *the programme has helped in reduction in cost of cultivation in farming* (Statement 7) were at the last rung of XV and XVI respectively. In case of IARI model village (IMV) approach, *It is better to remain away from this programme due to poor availability of improved quality seed* and *Staff are not concerned about feedback and response of farmers* was at Rank I, *Programme helps to increase awareness of farmers about quality seeds and improved varieties* and *Provision of suitable information in the programme helps in managing pest and disease problems at the farmer's field* (Rank II) and *Farmers are interested in programme and wish to further strengthen it* (Rank III). *Programme has given emphasis on supply of seed and neglects other aspects of package of practice*. Statement 16 and *Programme is actively engaging*

in promoting technologies which helps in drudgery reduction in agriculture (statement 12) were at the last Rung of XV and XVI respectively in case of IARI model village extension approach.

Comparison of attitude of the farmer respondents towards extension approaches of IARI: Kruskal-Wallis H test was used to find out whether the farmers in the IARI-NEP adopted village, IARI-VO adopted village and IARI model village were statistically significantly different from each other with respect to their attitude towards the extension approaches of IARI. In the Table 3, Test statistics ($\chi^2= 6.085$, asymptotic significance (2-tailed) p -value = 0.048) indicates that there was a statistically significant difference in the attitude score of the farmer respondents between the IARI-NEP adopted village, IARI-VO adopted village and IARI model village. Since Kruskal-Wallis H test is an omnibus test statistic, it indicates that at least two villages were different on the basis of the attitude score of the farmer respondents, but it cannot conclude that attitude of which specific villages were statistically significantly different from each other. For knowing that a post hoc test (i.e., Mann-Whitney U test) was performed.

Table 3. Comparison of attitude of the farmer respondents towards extension approaches of IARI by Kruskal-Wallis H test

Group	N	Mean rank
IARI-NEP	30	45.13
IARI-VO	30	53.98
IMV	30	37.38
Test Statistics		Value
χ^2 (Kruskal-Wallis H)		6.085*
df		2
Asymp. Sig. (2-tailed)		0.048
**Significant at the 0.01 level (2-tailed)		
*Significant at the 0.05 level (2-tailed)		

Further it was ascertained that whether the attitude of farmers of two different approaches differ significantly Mann Whitney U test was used. The results are shown in the Table 4. The Mann-Whitney U test, as a post hoc test of Kruskal-Wallis H test, concluded that attitude score of the farmers of IARI-VO adopted village was statistically significantly higher ($p<0.01$) from the farmers of IARI model village, which means the farmer respondents of IARI-VO adopted village had more favourable attitude towards IARI extension approach compared

Table 4. Difference in attitude of the farmers towards different extension approaches of IARI by Mann Whitney U test

Groups	Group of approaches	Mean rank	N	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
A	IARI-NEP	27.95	30	373.500	838.500	-1.133 ^{Ns}	0.257
	IARI-VO	33.05	30				
B	IARI-NEP	32.68	30	384.500	849.500	-0.970 ^{Ns}	0.332
	IMV	28.32	30				
C	IARI-VO	36.43	30	272.000	737.000	-2.638 ^{**}	0.008
	IMV	24.57	30				

****Significant at the 0.01 level (2-tailed)** ***Significant at the 0.05 level (2-tailed)**

to the farmer respondents of IARI model village. *Association between attitude of the farmer respondents towards extension approaches of IARI and selected independent variables:* Table 5 reveals that Family size, land holding, innovativeness, economic motivation and scientific orientation were positively and statistically significantly correlated with attitude of the farmers of IARI-NEP adopted village. Family size, land holding, farming experience, social participation, estimated annual income, economic motivation and scientific orientation were found positively and statistically significantly correlated with attitude of the farmers of IARI-VO adopted village. Land holding, estimated annual income, innovativeness, economic motivation and scientific orientation were found positively and statistically significantly correlated with attitude of

the farmers of IARI model village. This finding was consistent with finding of *Kaur et al. (2014)* who found that that socio-economic status and land holding were found significantly and positively associated with the attitude of farmers towards privatization of agricultural extension services.

Table 6 showed that about 81.1 per cent of variance in attitude towards IARI-NEP Extension Model could be explained by the independent variables selected for the study which can be seen from R² value of 0.811. The F-ratio being at 7.015 indicates that the overall regression model statistically significantly predicts the attitude of the farmers and it is a good fit for the data at 1 per cent level of significance (*p* = 0.0002). Two independent variables were found to be significantly contributing to the attitude of the farmers towards

Table 5. Correlation between attitude of the farmer respondents towards extension approaches of IARI and selected independent variables

Independent variables	IARI-NEP		IARI-VO		IMV	
	Pearson correlation coefficient (r)	p-value	Pearson correlation coefficient (r)	p-value	Pearson correlation coefficient (r)	p-value
Age	-0.120	0.529	0.339	0.067	-0.128	0.502
Education	0.084	0.659	0.320	0.084	0.087	0.647
Family size	0.471 ^{**}	0.009	0.379 [*]	0.039	-0.068	0.722
Farming experience	-0.122	0.520	0.399 [*]	0.029	-0.216	0.251
Social participation	0.269	0.150	0.368 [*]	0.045	0.292	0.118
Land holding	0.540 ^{**}	0.002	0.410 [*]	0.024	0.478 ^{**}	0.008
Estimated annual income	0.255	0.175	0.392 [*]	0.032	0.473 ^{**}	0.008
Contact with IARI	0.300	0.108	0.139	0.464	-0.017	0.930
Innovativeness	0.578 ^{**}	0.001	0.248	0.187	0.596 ^{**}	0.001
Economic motivation	0.712 ^{**}	0.00001	0.389 [*]	0.034	0.631 ^{**}	0.0002
Scientific orientation	0.753 ^{**}	0.000002	0.527 ^{**}	0.003	0.572 ^{**}	0.001

****Significant at the 0.01 level (2-tailed)** ***Significant at the 0.05 level (2-tailed)**

Table 6. Multiple regression analysis of the selected independent variables with attitude of the farmer respondents towards different extension approaches of IARI

Independent variables	IARI-NEP				IARI-VO				IMV							
	B	SE	β	p-value	t-value	p-value	B	SE	β	t-value	p-value	B	SE	β	t-value	p-value
Constant	13.598	16.173		0.411	0.841	0.411	46.091	16.031		2.875	0.010	23.081	16.363		1.411	0.175
Age	0.024	0.683	0.024	0.972	0.035	0.972	-0.088	0.213	-0.187	-0.412	0.686	0.028	0.287	0.037	0.096	0.925
Education	-0.733	0.519	-0.202	0.175	-1.412	0.175	0.162	0.417	0.075	0.389	0.702	-0.069	0.251	-0.049	-0.276	0.786
Family size	0.279	0.483	0.127	0.571	0.577	0.571	0.311	0.303	0.186	1.026	0.318	-0.426	0.289	-0.243	-1.477	0.157
Farming experience	-0.034	0.679	-0.035	0.960	-0.050	0.960	0.258	0.238	0.531	1.084	0.293	0.077	0.266	0.115	0.290	0.775
Social participation	0.861	0.895	0.141	0.349	0.961	0.349	0.278	0.430	0.136	0.648	0.525	1.751	1.479	0.192	1.184	0.252
Land holding	0.208	0.235	0.207	0.388	0.884	0.388	0.087	0.316	0.091	0.275	0.786	0.922	0.751	0.283	1.228	0.235
Annual income	-6.166E-6	0.000003	-0.364	0.068	-1.940	0.068	-3.032E-6	0.000009	-0.103	-0.328	0.747	8.100E-6	.00002	0.088	0.443	0.663
Contact with IARI	-0.262	0.506	-0.092	0.611	-0.517	0.611	-0.126	0.884	-0.029	-0.142	0.888	-0.399	0.363	-0.167	-1.101	0.285
Innovativeness	1.668	0.521	0.463	0.005	3.200**	0.005	0.145	0.364	0.074	0.398	0.695	0.674	0.658	0.235	1.024	0.319
Eco. motivation	1.750	0.837	0.458	0.05	2.090*	0.05	0.970	0.471	0.374	2.058*	0.05	1.600	1.032	0.360	1.551	0.138
Scientific orientation	0.485	0.555	0.190	0.394	0.873	0.394	0.516	0.441	0.238	1.169	0.258	0.307	0.429	0.136	0.715	0.484
**Significant at 0.01 level of probability;																
*Significant at 0.05 level of probability																
R ² = 0.811																
F ratio = 7.015*																
R ² = 0.576																
F ratio = 2.223																
R ² = 0.662																
F ratio = 3.203**																

IARI-NEP Extension Model. *Innovativeness* had a positive and significant contribution to the attitude of the farmers at 1 per cent level of significance while *economic motivation* had a positive and significant contribution to the attitude of the farmers at 5 per cent level of significance. 57.6 per cent of variance in attitude towards IARI-VO Partnership Extension Model could be explained by the independent variables selected for the study which can be seen from R² value of 0.576. The F-ratio being at 2.223 is non-significant which indicates that the overall regression model is not a good fit for the data ($p = 0.064$). Only one independent variable was found to be significantly contributing to the attitude of the farmers towards IARI-VO Partnership Extension Model. *Economic motivation* had a positive and significant contribution to the attitude of the farmers at 5 per cent level of significance. 66.2 per cent of variance in attitude towards IARI Model Village (IMV) Extension Approach could be explained by the independent variables selected for the study which can be seen from R² value of 0.662. The F-ratio being at 3.203 indicates that the overall regression model statistically significantly predicts the attitude of the farmers and it is a good fit for the data at 1 per cent level of significance ($p = 0.01$). But no independent variable was found to be statistically significantly contributing to the attitude of the farmers towards IARI Model Village (IMV) Extension Approach. *Das and Chowdhury (2022)* in their study reported that the predictor variables agricultural knowledge, scientific orientation, information seeking behaviour and farm science centre exposure had positively influenced on attitude of the farm women towards farm science centre scientist. Their study is inconsistent with the present study.

CONCLUSION

The mean attitude score was found to be highest for farmer respondents of IARI-VO adopted village i.e., majority of the farmers had more favourable attitude towards IARI-VO partnership extension approach compared to other extension approaches of IARI. The rank wise distribution of the attitude statements based on the farmers' scores revealed that most of the positive attitude statements got higher rank in case of IARI-NEP adopted village and IARI model village (IMV) while few negative attitude statements also received higher rank in case of IARI-VO adopted village. Though majority of the farmers

had more favourable attitude towards IARI-VO partnership extension approach compared to other extension approaches of IARI, some farmers showed unfavourable attitude towards the same. The study revealed that the farmers were interested to further strengthen the programme for getting more benefitted in future. Land holding, economic motivation and scientific orientation were found positively correlated with attitude of the farmers towards selected extension approaches of IARI. The Multiple regression analysis elicited that the predictor variables innovativeness and economic motivation had a positive and significant contribution to the attitude of the farmers of IARI-NEP adopted village, while the predictor variable economic motivation had a positive and significant contribution to the attitude of the farmers of IARI-VO adopted village.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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