

A Critical Study on the Factors Responsible For Being Unreached by the Farmers towards Recommended Crop Production Technologies

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Received: 11.02.2018 | Revised: 24.03.2018 | Accepted: 1.04.2018

ABSTRACT

The economic contribution of Indian Agriculture is declining over a period. More than 70 per cent of population is depending on agriculture for sustainable livelihood and about 60 per cent of total net sown area is under rainfed agriculture (GK Today, 2014) and stands first in value of rainfed products. Since, majority were belonged to rainfed agriculture, they were not utilized the farm related services provided through formal extension system even after implementation of many programmes. Hence, the present study carried-out with the objective i.e., “to find out the factors responsible for being unreached by the farmers”. It is very interesting to note that, the seven factors viz., behavioural (intrinsic), intellectual, economic, posteriori knowledge, conservative cosmopolitan, stuffed or conservative and social participation were found to be contributing more for unreachedness.

Key words: Unreached farmers, Factors and Unreachedness.

INTRODUCTION

Indian society is an agrarian society. Agriculture plays a vital role in the country's economy. Its contribution to Gross Domestic Product (GDP) is 16.1 per cent in 2015. It is evident that, more than 70 per cent of country's population is depending on agriculture for their livelihood. About 60 per cent of total net sown area is under rainfed agriculture¹ and it provided employment to 56.00 per cent of Indian work force³.

Most of the programmes and initiatives taken by the Government of India and the efforts taken by the State Governments

worked in the same lines of continuing dependence on only a limited target group of farming community who were resource rich, progressive, economically sound and big farmers for their goal achievement. The widely adopted practices by the extension system of the state and country preferred road side plots for demonstrations neglecting the interior fields for the sake of convenience of farmers and administrators. No doubt it is beneficial to farming community, but over a period of time, only selected farmers having road side fields were getting benefitted and others were almost untouched⁴.

Cite this article: Sureshverma, R., Samuel, G., and Sreenivasa Rao, I., A Critical Study on the Factors Responsible for Being Unreached by the Farmers towards Recommended Crop Production Technologies, *Int. J. Pure App. Biosci.* 6(6): 324-329 (2018). doi: <http://dx.doi.org/10.18782/2320-7051.5801>

Now, the population has been making increasingly greater demand on the soil, the subsistence farming techniques are no more relevant. We have been passing through this critical transition from subsistence agriculture to commercial farming based on varied scientific and material inputs. Over a period, natural fertility will be declined and supplemented with chemical fertilizers at optimum dose. At the same time farmers should use them judiciously to improve sustainability. Even though, majority of the farmers were belonged to different categories *viz.*, marginal, small, medium and large category, they have similar characteristics which highly responsible for being unreached towards recommended crop production technologies.

Keeping this in view, the present study has been designed and entitled “A critical study on the factors responsible for being unreached by the farmers towards recommended crop production technologies” with the objective “to find out the factors responsible for being unreached by the farmers”. To find out highly contributing variables, factor analysis was carried out for the collected data and results were discussed.

MATERIAL AND METHODS

For the present study, ex-post facto research design was adopted. According to Kerlinger², ex-post facto research is a systematic empirical enquiry, in which the scientists do not have direct control of influencing independent variables because their manifestations have already been occurred.

The Tamil Nadu state is located in the south-eastern part of Peninsular India, the state is classified into seven distinct agro-climatic zones delineated as North Eastern, North Western, Western, Cauvery Delta, Southern, High Rainfall and Hilly Zone. Based on the least production of major crops *viz.*, rice, groundnut and maize, the districts namely Vellore in North Eastern Zone, Krishnagiri in North Western Zone, Perambalur in Cauvery Delta Zone, Sivagangai in South Zone and Thiruppur in Western Zone of Tamil Nadu were selected for the study.

From each of the selected districts, two (2) most backward blocks were selected thus making a total of ten blocks for the study. From each selected block, three (3) villages were considered based on their accessibility to the town thus making a total of thirty (30) villages for the study. From each selected village ten (10) unreached farmers were identified based on the sources utilized for seeking information on crop production practices by administering a structured interview schedule specially prepared for the purpose. A total of sixty (60) respondents from each of the selected districts were identified thus making a total of three hundred (300) respondents for carrying out the study during 2014-2017.

Principal Component Analysis-Factor analysis

Factor analysis is a statistical method used to study the dimensionality of a set of variables. It investigates whether a number of variables of interest Y_1, Y_2, \dots, Y_k are linearly related to a smaller number of unobservable factors F_1, F_2, \dots, F_k . In this study factor analysis was done using the varimax rotation. This was done to determine the number and nature of factors underlying the dependent variable. The concept of Factor loadings and Eigen values solves this problem. By default, the Statistical Package for Social Sciences (SPSS) keeps the factor with ‘Eigen values’ greater than 1.

RESULTS AND DISCUSSION

Principle component analysis of independent variables on knowledge level of unreached farmers irrespective of crops grown was carried out with all the indicators and the results are furnished below. The table 1 provides the specifications of Eigen value and percentage of variance explained by the components. The components which are having more than one Eigen value were selected. Thus, from the seventeen (17) components, seven (7) factors were extracted and these factors together explained a total variance of 63.315 per cent towards return intention. Therefore it could be concluded that first seven (7) factors which have more than one Eigen value are contributing 63.31 per cent variation towards return intention.

Rotated factor (Varimax) matrix of indicators

The results of principle component analysis clearly indicated that there were seven factors that explained the maximum variation (63.15%) in return intention. Further, the findings on factor loading of each indicator under seven factors were analysed and furnished in table 2. From the table (2) each factor column was scanned for identifying the indicators which are more significantly correlated with the particular factor. Thus, from each factor column, the indicators having a factor loading of more than 0.61 were selected and grouped in table 3. The data in table (3) further revealed the grouping of indicators under each factor with their factor loadings.

Factor I

This factor has been identified as prime factor as it explained 14.474 per cent of variation. From the table, it could be inferred that under factor 1, personal commitment of a farmer was found to influence more for being unreached. The variables i.e., self-confidence (0.821*), economic motivation (0.773*) and risk orientation (0.800*) have been termed as ‘**behavioural (intrinsic) factors**’.

Factor II

About 12.825 per cent of variation is explained by third factor. It is evident from the table that the variables like education and occupation with factor loading of 0.797* and 0.682* respectively are related to unreached farmers knowledge level based on their education and primary occupation in which (s)he spend maximum time for gaining knowledge and income generation. Hence, it is termed as ‘**intellectual factor**’.

Factor III

About 9.224 per cent of variation is explained by this factor. It clearly indicates that the variables like farm size, farm power status and livestock possession with factor loading of 0.622*, 0.725* and 0.754* respectively influence the farmers economically in order to practice age old technologies instead of new ones. Since, the variables grouped in this factor are related to farmer’s economic status in terms of farm size, farm power status and livestock possession, which directly influence unreached farmers to practice old

technologies. It leads to have poor knowledge on recommended crop production practices. Hence, it is named as ‘**economic factor**’.

Factor IV

About 7.487 per cent of variation is explained by this factor. It clearly indicates that the majority of unreached farmers are old aged and with high level of farming experience. It could be concluded that the variables like age and farming experience with factor loading of 0.801* and 0.785* respectively influence the farmers to practice age old technologies instead of new ones. Since, the variables grouped in this factor are related to farmer’s age and farming experience. It is named as ‘**posteriori knowledge**’.

Factor V

The variation explained in the factor V is 7.01 per cent. It was observed that two variables were retained under factor V i.e., Family type and Information sharing with factor loading of 0.675* and 0.694*. Since, the variable information sharing behaviour among unreached farmers were at low level because of that the majority of unreached farmers were utilized personal localite channels for sharing information. Hence, this factor is called as ‘**conservative cosmopolitan**’.

Factor VI

The variation explained in the factor VI is 6.361 per cent. It was observed that the variable retained under factor VI i.e., innovativeness with factor loading of 0.821* shows that the unreached farmers are less innovative and not exposed to the medium that disseminate agriculture related informations which influence more for being unreached to the recommended technologies. Hence, this factor is called as ‘**stuffed or conservative**’.

Factor VII

About 5.933 per cent of variation is explained by seventh (VII) factor. It is evident from the table that the variable social participation having a factor loading of 0.861*. The observation clearly explains that the social participation of unreached farmer is playing crucial role for being unreached. Since, the social participation is poor, they are not aware about advances in crop production technologies recommended by the institutions. This factor is named as ‘**social participation**’.

The variable namely social participation ranked first (I) since it had more communality (h^2) value i.e. 0.758. It was followed by other variables like age, education, farming experience, self-confidence, innovativeness, economic motivation, occupation, risk orientation, farm power status, livestock

possession, information sharing behaviour, family type and farm size with communality values of 0.737, 0.733, 0.701, 0.694, 0.687, 0.681, 0.657, 0.648, 0.619, 0.604, 0.555, 0.515 and 0.513 respectively were ranked accordingly.

Table 1: Eigen values for return intention

S. No.	Component number	Eigen value	Percentage of variance	Cumulative variation (%)
1.	I	2.461	14.474	14.474
2.	II	2.180	12.825	27.299
3.	III	1.568	9.224	36.524
4.	IV	1.273	7.487	44.011
5.	V	1.192	7.010	51.021
6.	VI	1.081	6.361	57.382
7.	VII	1.009	5.933	63.315
8.	VIII	0.972	5.718	69.033
9.	IX	0.798	4.692	73.724
10.	X	0.749	4.407	78.131
11.	XI	0.724	4.261	82.392
12.	XII	0.661	3.889	86.281
13.	XIII	0.594	3.493	89.775
14.	XIV	0.548	3.226	93.001
15.	XV	0.477	2.804	95.805
16.	XVI	0.390	2.294	98.099
17.	XVII	0.323	1.901	100.000

Table 2: Rotated factor (Varimax) matrix of each indicators

Sl. No.	Variables	Factors							(h^2)
		I	II	III	IV	V	VI	VII	
1.	X ₁	-0.010	-0.208	-0.161	0.801*	0.119	0.018	0.107	0.737
2.	X ₂	0.081	0.797*	0.151	-0.222	-0.134	0.038	0.015	0.733
3.	X ₃	-0.080	0.682*	0.124	0.040	-0.186	0.251	0.265	0.657
4.	X ₄	0.126	-0.019	0.111	0.785*	-0.185	-0.017	-0.147	0.701
5.	X ₅	-0.146	-0.117	-0.030	-0.038	0.675*	-0.053	0.140	0.515
6.	X ₆	0.071	0.014	-0.041	-0.042	0.069	-0.049	0.861*	0.758
7.	X ₇	0.014	-0.056	0.085	-0.040	0.021	0.821*	-0.006	0.687
8.	X ₈	0.821*	0.014	-0.110	-0.005	0.073	0.007	-0.052	0.694
9.	X ₉	0.773*	0.104	0.098	0.190	-0.092	-0.042	0.126	0.681
10.	X ₁₀	0.800*	0.039	-0.012	0.011	0.016	0.050	0.055	0.648
11.	X ₁₁	0.458	-0.087	-0.162	-0.174	0.114	0.433	-0.212	0.520
12.	X ₁₂	0.213	0.098	0.091	-0.027	0.694*	0.067	-0.071	0.555
13.	X ₁₃	0.100	0.213	0.622*	0.028	0.036	0.225	0.136	0.513
14.	X ₁₄	-0.020	0.024	0.725*	-0.060	0.088	0.252	-0.130	0.619
15.	X ₁₅	0.021	-0.065	0.754*	0.036	0.001	-0.172	-0.016	0.604
16.	X ₁₆	0.171	0.564	0.102	-0.104	-0.298	0.257	0.252	0.586
17.	X ₁₇	-0.346	0.511	0.045	0.131	0.231	0.177	0.271	0.558
Eigen values		2.461	2.18	1.568	1.273	1.192	1.081	1.009	
% of variation explained		14.474	12.825	9.224	7.487	7.01	6.361	5.933	
Cumulative % variation explained		14.474	27.299	36.524	44.011	51.021	57.382	63.315	

Table 3: Factors-wise indicators with factor loading

Sl. No.	Factors	Variables	Factor loadings	
1	Factor 1	X ₈	Self-confidence	0.821*
2		X ₉	Economic motivation	0.773*
3		X ₁₀	Risk orientation	0.800*
4	Factor 2	X ₂	Education	0.797*
5		X ₃	Occupation	0.682*
6	Factor 3	X ₁₃	Farm size	0.622*
7		X ₁₄	Farm power status	0.725*
8		X ₁₅	Livestock possession	0.754*
9	Factor 4	X ₁	Age	0.801*
10		X ₄	Farming experience	0.785*
11	Factor 5	X ₅	Family type	0.675*
12		X ₁₂	Information sharing	0.694*
13	Factor 6	X ₇	Innovativeness	0.821*
14	Factor 7	X ₆	Social participation	0.861*

Table 4: Indicators explained by the seven factors

Sl. No.	Variables	Factor loadings	Communality h ²	Rank	
1	X ₈	Self-confidence	0.821*	0.694	V
2	X ₉	Economic motivation	0.773*	0.681	VII
3	X ₁₀	Risk orientation	0.800*	0.648	IX
4	X ₂	Education	0.797*	0.733	III
5	X ₃	Occupation	0.682*	0.657	VIII
6	X ₁₃	Farm size	0.622*	0.513	XIV
7	X ₁₄	Farm power status	0.725*	0.619	X
8	X ₁₅	Livestock possession	0.754*	0.604	XI
9	X ₁	Age	0.801*	0.737	II
10	X ₄	Farming experience	0.785*	0.701	IV
11	X ₅	Family type	0.675*	0.515	XIII
12	X ₁₂	Information sharing	0.694*	0.555	XII
13	X ₇	Innovativeness	0.821*	0.687	VI
14	X ₆	Social participation	0.861*	0.758	I

CONCLUSION

It is interesting to note that, the factors (7 nos.) identified through this study were found to be contributing more for being unreachable by the farmers. Hence, it is suggested to concentrate only on these factors to mainstream unreachable farmers. Strategies for reorienting the existing system for reaching the unreachable farmers were also developed and broadly categorized into different topographies namely reorientation on socio-psychological,

economic, communication, technological, infrastructure and finally extension system.

Acknowledgement

With endless pleasure, I wish to express my indebtedness and deep sense of gratitude to my beloved Guide and esteemed Chairman of the advisory committee Dr. G. Samuel, Professor and Professors of the Department of Agricultural Extension, College of

Agriculture, PJTSAU, Rajendranagar, Hyderabad, Telangana State for their guidance, untiring attention, sustained help and keen interest evinced. My special thanks to the staff of Revenue department and Agriculture department of Tamil Nadu for timely help rendered throughout my research work.

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