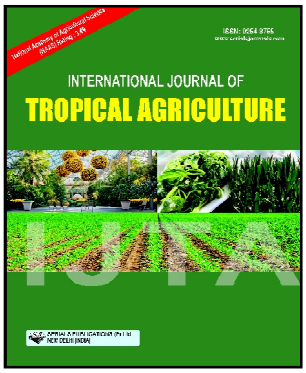

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Role of Vikasa Volunteer Vahini Clubs in adoption of Agricultural Technology in Andhra Pradesh

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I. INTRODUCTION

India has got 5.5 lakh villages having farmers, farmwomen who are less educated with little communication facilities and Information backup. At present situation of Extension infrastructure facilities available in the country (one Extension functionary is available for 1000 farmers) the task of making Indian farming community information rich is quite Challenging.

Considering the shortage of manpower in agriculture extension, inadequate infrastructure, cost of extension and scarcity of time, it is felt necessary to adopt group led extension as emphasized on reforms.

National Bank for Agriculture and Rural Development (NABARD) is contributing its might towards the rural development in association with various banks and other financial institutions, extension agencies of various government departments, voluntary agencies and Non-Government organizations. On 5th Nov 1982, the then Prime Minister Smt. Indira Gandhi dedicated NABARD to the Nation and inaugurated the Vikas Volunteer Vahini (VVV) Program by presenting the logo of Vikas Volunteer Vahini to the first group of 36 volunteers from 17 states of the country. This is in line with promoting group led extension for Agricultural development.

The VVV Program envisages eliciting voluntary efforts of the rural volunteers towards finding out solutions to the common village problems and developmental issues particularly those that address to the needs of the appropriate technology and infra structural linkages in rural productive avocations with the support of bank credit under the banner of the volunteers club. NABARD has found this program as highly useful in rural areas and has accordingly encouraged this program through banks, Krishi Vigyan Kendras, Agricultural Universities and N.G.Os.

As on 31-03-2008, a total number of 28,226 clubs were launched. RRBs promoted maximum

number of clubs (12604), followed by commercial banks (8471), Cooperative banks (5237) and other agencies viz.KVKs, Agricultural Universities (1914).

This indicates increase demand, utility and acceptability of the programme by farmers themselves. Still, with the country of our size, where seventy four percent of the population live in villages and predominantly dependent on agriculture with 5,50,000 inhabited villages in the country, the number of farmers clubs appears to be too small and miniscule.

NABARD may have a mission to achieve formation of 1,00,000 farmers clubs by the end of XI plan period. Since we are already having 28,000 clubs viz.50,000 clubs in the next two years. Accordingly, the target for current year (2008-09) has been fixed at 12,500 clubs.

2. EXPLANATION OF THE PROBLEM

- Many of the Extension functionaries working at field level felt the strong need of having a facilitator system at village level as a representative of the institution, for effective dissemination of agricultural based technology. The researcher is working in KVK system for last fifteen years and his main job is transfer of agricultural technology to farmers' field. Many Extension scientists and organizations felt the need of having an institutional network at the village level for effective follow up of the activities and to get proper feedback from the villages, the researcher felt the same. At this juncture he came to know about the activities of VVV clubs sponsored by NABARD. The objectives of these clubs mostly fit into the mandatory activities of KVKs. The additional advantage of these clubs is financial services access through banks.

3. RESEARCH DESIGN

Basis of the objectives of the study expost facto research design was followed.

According to Kerlinger (1973), Expost facto research is systematic empirical enquiry in which the scientists do not have direct control of influencing variables(independent) because their manifestation have already occurred or because they are inherently not manipulable. Since the variables chosen for the study have already been occurred, this research design was made use of in this study.

4. THE SAMPLING PROCEDURE

Andhra Pradesh was purposively selected as area of the study since the VVV program is very much active in Andhra Pradesh and there will not be any language problem for the researcher in interacting with the respondents. Andhra Pradesh was divided into three regions geographically, politically and agriculturally as Telangana, Rayalaseema and Coastal Andhra Pradesh. The Researcher has adopted stratified random sampling at two stages i.e. in selecting districts, the present study was conducted in three districts from the three regions of the state in which VVV clubs project was implemented. They were Chittor from Rayalaseema, Medak from telangana region and Visakhapatnam from coastal region respectively.

From each District Ten VVV clubs will be selected randomly. From each clubs Five Respondent Members will be identified. The total number of Respondent Members will be 150 in number. An equal number of Non Member Respondent from the matched adjacent village will be identified. The total sample Respondents will be 300 in number.

5. STATISTICAL TESTS USED

For analysis of the data of the present investigation, the following statistical tests were applied. The data for statistical procedures were processed with the help of computer.

5.1. Pearson's product moment correlation Coefficient(r)

The degree of association ship or the extent of relationship is known as coefficient of correlation (Nageswara Rao,1983). This measure was used to find out the relationship between the scores of independent variables (Personal socio economic and psychological) and the scores on dependent variables (Adoption) of farmers.

The computed r values were then compared with the tabular values of correlation coefficient at 1 and 5 percent level of significant at n-2 degree of freedom.

$$r_{xy} = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{n}\right)\left(\sum y^2 - \frac{(\sum y)_2}{n}\right)}}$$

Where, r = coefficient of correlation

Σx = sum of scores of x variable

Σy = sum of scores of y variable

Σx^2 = sum of square of scores of x variable

Σy^2 = sum of square of scores of y variable

Σxy = sum of product of x and y variables

5.2. Multi linear regression (MLR)

Multi linear regression is an extension of simple linear regression by considering more than one independent variable (Nageswara Rao, 1983).

The analysis with respect of multi linear regression was found on the following two main issues.

1) Determining the explanatory or predictive power of independent variables taken together on the dependent variables namely Knowledge level of the respondents, Adoption level of the respondents.

R2 = the significance of coefficient of multiple determinations.

2) Determining the extent to which each independent variable is related to and predicts the dependent variable when the effect of other independent variable was held constant.

Multiple regression analysis was used to find out the relative contribution of the selected independent variables towards the dependent variable.

The following multiple linear regression was used

$$Y = a + b1\ X_1 + b_2\ X_2 + \_\_\_\_\_ bnXn$$

Where,

Y = dependent variable

$X_1 - Xn$= independent variable

$b_1\ b_2$ are the regression coefficients

n = total number of variables

The data was analysed and computed. The regression coefficients 'b_1' were teseted for their significance and the following formula was used.

$$T_{(n-k-1)df} = \frac{b_1}{SE(bi)}$$

Where n = the number of observations

K = No. of independent variables

SE = the standard error

$B1$ = regression coefficient

T = test for significance

The coefficient of multiple determinations (R2) is given by

$$R2 = \frac{Regression\ sum\ of\ sqaures\ (RSS)}{Total\ sum\ of\ squares\ (TSS)}$$

Where Regressison Sum of Squares = $b1\ \Sigma$ x1y + b2 Σ x2y…….b13 Σ x11y

Total sum of squares = Σ y2

R^2 value ranges from 0-1 where it is expressed in percentage. It measures the extent of variation in dependent variable (y) which can be explained by the independent variable (x1) together.

This is further extended to step down analysis by which we can measure the variables which are mainly contributing the maximum variation through the elimination process.

The significance of coefficient of multi determination R2 was tested by using the F-test, while the test of significance of partial regresson coefficients(b) was tested with the help of "Z" test.

$$\text{"Z" test} = Z = \frac{|\bar{X}_1 - \bar{X}_2|}{SE(\bar{X}_1 - \bar{X}_2)} = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)}}$$

5.3. Step down regression

In the Step down method, the regression of Y on all *k* X-variables is calculated. The contribution of X_1 to the reduction in sum of squares of Y, after filtering the other variables is b_i^2 / c_{ii}. The variable X_u for which this quantity is smallest is selected, and some is followed in deciding whether to omit X_u. One such rile is to omit Xu if $b_u^2 / s^2 c_{uu} < 1$: Others omit X_u if b_u is not significant at some chosen level. If Xu is omitted, the regression of Y on the remaining (*k-1*) variables is compared, and the same rule is applied. The process continues until no variable qualifies for omission.

Snedecor and Cochran (1967) opined about the step down method that, it will not necessarily select the same X-variables, and neither guarantees to find the same variables as the exhaustive method of investigating every subset. Striking differences appear mainly when X variables are highly correlated.

6. VARIABLES SELECTED FOR THE STUDY

6.1. Dependent Variables

Extent of adoption among the respondents were chosen as the dependent variable.

6.2. Independent Variables

The independent variables selected for the study were age, social status, education, Occupation, Land holding, Material possession, Family type, Annual family income, Extension contact, Urban contact, Scientific orientation, Economic orientation,Risk orientation, Management orientation, Decision making ability, Information seeking behavior, Achievement motivation. The same were measured by appropriate scales and schedules.

7. COLLECTION OF DATA

The data was collected by using a pre-tested interview schedule developed for the study. The collected data was coded, tabulated and analyzed statically and the results were interpreted accordingly.

8. RESULTS & DISCUSSIONS

I.i. Relationship between the Selected Independent Variables of Respondents with their Extent of Adoption

In order to study the nature of relationship between the selected profile characteristics of the Members of VVV Clubs and their extent of adoption, correlation coefficients (r) were computed and the values were presented.

The relationship between extent of adoption scores and the scores of selected profile characteristics of the Members of VVV Clubs were tested by relevant null and empirical hypothesis.

Null Hypothesis: There will be no significant relationship between the scores of characteristics of

the Members of VVV Clubs and the scores of extent of adoption of member respondents.

Empirical Hypothesis: There will be a significant relationship between scores of selected profile characteristics of the Members of VVV Clubs and the scores of extent of adoption of Member respondents.

I.ii. Relationship between Selected Profile Characteristics of the Members of VVV Clubs and their Extent of Adoption of Recommended Agricultural Practices

Extension contact, Urban contact, Scientific orientation, Economic orientation, Risk orientation, Management orientation, Decision making ability, Information seeking behavior, Achievement motivation had a positive and significant relationship, while Age, Social status, Education, Occupation, Farm size, Material possession, Family type and Annual family income had no significant relationship with the extent of adoption of latest Agricultural technology by the Members of VVV Clubs.

Achievement Motivation (X18). It could be seen from Table –4.24, that the coefficient of correlation value (r = 0.619) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected, which indicates that there was a positive and significant relationship between achievement motivation and extent of adoption of member respondents.

Information seeking behaviour(x.17) It was clear from Table 4.24, that the computed ' r ' value (0.517) was found positively and significantly related with the adoption level of members of VVV Clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between Information seeking behaviour and extent of adoption of member respondents.

Table 1
Relationship between the Selected Profile Characteristics of Independent Variables of Members of VVV Clubs with Their Extent of Adoption

S. No	*Independent Variables*	*Correlation coefficient (r)*
1	Achievement motivation	0.619 **
2	Information seeking behaviour	0.517**
3	Economic Orientation	0.358 **
4	Urban contact	0.337 **
5	Management Orientation	
	Planning orientation	0.329 **
	Production orientation	0.212 **
	Market orientation	0.239 **
6	Extension contact	0.293 **
7	Decision Making Ability	0.223 **
8	Risk Orientation	0.187 **
9	Scientific Orientation	0.145*
10	Family size	-0.051NS
11	Family type	0.050 N.S
12	Education	0.118 NS
13	Land holding	0.078N.S
14	Material Possession	0.051 N.S
15	Annual family income	0.038NS
16	Age	-0.076NS
17	Social status	-0.074NS
18	Occupation	-0.119 N.S

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

NS : Non-significant

Economic orientation (X13) It was clear from Table 4.24, that the computed r ' value (0.358) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. Thus it could be concluded that there was a positive and significant relationship between economic orientation and extent of adoption of member respondents.

Urban contact (*X11*) From Table 4.24, it was clear that the computed r ' value (0.337) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. Thus it could be concluded that there was a positive and significant relationship between Urban contact and extent of adoption of member respondents.

Management Orientation (X15)

Planning orientation (x15.a) It was clear from Table 4.24, that the computed ' r ' value (0.329) was found positively and significantly related with the adoption level of members of VVV Clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between planning orientation and extent of adoption of member respondents.

Production orientation (x.15.b) It was clear from Table 4.24, that the computed ' r ' value (0.212) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between Production orientation and extent of adoption of member respondents.

Market orientation (x.15.c) It was clear from Table 4.24, that the computed ' r ' value (0.239) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between Market orientation and extent of edoption of member respondents.

Extension Contact (x10). From Table 4.24, it was clear that the computed r ' value (0.293) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. Thus it could be concluded that there was a positive and significant relationship between Extension contact and the extent of adoption of member respondents.

Decision making ability (x.16) It was clear from Table 4.24, that the computed ' r ' value (0.223) was found positively and significantly related with the adoption level of members of VVV Clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between Decision making ability and extent of adoption of member respondents.

Risk orientation(X14) It was clear from Table 4.24, that the computed ' r ' value (0.187) was found positively and significantly related with the adoption level of members of VVV clubs at 0.01 level of probability. So the null hypothesis was rejected. So it could be concluded that there was a positive and significant relationship between risk orientation and extent of adoption of member respondents.

Scientific orientation(X12) The perusal of Table 4.24, reveals that the computed r ' value (0.145) was found positively and significantly related with the adoption level of members of VVV Clubs. So the null hypothesis was rejected. Thus it could be inferred that there was a positive and significant relationship between scientific orientation and extent of adoption of member respondents.

Age (X_1). From Table 4.24, the computed coefficient of correlation value (r = -0.076) was found to have negatively and non-significant relationship at 0.05 level of probability. Hence, null hypothesis was accepted. Thus it could be concluded that there was no significant relationship Age and extent of adoption of members of VVV Clubs.

Social Status(X2) From Table 4.24, it was evident that the computed coefficient of correlation value (r = -0.074) was found negatively and non

significantly related with the adoption level of members of VVV clubs. Hence, null hypothesis was accepted. Thus it could be inferred that there exits a negative and non significant relationship between Social status and extent of adoption of member respondents.

Education (X_2). From Table 4.24, it was evident that the computed coefficient of correlation value (r = 0.118) was found positively and non significantly related with the adoption level of members of VVV Clubs at 0.05 level of probability. Hence, null hypothesis was accepted. Thus it could be inferred that there exits a positive and non significant relationship between education and extent of adoption of member respondents.

Occupation(X4) From Table 4.24, it was evident that the computed coefficient of correlation value (r = -0.119) was found negatively and non significantly related with the adoption level of Members of VVV Clubs at 0.05 level of probability. Hence, null hypothesis was accepted. Thus it could be inferred that there exits a negative and non significant relationship between Occupation and extent of adoption of member respondents.

Land holding (X5). It could be seen from Table 4.24, that the computed coefficient of correlation value (r = 0.078) was found to be positively and non significantly correlated with the adoption level of members of VVV Clubs at 0.05 level of probability. Hence, null hypothesis was accepted. Therefore, it can be concluded that there was a positive and non significant relationship between Land holding and extent of adoption of member respondents.

Material possession (X6) It was evident from Table 4.24, that the computed 'r' value (0.051) was found positively and Non significantly related with the adoption level of Members of VVV clubs at 0.05 level of probability. So the null hypothesis was accepted. This indicates that there was a positive and non significant relationship between Material possession and Extent of Adoption of Member respondents.

Family Size (x7) It was evident from Table – 4.24, that the computed 'r' value (-0.051) was found negatively and Non significantly related with the adoption level of Members of VVV clubs at 0.05 level of probability. So the null hypothesis was accepted. This indicates that there was a negative and non significant relationship between Family size and extent of adoption of member respondents.

Family type (X8) It was evident from Table – 4.24, that the computed 'r ' value (0.050) was found positively and Non significantly related with the adoption level of Members of VVV clubs at 0.05 level of probability. So the null hypothesis was accepted. This indicates that there was a positive and non significant relationship between Family Position and extent of adoption of Member respondents.

Annual Family Income(X9) It was evident from Table 4.24, that the computed 'r' value (0.038) was found positively and Non significantly related with the adoption level of members of VVV clubs at 0.05 level of probability. So the null hypothesis was accepted. This indicates that there was a positive and non significant relationship between Annual family income and the extent of adoption of member respondents.

II. COMBINED EFFECT OF ALL THE SELECTED INDEPENDENT VARIABLES ON THE EXTENT OF ADOPTION BY THE MEMBERS OF VVV CLUBS

In order to determine the combined effect of all the selected independent variables in explaining the variation in extent of adoption by respondents, Multi linear regression analysis was carried out. The coefficient of multiple determination (R^2) value and partial regression coefficient (b) values with their corresponding 't' values were presented in Table – 4.27. The 'R^2' and 'b' values were tested statistically for their significance.

Null hypothesis: The combined effect of scores of 18 independent variables will not explain a significant amount of variation on the extent of adoption of members of VVV clubs.

Emperical hypothesis: The combined effect of scores of 18 independent variables will explain a significant amount of variation on the extent of adoption of members of VVV clubs.

Table 2
MLR analysis of the selected independent variables with the extent of Adoption of respondent members of VVV clubs

S. No	*Independent Variables*	*"b" Values*	*Std Error*	*"t" Values*
1	Age	-0.080	0.212	0.379
2	Social status	4.138	1.802	2.296*
3	Education	2.501	1.973	1.268
4	Occupation	-3.471	3.673	-0.945
5	Land holding	6.532	2.333	2.799**
6	Material Possession	0.493	0.502	0.983
7	Family size	0.661	3.445	0.192
8	Family type	6.621	6.346	1.043
9	Annual family income	0.092	0.171	0.541
10	Extension contact	2.143	0.786	2.726**
11	Urban contact	0.952	1.226	0.844
12	Scientific Orientation	0.464	0.916	0.510
13	Economic Orientation	5.875	1.226	4.792**
14	Risk Orientation	-0.476	0.933	-0.510
15	Management Orientation			
	Planning orientation	0.331	0.934	0.355
	Production orientation	1.176	0.745	1.578
	Market orientation	0.849	0.928	0.914
16	Decision Making Ability	-0.500	0.506	-0.984
17	Information seeking behaviour	0.629	0.361	1.745
18	Achievement motivation	3.653	0.504	7.248**
R^2: 0.632				

* Significant at 0.05 level of probability (Table value 1.96)

** Significant at 0.01 level of probability (Table value 2.576)

The 'R^2' values of 0.632 indicated that all the selected 18 independent variables put together explained about 63.20 per cent variation in extent of adoption by Members of VVV Clubs. The computed F value (11.065) found to be significant. Hence, the null hypothesis was rejected.The partial regression co-efficient values presented in Table 4.27, indicated that independent variables i.e Land holding, Extension contact, Economic orientation, Achievement motivation were found to be significant from t value at 0.01 level of probability, where as social status was found significant at 0.05 level of probability. This implied that these variables found to be significantly contributed to most of the variation in extent of adoption among members of VVV clubs.

III. STEP DOWN REGRESSION ANALYSIS OF THE CHARACTERISTICS OF VVV CLUB MEMBERS WITH EXTENT OF ADOPTION OF LATEST AGRICULTURAL TECHNOLOGIES

The step down regression analysis was used to get the combined influence of the best set of predictors on extent of adoption. Though the multiple regression analysis gave the combined effect of all selected independent variables on extent of adoption, it was felt necessary to know few and most important variables that explain maximum variation.

The step down regression analysis was carried out with help of SPSS stastical package and the results, so obtained by running analysis were presented in table 4.28. revealed that ten variables namely Achievement motivation, Information seeking behaviour,Production orientation,economic orientation, extension contact,Family type,Material possession, land holding, Education and Social status contributed significantly to the variation adoption level (F = 22.622). The coefficient of determination (R^2) was found to be 0.619 which indicated that 61.90 percent variation in the extent of adoption could be explained by these ten variables.

Table 3
Step – down regression analysis of the characteristics of VVV Club members with their Extent of Adoption

(n = 150)

S.No	*Characteristics*	*Regression coefficient*	*S.E of partial Regression coefficient*	*t value*
1	Achievement motivation	3.677	0.473	7.76**
2	Information seeking behaviour	0.677	0.330	2.048*
3	Production orientation	1.239	0.630	1.966*
4	Economic Orientation	5.860	1.122	5.223**
5	Extension contact	2.517	0.707	3.561**
6	Family type	12.077	4.824	2.503*
7	Material possession	0.729	0.424	1.720NS
8	Land holding	6.314	2.108	2.995**
9	Education	3.778	1.498	2.522*
10	Social status	4.323	1.705	2.536*

** : Significant at 1% level of significance (Table value 2.576);
* : Significant at 5% level of significance (Table value 1.960);
NS : Non Significant
R = 0.787 R^2 =0.619 F = 22.622**

CONCLUSION

Majority 74.00 and 72.3 per cent of Member and Non member respondents had medium level Adoption but compared to Nonmember respondents (4.00%), the member respondents (12.7%) are falling in high level Adoption category. Further the results also revealed that there was a significant difference in the adoption scores between Member and Non member respondents.

Extension contact, Urban contact, Scientific orientation, Economic orientation, Risk orientation, Management orientation, Decision making ability, Information seeking behavior, Achievement motivation had a positive and significant relationship, while Age, Social status, Education, Occupation, Farm size, Material possession, Family type and Annual family income had no significant relationship with the extent of adoption of latest Agricultural technology by the Members of VVV Clubs.

All the selected 17 independent variables put together explained for about 61 per cent variation in the adoption of recommended Agricultural practices by the Members of VVV Clubs. Achievement motivation, Economic orientation, Extension contact, Urban contact, Production orientation, Market orientation, Information seeking behavior, Education, Farm size, Family position had positively and significantly contributed to most of the variation in adoption of recommended Agricultural practices.

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