

To Study the Relationship of Personal Characteristic with Adoption of Innovation in Northern Madhya Pradesh

O P Daipuria¹, R P Sharma² and V B Singh³

1. Introduction

Agriculture development depends largely on the extent of new technology used by the farmers. Theoretically, it is assumed that the use of new technology by the farmers would be more in an irrigated area than in dry farming area and would also induce social and economic change depending on the extent of use of new technology. The extent of technology use refers to adoption of recommended practices in respect of all the important crops grown by the farmers. Adoption refers to continue the use of an innovation. Adoption is an action involving the use of means for the attainment of goals. Human action is dependent upon many factors like social, economic, physical and cultural. In view of the various factors that influence the technology use, important variables were identified for studying the extent of technology use and the present study was undertaken to study the role of socio-economic factors in adoption of innovations.

2. Methodology

The present study was conducted in Morar and Ghatigoan blocks of Gwalior district of Northern Madhya Pradesh. Out of five blocks of Gwalior district, Morar and Ghatigoan were selected randomly. From the list of villages of both the blocks, ten villages from each block were selected on random basis. Thus, total number of villages selected for this study became twenty. 25 per cent farmers were selected randomly from each study village. The selected farmers were categories as big, medium and small. Finally, the sample constituted 54 big, 162 medium and 84 small farmers. Altogether number of selected respondents was 300 for this study. The data were collected with the help of pretested structured schedule by personally interviewing the respondents. In order to examine the relationship and rate of dependence of adoption of innovation upon the selected independent variables, simple correlation co-efficient and standard partial regression co-efficient were worked out by the method given by Jhonson (1950).

3. Result and Discussion

The zero order correlation was computed to know the degree of linear relationship between independent variables and extent of adoption of agricultural technology among big, medium and small farmers. It is evident from Table 1 that 8 independent variables viz. social participation, risk orientation, knowledge of technology, infrastructural experience, extension contact, personal localite source, personal cosmopolite source, mass media source and market orientation were having significant correlation with extent of adoption of agricultural technology for all the three categories of the farmers.

In case of big farmers, correlation with respect to age, education, type of house, social participation, risk orientation, knowledge of technology, infrastructural experience, extension contact, farm size, personal cosmopolite, mass-media and market orientation were found significant at $p = 0.01$ level. Age was

1. Junior Scientist, Department of Extension, College of Agriculture, Gwalior (M.P.)
2. Training Associate, K. V. K., Rajghar (M.P.)
3. Junior Scientist, Department of Statistics, College of Agriculture, Gwalior (M.P.)

found negatively and significantly correlated. As regards to medium farmers, correlation with respect to age, education, caste, type of house, social participation, risk orientation, knowledge of technology, infrastructural experience, extension contact, personal localite, personal cosmopolite, mass media and market orientation were found significant at $p=0.01$ level. The correlation with regards to family type

Table 1 Simple Correlation of Independent Variables with the Extent of Adoption of Agricultural Innovations.

Independent Variables	'r' values			
	Big farmers	Medium farmers	Small farmers	Pooled
Age	-0.561**	-0.365*	-0.071	-0.308**
Education	0.828**	0.725**	0.111	0.596**
Family size	0.083	0.097	0.145*	0.082
Family type	-0.021	-0.139*	0.009	-0.103
Caste	0.086	0.276**	0.297**	0.287**
Type of house	0.681**	0.179**	0.101	0.235**
Social participation	0.830**	0.427**	0.203**	0.448**
Risk orientation	0.606**	0.571**	0.201**	0.478**
Knowledge of technology	0.860**	0.863**	0.593**	0.570**
Infrastructural experience	0.750**	0.754**	0.919**	0.766**
Extension contact	0.681**	0.292**	0.544**	0.336**
Farm size	0.251**	0.043	0.127**	0.183**
Personal localite source	-0.083	0.384**	0.483**	0.256**
Personal cosmopolite source	0.596**	0.344**	0.538**	0.268**
Mass media source	0.594**	0.389**	0.285**	0.398**
Market orientation	0.668**	0.363**	0.430**	0.437**

* Significant at $p=0.05$, ** Significant at $p=0.01$

between extent of adoption of agricultural technology and 14 variables namely age, education, caste, type of house, social participation, risk orientation, knowledge of technology, infrastructural experience, extension contact, farm size, personal localite source, personal cosmopolite source, mass media source and market orientation for pooled farmers. These findings were supported by Kalaskar *et al* (1999), Pagar and Kulkarni (1996) and Kadam and Bose (1993).

In order to study the relative influence of each of the 16 independent variables on extent of adoption of an innovation the values of standard partial regression coefficient were calculated and presented in Table 2. The values of standard partial regression coefficient (β -values) for big farmers indicate that adoption of agricultural technology was significantly influenced by age, education, type of family, caste, type of house, social participation, risk orientation, knowledge of technology, infrastructural experience, size of farm, personal localite source and mass media source. However, three of 16 variables i.e. comparatively more influence on adoption of agricultural technology. Risk orientation also showed its

was significant at $p=0.05$ level. Variable like size of family, caste, social participation, risk orientation, knowledge of technology, infrastructural experience, extension contact and personal cosmopolite were positively related to the extent of adoption in case of small farmers and they were significant at $p=0.01$ level. The variables viz. size of family, size of farm, personal localite source, mass media and market orientation were found significant at $p=0.05$ level.

It may therefore, be concluded from the Table 1 that there was significant correlation

superiority over age and personal localite source in respect of their capability to influence the adoption of agricultural technology. The multiple regression equation in which all the 16 variables were included accounted for 99.60 per cent of variation in adoption of agricultural technology by the big farmers. Multiple correlation coefficient (R.) was found to be significant at $p=0.01$ level.

Table 2 Standard Partial Regression Coefficient (β -Values) of Extent of Adoption of Agricultural Technology with the Independence Variables.

Variables	' β ' values			
	Big farmers	Medium farmers	Small farmers	Pooled
Age	0.399**	0.001	0.337**	-0.058
Education	-1.378**	0.413**	0.093	0.341**
Family size	-0.014	-0.007	0.087	0.079*
Family type	0.101**	0.001	-0.383**	0.058
Caste	0.056*	0.038	0.110**	0.137**
Type of house	-0.127*	-0.156**	0.167**	-0.099*
Social participation	1.137**	-0.060	-0.263**	-0.044
Risk orientation	0.413**	0.274**	0.305**	0.186**
Knowledge of technology	1.081**	0.461**	0.052	0.033
Infrastructure experience	-0.161*	0.110*	0.708**	0.683**
Extension contact	0.044	0.114**	0.230**	0.101
Farm size	-0.706**	-0.225**	0.155**	-0.488**
Personal localite source	0.360**	-0.092*	0.159**	0.154**
Personal cosmopolite source	0.072	0.179**	0.050	-0.072
Mass media source	1.041**	-0.151**	-0.131*	-0.182**
Market orientation	0.007	0.040	0.040	0.050
Coefficient of determination (R^2)	0.996	0.907	0.987	0.795
Multiple correlation coefficient (R)	0.998**	0.952**	0.993**	0.892**

*Significant at $p=0.05$, ** Significant at $p=0.01$

In case of medium farmers, 90.70 per cent of the variation in adoption was explained by these 16 variables. The adoption of agricultural technology by the medium farmers was affected significantly by 10 variables viz. education, type of house, risk orientation, extension contact, size of farm, personal localite source, personal cosmopolite source and mass media source. Knowledge of technology, risk orientation and education of respondents were found to have comparatively more influence than other variables on adoption of agricultural technology.

Like big and medium farmers high percentage (98.70%) of variation in adoption of technology by the small farmers was also explained. Combined effect of these independent variables on adoption was found significant at $p=0.01$ level. Ten variables i.e. age, type of family, caste, type of house, social participation, risk orientation, infrastructural experience, extension contact, size of farm, personal localite source and mass media source had significant effect on adoption.

On the basis of pooled data it was found that 79.5 per cent of variation in adoption was explained by all 16 variables. Multiple correlation coefficient was found to be significant at $p=0.01$ level. The influence of education, caste, risk orientation, infrastructural experience, size of farm, personal localite source and mass media source on adoption were found significant at $p=0.01$ level while size of

family and type of house were influenced the adoption significantly $p=0.05$ level. These findings is consistent with the findings of Kharde and Nimbalkar (1996) and Sharma (2000).

4. Conclusion

It could be concluded from the above discussion that education of the respondents was the most important factor affecting adoption of agricultural technology followed by personal localite source, risk orientation and caste of the respondents. All these variables had direct effect on adoption of innovation. Size of farm and mass media source were the next important variables which has shown its effect on adoption in the inverse direction.

5. References

- Jonhson, P.O. (1950). *Statistical method in research*. Prentice Hall Inc. New York. 377.
- Kadam, K.R. and Bose, A.V. (1993). Adoption behaviour of banana growers, *Maha, J. Extn. Edn. XII* : 45-46.
- Kalaskar, A.P., Shinde, P.S. and Bhopal, R.S. (1999). Correlation of adoption on integrated pest management technology of cotton growers. *Maha. J. Extn. Edn. XVII* : 45-48.
- Kharde, P. B. and Nimbalkar, S.D. (1996). Socio-economic factors affecting adoption of improved practices of sugarcane cultivation. *Maha. J. Extn. Edn. XV* : 156-159.
- Pagar, H.P. and Kulkarni, R.R. (1996). Adoption of recommended Agro-forestry practices by farmers in Marathwada Region. *Maha. J, Extn. Edn. XV* : 160-161.
- Sharma, R.P. (2000). Influence of personal characteristics in adoption of plant protection measures. *Ind. J. of Agric. Res. 34(2)* : 130-135.