Original Research Article

Assessing the Mechanics of Technology Application and Adoption of Tribal Farmers in Madhya Pradesh, India

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A B S T R A C T

Keywords	Krishi Vigyan Kendra is an innovative science based institution which conducts On Farm Testing for technology assessment and refinement; undertakes vocational training of farmers, farm women and rural youths; and Frontline demonstrations to promptly demonstrate the latest agricultural technologies to the farmers as well as the extension workers. KVKs function by the collaborative participation of scientists, subject matter experts, extension workers, farmers, input dealers, traders, etc. The present study was undertaken to assess the adoption level of beneficiaries and non-beneficiaries of KVK working in the tribal district of Madhya Pradesh. The study was conducted with 300 tribal farmers randomly selected in 12 villages of Mandla, Dindori and Shahdol district, which were results showed that, tribal farmers were of comparatively high attitude towards technological demonstration, high knowledge about KVK's activities, high perception towards scientific agriculture, medium market orientation, high scientific orientation, high aspiration level, medium use of information sources and high training exposure. The adoption level of tribal farmers was high.
Adoption, Beneficiaries, Non-beneficiaries, Tribal farmers	

Introduction

Krishi Vigyan Kendra under ICAR has been assigned responsibilities of catering the needs of farming community by adopting area-specific strategies and technologies. The mandated activities of KVK's is assessment, refinement and demonstrating the technologies for location specific farming situations, organizing On and off campus trainings, front line demonstrations, farm advisory services, production of seeds, and providing planting material. There are 680 Krishi Vigyan Kendra in India and 11 Zonal Project Directorate working under administrative control of Indian Council of Agriculture Research. In Madhya Pradesh state 47 KVK's are functioning under zone XI ATARI, out of which 6 KVK's are working in tribal districts. These KVK's are primarily focused on dissemination of location specific technologies access to information for upliftment and empowerment of tribals.

Training programme for the tribal people should be designed based on their felt needs they are struggling with. Training needs of the tribal people refers to one's need for gaining knowledge and skills on different aspects and successful adoption of these activities. Effective training program designed for the tribal people for better livelihood will go a long way in their

required daily expenditure. Hence, it is necessary to have a complete understanding of the needs of the tribal people before launching aforementioned training programme. An effective extension programme might be a tool to train and educate its client system. Agricultural extension services, NGOs' and other development agencies, therefore, need to develop a suitable mechanism for imparting knowledge and skills to the tribal people on various aspects. Through effective training, tribal people are more likely to acquire up-to-date knowledge on improved practices and refresh their existing knowledge. As a result, the tribal people will favourably be disposed towards adoption of various agricultural technologies. (Rokonuzzaman, 2013).

The state Madhya Pradesh has four agro-climatic zones, and thus, has the most interesting mix of ethnic groups and tribes, castes and communities, including the indigenous tribals and relatively more recent migrants from other states. It has a significant tribal population, which constitutes more than one-fifth of its total population and 40 percent of India's total tribal population. In absolute numbers, Madhya Pradesh is home to the largest number of Scheduled Tribes (STs) in India and is often called the tribal state of India.

There are 46 recognized STs, three of which are identified as Special Primitive Tribal Groups. Goand, Bhil, Baiga, Korku, Bharia, Halba, Koal, Pardhan, Dhula, Bhoomia and Agaria are the main tribes found in Madhya Pradesh. Bahu Lamsena, Jadoo-Tona, Jhada-Phooki and Alcoholism are co-tradition of their life. Badadev is the main god of tribes. The tribal population is largely concentrated in and around the forest area of Madhya Pradesh. They have maintained their cultural peculiarity and individuality over the years.

They have somewhat made progress in social and religious reformation but economically they are very much backward as compared to other societies *(Ruram, 2002)*. So keeping the view, the study has been conducted to assess the mechanics of technology application and adoption of tribal farmers in Madhya Pradesh.

Methodology

The study was carried out in three district of Madhya Pradesh in 2013-14 i.e. Mandla Dindori and Shahdol. As these districts comes under tribal districts of MP. The Mandla district comprises of seven blocks out of which two blocks were selected and from each selected block two adopted villages of KVK's were selected i.e., Prempur, Bhavarda, Silwara, Madanpur. The Dindori district also comprises of seven blocks out of which two blocks were selected and from each selected block two adopted villages of KVK's were selected i.e., Rusamal, Nariya, Bilasar, Chaura. The Shahdol district comprises of five blocks out of which two blocks were selected and from each selected block two adopted villages of KVK's were selected i.e., Sindu chunia, Kalyanpur, Shahpur, Kudeli. A comprehensive list of tribal farmers of each selected village was prepared with the help of KVK's of each district. 75 equal numbers of beneficiaries and 25 equal numbers of non-beneficiaries from each district was selected randomly, thus the total 300 tribal farmers was the sample size of the study.

The following statistics was used to assess the adoption of tribal farmers regarding selected technologies given by KVKs.

t- test

Student's t-test was used for testing the significant differences of mean scores of

various categories of the respondents. The t-value was worked out by using the following statistics:

$$t = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{S^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Correlation coefficient 'r'

Pearson's product moment correlation (r) was used to assess the Correlation between two variables with the help of formula.

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{N}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{N}\right)\left(\sum y^2 - \frac{(\sum y)^2}{N}\right)}}$$

Chi-Square

Test to determine whether two attributes are independent by comparison of observed frequencies related to expected frequencies.

Formula:

$$X^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad \text{With d.f.} = (r-1)(c-1)$$

Results and Discussion

The study revealed that the majority of beneficiaries 69.33 % had high attitude towards technological demonstration. In case of participation 47.11% had medium participation in KVK activities and 77.78% had high knowledge about KVK activities. Perception of beneficiaries towards scientific agriculture majority 53.33% of beneficiaries had high perception. In case of market orientation majority 36.88 % of beneficiaries had high market orientation and 77.77 % of beneficiaries had high scientific orientation. It is evident from the data that about 67.56 % of beneficiaries had high aspiration level. In case of use of information sources the majority of beneficiaries 80.00 % had medium use of information sources. In case of training exposure the majority of beneficiaries 64.45% had high training exposure.

While in case of non-beneficiaries, the study revealed that the majority of non-beneficiaries 58.60 % had medium attitude towards technological demonstration. In case of participation 57.33% had low participation in KVK activities and 48.00% had medium knowledge about KVK activities. Perception of non-beneficiaries towards scientific agriculture majority 56.00% of non-beneficiaries had medium perception. In case of market orientation majority 45.00 % of non-beneficiaries had low market orientation and 49.33 % of non-beneficiaries had medium scientific orientation. It is evident from the data that about 54.66 % of non-beneficiaries had low aspiration level. In case of use of information sources the majority of non-beneficiaries 53.34 % had low use of information sources. In case of training exposure the majority of non-beneficiaries 52.00% had low training exposure.

The data in the Table 1 indicates that out of the total beneficiaries, highest percentage i.e. 52.88 per cent was found in high adoption category, followed by 29.34 per cent in medium and 17.78 per cent in low adoption categories. While in case of non-beneficiaries 53.33 per cent had low adoption, whereas 26.67 per cent medium and 20.00 per cent had high adoption.

Table.1 Percentage distribution and statistical parameters of tribal farmers according to their adoption level

S. No.	Categories	Beneficiaries	Non-Beneficiaries	Total
1.	Low (14 - 23)	40 (17.78)	40 (53.33)	80 (26.66)
2.	Medium (24 32)	66 (29.34)	20 (26.67)	86 (28.67)
3.	High (33 - 42)	119 (52.88)	15 (20.00)	134 (44.67)
	Total	**225**	**75**	**300**
	Mean	**32.31**	**22.98**	
	S.D.	**6.61**	**6.23**	
		t =10.73**		

** Significant at 0.01 probability level.

Table.2 Association between independent variables with their Adoption

Variables	Adoption			
	Beneficiaries		**Non-beneficiaries**	
	χ^2	Degree of freedom	χ^2	Degree of freedom
Attitude towards Technological Demonstration	28.560**	4	6.275*	2
Knowledge about KVK activities	26.524**	4	7.286*	2
Perception towards Scientific Agriculture	14.236**	4	7.487*	2
Market Orientation	25.663*	4	8.077*	2
Scientific Orientation	29.874**	2	8.764*	2
Aspiration level	09.182*	4	9.008*	2
Participation in KVK activities	19.950**	2	8.470*	2
Use of information	22.564*	4	9.585**	2
Training exposure	18.367*	4	6.077*	2
* Significant at 0.05 and * * Significant at 0.01 level of probability				

Thus, it can be concluded that the higher 52.88% of the beneficiaries had high level of adoption while, 53.33% of non-beneficiaries had low adoption.

Statistical parameters reveal that mean score for beneficiaries and non-beneficiaries 32.31 and 22.98 respectively with standard deviation of 6.61 and 6.23 respectively. The t-test calculated was found to be significant, this indicates that there was considerable difference between the adoption level of beneficiaries and non-beneficiaries. This finding was in conformity with the work of Sharma *et al.,* (2011) and Chauhan *et al.,* (2013)

It is seen from Table 2 that all the attributes of beneficiaries and non-beneficiaries have significant positive association with the adoption level.

It suggest that in general, the tribal farmers adoption increases with the increase in their attitude towards technological demonstration, knowledge about KVK activities, perception towards scientific agriculture, market orientation, scientific orientation, aspiration level, participation in KVK activities, use of information sources and training exposure. This finding was in conformity with the work of Dubey *et al.,* (2010)

Regarding the adoption of tribal farmers majority of beneficiaries had high level of adoption while, non-beneficiaries had low adoption. The t-test calculated was found to be significant, this indicates that there was considerable difference between the adoption level of beneficiaries and non-beneficiaries. It is clear from the data that the beneficiaries have more adoption of technologies due to the contact with the KVK.

In case of correlation coefficient psychological and communicational factors except of market orientation were found to have positive and significant correlation of both the categories beneficiaries and non-beneficiaries with their adoption. It means if these characteristics of tribal farmers are increased by any means that will lead to their higher adoption.

Association between independent variables with their adoption, revealed that attitude towards technological demonstration, knowledge about KVK activities, perception towards scientific agriculture, market orientation, scientific orientation, aspiration level, participation in KVK activities, use of information sources and training exposure have significant positive association with the adoption level. It is evident from the data that all these attributes have contributed to adoption of technologies by the tribal farmers. So that the KVK must have focus on these attributes of farmers.

On the basis of the afore-said discussion, it could be concluded that regarding the adoption of tribal farmers majority of beneficiaries had high level of adoption while, non-beneficiaries had low adoption. The t-test and relationship was also found positive and significant. Such findings encourage the scientists and sociologists for further investments and technological interventions for bringing them in the main life style of the modern society with changed norms. Further, it was found that there is remarkable change in the attitude and mindset of these tribal farmers about the scientific agriculture for harnessing more profit and bringing prosperity.

References

Anonymous, 2001. Census Report. Available at Registrar general of India. Government of India. Available of www.censusreport.registrargeneralofindia.org.co.in

Chauhan PS, Dangi KL and Meena DK. 2013. Impact of Front Line Demonstration on the farmers in adoption of scientific technologies of soybean cultivation. Environment and Ecology 31(3A): 1419-1423.

Dubey MK, Chauhan HS, Khare NK and Tiwari SG. 2010. Factor associated with adoption of cotton production technology by tribal farmers. Madhya Journal of Extension Education 9: 92-94.

Gawai MB, Chikhale NJ and Deshmukh AN. 2013. Adoption behaviour of contact farmers of Krishi Vigyan Kendra about bio-fertilizer. Agriculture Update 8(4): 551-554.

Girase GP, Kalantari LB and Tekale VS. 2004. Constraints faced by the farmers in the adoption of recommended package of practices of cotton. Asian Journal of Extension Education 22(1): 157-160

Rokonuzzaman M. 2013. Training Needs of Tribal People Regarding Income Generating Activities Indian Research Journal of Ext Edu 13(2): 1-7

Rurarm, J. 2002. Essay on Garo Society (compiled publication), Garo National Council of Bangladesh, Birishiri, Netrakona, Bangladesh. p11.

Sharma SK, Sharma AK. 2011. Assessment of biological pest managements among gram growers of Ratlam district. Life Science Bulletin; 2011. 8(1): 57-58.