Symbolic Adoption of Dairy Farming Practices by Tribal Dairy Farmers in Chhattisgarh : An Experimental Study

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ABSTRACT

This experimental study was conducted to identify the influence and relationship of socio-economic variables on symbolic adoption of tribal farmers from twelve tribal village of Chhattisgarh. Totally three hundred respondents were selected for this study. The Interactive Educational Multimedia Module (IEMM) on Good Dairy Farming Practices (GDFPs) was selected as a learning module for experiment. One group (Pre-test and Post-test) experimental design was used to study the effectiveness of the module. The study revealed that out of twelve variable studied, three variables namely occupational status, farm size, social participation was found to be having a positive association with symbolic adoption. Further, coefficient of multiple determination viz., R^2 was 0.371 which was significant at 1 percent level. This meant that 37.10 percent of the variation in the dependent variable is explained by the independent variables chosen for the study. This revealed that a unit increase in farming experience would decrease the knowledge gain by 0. 232 units' ceteris paribus. The study revealed that respondents were more satisfied and eager to learn through modern interactive multimedia gadgets. This indicates that, they were inclined towards accepting cyber extension initiatives.

Key words: *Symbolic adoption; GDFPs; Interactive Educational Multimedia Module;*

India is a vast and diverse country, which is also a home for over one-fourth of world's absolute poor. Among the social groups in India, Scheduled Tribes (ST) have the highest proportion of the poor. While they account for only 8 percent of the total population, they comprise 40 percent of the displaced population (*CTDP, 2009*). The population of Chhattisgarh is notable for the high proportion of Scheduled Tribes which constitute 30.6 percent of the total state populace. The issue of tribal development has been engaging the attention of the Government, planners, administrators and political leaders since the beginning of the plan era (*Barua and Wason, 2014*). As of 2011, Chhattisgarh had an HDI value of 0.358 the lowest of any Indian state. The national average is 0.467 according to 2011 Indian NHDR report. Chhattisgarh has one of the lowest standard of living in India as per the Income Index (0.127). Chhattisgarh has an Education Index of 0.526 according to 2011 NHDR which is higher than that of states like Bihar,

Jharkhand, Uttar Pradesh, Rajasthan which are below the 0.5 mark. Though, it is lower than the national average of 0.563. With respect to literacy, the state fared just below the national average. Health Index of Chhattisgarh is less than 0.49, one of the lowest in the country. The incidence of poverty in Chhattisgarh is very high. More than half of the rural STs and urban SCs are poor.

Agriculture is counted as the chief economic occupation and primary livelihood option of more than 80 percent of the state population. Horticulture and animal husbandry also engage a major share of the total population of the state (*Agriculture in Chhattisgarh, 2014*). Chhattisgarh state is playing an important role by generating self-employment through dairy in rural areas which in turn provides nutritious food to rural folks. Livestock development in general and dairy development activities in particular are key components of pro-poor development strategies because livestock distribution is much more equitable than land distribution.

Thus, changes in the dairying environment have important implications for the smallholder farmers and for poverty reduction (*Punjabi, 2010*). Dairy sector has generated an employment potential for most of the tribal community belonging to weaker section of the society. Identification of influence and relationship of socio-economic variables on symbolic adoption of tribal farmers is very crucial to design and dissemination of appropriate dairy production technologies to the target group. Hence, the explorative study was conducted.

METHODOLOGY

The present study was conducted in Chhattisgarh state during 2012-15. Out of 27 districts of Chhattisgarh, three districts namely Surajpur, Surguja and Balrampur were selected for this study based on the random sampling method. Subsequently, four villages selected purposively from each district and from each district 25 farmers were selected randomly for this study. Totally, three hundred tribal farmers were selected purposively for this study. Data were collected using a knowledge build questionnaire, demographic schedule, teacher made knowledge test, participatory observation, open ended questions and focus group discussions. Appropriate scoring procedure were developed to measure the dependent variables towards symbolic adoption. The main objectives of this study were to identify the existing relationship and influence between independent socio-economic variables and dependent variable symbolic adoption. Further, the degree of association is measured by a correlation coefficient (*r*). It is sometimes called Pearson's correlation coefficient after its originator and is a measure of linear association. If a curved line is needed to express the relationship, other and more complicated measures of the correlation must be used. The correlation coefficient is measured on a scale that varies from + 1 through 0 to - 1. Complete correlation between two variables is expressed by either + 1 or -1. When one variable increases as the other increases the correlation is positive; when one decreases as the other increases it is negative. Complete absence of correlation is represented by 0 (*BMJ, 2015*).

As per UNESCO (2015), Regression analysis is one of the most commonly used statistical tool in social, behavioral and physical sciences. Its main purpose is to explore the relationship between a dependent variable (Y) and one or more independent variables (X) (which

are also called predictor or explanatory variables). Linear regression used to investigate relationships that can be readily described by straight lines or their generalization to many dimensions. In fact, large number of problems can be solved by linear regression, and even more by means of transformation of the original variables that result in linear relationships among the transformed variables. Mathematically, the regression model is represented by the given equation and involve the following variables.

$$Y \approx F(X, \beta)$$

Where, the unknown parameters, denoted as â, which may represent a scalar or a vector, the independent variables, X and the dependent variable, Y. In various fields of application, different terminologies are used in place of dependent and independent variables. A regression model relates Y to a function of X and â.

RESULTS AND DISCUSSION

Relationship of the independent variables towards symbolic adoption: The results of correlation analysis of twelve independent variables on symbolic adoption are presented in Table 1.

Table 1. Relationship of the independent variables towards symbolic adoption (N=300)

Variables	'r' value
Age	.112[NS]
Educational status	.013[NS]
Occupational status	**.153**[**]
Farm size	**.216**[**]
Farming experience	0.089[NS]
Annual income	-.477[**]
Mass media exposure	-0.049[NS]
Herd size	-.438[**]
Milk production	-.193[**]
Milk consumption	0.007[NS]
Milk sale	-.243[**]
Innovativeness	.004[NS]
Social participation	**.166**[**]

NS - Non Significant, * Significant at 0.05 level,
** Significant at 0.01 level

The results indicate that out of twelve characteristics studied, three characters were found to be having a positive association with symbolic adoption. The characters namely occupational status, farm size, social participation was found to be positively associated

with symbolic adoption at 1 percent level of probability. Annual incomes, herd size, milk production, milk sale, were found to have a negative association with symbolic adoption at 1 percent level of probability. The other variables namely age, educational status, farming experience, mass media exposure, milk consumption and innovativeness were found to have no association with symbolic adoption. It is an accepted fact that with higher occupational status and higher farm size of the respondents might have helped to get more symbolic adoption. The increase in farm size might have led to adopt more GDFPs for the effective utilisation of available farm resources to make higher profit.

Influence of the independent variables towards symbolic adoption: The multiple regression analysis was carried out to assess the extent of influence of thirteen independent variables towards symbolic adoption. The results are presented in Table 2. It could be observed from the results that coefficient of multiple determination *viz.,* R^2 was 0.371 which was significant at 1 per cent level. This meant that 37.10 per cent of the variation in the dependent variable is explained by the independent variables chosen for the study.

Table 2. Influence of independent variables towards symbolic adoption (N=300)

Variables	Regression coefficient	SE	't' value	Sig.
Constant (Intercept)	4.866***	1.774	2.742	.006
Age	0.120**	.060	. 1.999	.047
Educational status	0-.027 NS	.132	-.331	.741
Occupational status	0.256**	.132	1.942	.053
Farm size	0.141**	.056	2.532	.012
Farming experience	-0.232**	.091	-2.538	.012
Annual income	-9.78E-06***	.000	-5.404	.000
Mass media exposure	-0.043 NS	.117	-.372	.710
Herd size	-0.264***	.045	-5.904	.000
Milk production	0.313*	.174	1.800	.073
Milk consumption	0.009 NS	.244	.036	.972
Milk sale	-0.355**	.178	-1.993	.047
Innovativeness	0.005 NS	.419	.013	.990
Social participation	0.414*	.244	1.697	.091

$R^2 = 0.371$ F = 12.806

Note: Figures within parenthesis indicate the standard error and ***, ** & * indicate the significance at one, five & ten percent level of probability. NS - Non Significant

The multiple regression coefficient value was found to be negatively significant for the variables namely, annual income farming experience, herd size and milk sale at 0.05 level of significance. This revealed that a unit increase in farming experience would decrease the knowledge gain by 0. 232 units' *ceteris paribus*. Even though, annual income had the negative relationship with symbolic adoption but it is very minimum level. It is not necessary that, the farmers who have rich experience should posses the significant knowledge on the farming. The existing knowledge base and knowledge gain solely based on the individual capacity towards learning. In the larger herd size, the farmers have to work round the clock to maintain the herd; it might be the reason behind the negative association. Low level milk production demotivates the farmers towards learning and ultimately it reflects on symbolic adoption process. The findings of the study are in conformity with the results reported by (*Mooventhan, 2006*).

The variables age, occupational status, farm size, milk production and social participation had influenced positively and significantly to symbolic adoption. This showed that a unit increase in the occupational status, farm size, milk production and social participation, *ceteris paribus* would increase the gain in knowledge by 0.120, 0.256, 0.141, 0.313 and 0.414 units respectively. If the farmers produce more milk, they might have followed certain GDFPs and higher returns from dairy farming would motivate the farmers to learn and adopt the recommended GDFPs. More social participation among the respondents will provide the platform for effective learning.

Livelihood pattern of the tribal dairy farmers: In could be observed from the Table 3 that about half (46.49%) of the respondents earning their livelihood from crop farming (Paddy, wheat, maize, groundnut, pulses, oilseeds and vegetables and its byproducts) followed by 33.40 per cent of the farmers earning their livelihood from forest resources (Collection of nationalised and non nationalised Minor Forest Produce - Tendu leaves, Sal seed, Chironji. Other resources like medicinal plants, bamboo, lac, honey and labour from forest department) which includes collection of nationalised and non nationalised Minor Forest Produce, about 15.45 per cent of the farmers earning their livelihood from dairy farming activities (Milk, animal sale for draught purpose and cattle yard manure) which includes sale of milk, draught animal and cattle yard manure and 4.66 per cent of the farmers earning their livelihood from labour (MGNREGS, PWD, etc.).

Table 3. Distribution of respondents according to their livelihood pattern (N=300)

Livelihood sources	Total monetary value (in `) per year	Share in Livelihood	Average Income per household
Crop farming	`. 97,34,900	46.49 %	`. 32,449
Forest resources	`. 69,94,050	33.40 %	`. 23313
Dairy farming	`. 32,36,125	15.45 %	`. 10787
Labour	`. 9,74,190	4.66 %	`. 3247
Total	`. 20939265	100.00	`. 69,796

Agriculture is counted as the chief economic occupation of the state. According to a government estimate, net sown area of the state is 4.828 million hectares and the gross sown area is 5.788 million hectares. About 80 per cent of the population of the state is in rural area and the main livelihood of the villagers is agriculture and agriculture-based small industry. Majority of the farmers are still practicing the traditional methods of dairy farming practices, resulting in low growth rates and milk production. The farmers have to be made aware of good dairy farming practices suitable to their holdings. Providing adequate knowledge to the farmers is essential for better implementation of the animal husbandry and agricultural development plans and to improve the production as well as productivity.

CONCLUSION

It can be summed up as, the variables such as age, occupation, farm size, milk production and social participation were found to act as critical variables in the symbolic adoption process. So, while preparing ICT mediated learning modules in future, one should take care of above variables. The study revealed that respondents were satisfied with the learning module but the low level awareness on good dairy farming practices created the vacuum in the adoption process. So, the scientific community and line department officials should take appropriate initiatives to reduce the knowledge gap, which would compromise farmers in terms of affordability and effectiveness. Further, the study explored that, respondents are more satisfied with the IEMM for learning and it clearly indicated that they are inclined towards accepting Cyber Extension. Since the farming community is proactive, the government has to initiate broad based approach to enhance the information technology infrastructure at the farmer's door steps to facilitate them with respect to timely information reach as well as better transfer of technology. This results implied that Model Dairy Villages (MDVs) may developed at gross-root level to create awareness among tribal farmers in turn to accelerate the adoption level for GDFPs.

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