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Adoption Behavior of Farmers in Khordha District of Odisha, India

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Authors' contributions

This work was carried out in collaboration among all authors. Author MM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SPP and DN managed the analyses of the study. Author DN managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

It is a generic concept that farmers like other kind of entrepreneurs; do not adopt innovation simultaneously as they crop up on the market. Diffusion typically takes a number of years, scarcely reaches a level of 100% of the potential adopters' population and mostly follows S-shaped curve in time. Apparently, some farmers choose to be the first users while others prefer to be early adopters or late adopters, some prefers not to adopt. This research paper titled 'Adoption Behavior of farmers in Khordha district of Odisha, India was conducted in four villages named Pubusahi, sarua, Balianta, and Benupur to know the factors affecting adoption of a new technology, attitude of the farmers towards the technology, perception of the farmers and suggestions from farmers regarding adoption of technologies. From the study, it was revealed most of respondents were cosmopolite and elderly having high favorability towards new technologies. However from the suggestions it was clear that the lack of timely supply of inputs, extension personnel's visit, training etc. affects the attitude of respondents towards the technologies.

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1. INTRODUCTION

Agriculture progresses technologically as farmers adopt innovations. The old age farmers had strong attitude base of previous experience and changing such attitude is a slow process. Therefore, the old farmers might have not responded quickly to the new practices. The young farmers being enthusiastic come forward to try new practices in their farming [1]. The impact of innovation in terms of productivity growth can be computed on the basis of the extent to which farmers adopt available innovation and the speed by which they do so. The probable reason is that farmers wants to get more yields and to improve their income level, they have to know about latest agricultural practices. Thus, annual income among farmers acts as initiating factor to adopt the new recommended technologies. Similar finding was reported by Pottappa [2]. Adoption is defined as a decision of full use of an innovation as the best course of action available (Rogers, 2003). Agriculture in Odisha is the cornerstone of majority of the populace and thus, holds the key to socio-economic development of the State. It suffers from frequent natural calamities like cyclones, drought and flash floods. Technology specific variables (e.g. yield potential and acceptability) are significant for explaining adoption behavior, implying that it is important to take farmers' preferences to varietal characteristics into consideration in the design of a research and development program [3]. It has been argued that traditional cultivation systems employing intensive soil tillage result in soil degradation and reduced crop yields [4-5]. The consequences are further exacerbated by the negative effects of monoculture cereal production and overgrazing in communal areas [6]. If small-scale farming is to survive and sustainable agriculture is to be achieved by farmers, then the patterns of agricultural production and management must evolve and new farming practices must be implemented [6]. The share of Agriculture Sector in the State's GDP has been declining over the years. The share of this Sector in Odisha's GDP is expected to be 15.6 percent in 2013-14 as per advance estimates. One of the most significant findings research done by Johnson and Van Dan Ban (1959): The relatively later adopters had twice as many discountenances as the earlier adopters. The researchers had presumed that later adopters were relatively less innovative because they did not adopt or were relatively slow to adopt innovations. This evidence suggests that later adopters may adopt, but then discontinue at a later point in time. Rejection is not to be confused from discontinuance. The consequence of innovation that is discontinuance, is a rejection that occurs after adoption of the innovation. When the farmers are satisfied with whatever new technology they have adopted, they are likely to hold on to it, but if they feel that it does not meet their needs they will discard it [7]. But, in the present times, there are so many other factors, apart from meeting of needs, which push a farmer to discard a technology. Van Tongeren (2003) investigated the discontinuance of farming innovations and found that the end of subsidies and educational programming explained the majority of discontinuances [8]. It is believed that an effective way to increase productivity is broad-based adoption of new farming technologies [9]

In order to examine the adoption behavior, the present study was taken to with following objectives;

1. To study the socio-economic profile of the respondent farmers.
2. To study the attitude of farmers towards the technology.
3. To collect suggestions from the respondents regarding the adoption

2. MATERIALS AND METHODS

The study was conducted in purposely selected Khordha district of Odisha. Out of 16 blocks, 3 blocks were purposely selected namely Khordha, Balianta and Begunia. Four villages named Pubusahi, Sarua, Balianta and Benupur were purposely selected. In a total 80 farmers were selected through random sampling methods. The data were collected through a pre-tested interview schedule in which the first part of the schedule comprised of the items related to personal, socio-economic profile. The second part is comprised of attitude of farmers towards technology and last part comprised of suggestions given by respondents. The data sheet was analyzed through the statistical methods viz. Frequency, Percentage, Mean, standard deviation and the results were interpreted and logical conclusions were drawn.

3. RESULTS AND DISCUSSION

The findings and the interpretations are cited side by side in order to have more insight to the findings.

3.1 Socio-Economic Characteristics of Respondents

The following table depicts the map of socio-economic characteristics of the respondents.

It is observed from the study that out of the total respondents majority of the respondents belongs to the third category that is above 50 years which accounts 50%, middle aged farmers were 45% and very less that is 5% respondents were young. Therefore the sample was dominated by old and experienced farmers. It was found that 37.5% passed their high school education which helps them to practice innovative things on their farm with the increase in contact with the extension functionaries. It was appreciable to learn that 20% respondents completed their college education. Only 10% respondents were illiterate which may be due to reasons that the family members did not give importance to education during early stage followed by lack of schooling facility in nearby areas.

The sample under study was dominated by the cosmopolite respondents who have more exposure to outside environment benefiting the rate of adoption agricultural technologies i.e. 55% were cosmopolite where as 45% of respondents were localite. The study revealed that less no of respondents participated regularly in meetings, conferences and other activities done for the welfare of their community. Results obtained from the study revealed that out of total respondents majority of the respondents i.e. 80% belongs to big family category followed by 20% from small family category. It was observed that out of the total 80 respondents most of the respondents belong to the joint family category i.e. 55% while the rest 45% respondents belong to the nuclear family category.

It was observed from the table that majority of the respondents were small and marginal farmers i.e. 45% each. Respondents having medium land holding were 5% followed by landless respondents i.e. 5%. The study revealed that the type of land holding reflect in adoption behavior of the respondents. The study mainly concerned with the small and marginal farmers. It was observed that in the sample study most of the respondents possessed agricultural occupation i.e. 97.5% and a very few respondents were found belonging to non-agricultural background i.e. 2.5%.

Table 1. Socio- economic profile of respondents

Sl. no.	Variables	Categories	Frequency(N=80)	Percentage
1	Age	Up to 35 years	4	5
		36-50 years	36	45
		>50 years	40	50
2	Education	Illiterate	8	10
		Up to primary	12	15
		Primary to high school	14	17.5
		High school	30	37.5
		College	16	20
3	Cosmopoliteness	Localite	36	45
		Cosmopolite	44	55
4	Family size	Small	16	20
		Big	64	80
5	Family type	Joint	44	55
		Nuclear	36	45
6	Social participation	Ordinary member	36	45
		No membership	40	50
		Office bearer	4	5
7	Land holding	Landless	4	5
		Marginal (0-0.5 ha)	36	45
		Small(0.5-1 ha)	36	45
		Medium (1-2 ha)	2	5
		Large (>2 ha)	0	0
8	Occupation	Agriculture	78	97.5
		Non-agriculture	2	2.5

Table 2. Distribution of respondents according to their attitude level on technology

Sl. no.	Category	Frequency(N=80)	Percentage
1	Less favourable	20	25
2	Favourable	47	58.7
3	More favourable	13	16.3

Mean = 47.12; S.D. = 9.05

Table 3. Correlation of independent variables with adoption level of respondents

Sl. no.	Variables	r- value	Remarks
1	Age	-0.058	NS
2	Caste	.186	*
3	Education	.055	NS
4	Family size	-.169	*
5	Land holding	.290	**
6	Information source use	.251	**
7	Knowledge level	.530	**

*** . Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed); NS. Correlation is not significant*

3.2 Attitude of Farmers towards the Technology

An attempt was made to study the attitude of the respondents towards different technologies like use of transplanter, line sowing, sprayer etc. in the selected study area. The respondents were categorized into three categories on the basis of mean score and standard deviation. The findings were reflected in the Table 2.

A close perusal of the above Table 2 indicated that a majority of the respondents i.e. 58.7 percent (47) of the total respondents had a favourable attitude towards different technologies followed by 25 percent (20) respondents having less favourable attitude and 16.3 percent (13) of the respondents having more favourable attitude.

It can be concluded that majority of the respondents (75%) had favourable attitude towards adoption of different technologies. 25 percent of respondents had less favourable or unfavourable attitude towards technologies. It is a natural phenomenon for laggards towards new technologies. Gradually it will be converted towards favourable attitude after some years of adoption and mass adoption among the people. Collaborative efforts should be initiated to increase favourable attitude towards new technologies in the study area.

The data reported in the Table 3 revealed that land holing, extension contact, information source use and knowledge level were significantly and positively correlated with the adoption of various horticulture practices. Family size was significantly and negatively correlated with adoption whereas age was not correlated.

3.3 Suggestions from the Respondents Regarding Adoption

The spread and adoption of innovation does not just happen but needs to be planned for so that the benefit of the innovation is maximized. We require to use the existing evidence to inform our plans by identifying factors that are weak and strengthening them using existing knowledge, tools and approaches. So suggestions should be collected from the respondents for effective use of technology. Many reasons are there for discontinuance and rejection of innovations, some of the suggestions are enlisted below;

1. Availability of good quality seeds to the farmer
2. More frequent extension personnel contact to the farmers
3. Training on disease pest management
4. Field visit of government officials
5. Provision of demonstrations about new technologies
6. Mobile soil testing
7. Training on vocational methods
8. Information about Govt. policies and programs
9. Better education facility to uneducated farmer
10. Market facility for perishable commodities

4. CONCLUSION

The research study provides an understanding of how the new technologies regarding agriculture deployed as enterprise systems and effected innovation and change. This study gives a clear cut idea about the adoption status and adoption behavior of the farmers of Khordha district of Odisha. The study was conducted in few areas with small respondents of 80 nos however from the study it can be concluded that the spread of innovation to the rural areas mainly depend on the extension personals, training and demonstration. Farmer's education and awareness also plays an important role in the technology adoption.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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