

FARMER'S INFORMATION EXPOSURE AND ITS IMPACT ON THEIR ADOPTION BEHAVIOUR

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Agricultural development is a fact of life which may mainly be explained as a function of application of the latest technology by farmers in their fields. This in turn depends upon their knowledge about the latest technology which ultimately demands that farmers be exposed to a variety of information sources. Empirical evidence shows that information exposure has a highly significant positive association with awareness, adoption and adoption precision. Therefore, there is a strong likelihood that farmers who have more information contacts are likely to be more aware of the recommendations and better adopters than others who have a little or no exposure.

Key words: adoption behaviour, exposure, farmer's information

INTRODUCTION

Agricultural development has always been the main focus of development agencies throughout the world in the overall development model. Pickering (1989) argues that "no country anywhere in the world has ever reached an advanced stage of economic development in the absence of agriculture as its primary engine of growth". Its importance becomes vital especially for the developing world where 61% of the labour force is employed in agriculture (Gill, 1991). FAO (1988) figures show that in 1987 a fairly large majority of the world population (75.5%) lived in the developing countries, of which 58% were classified as those involved in agriculture. However, agricultural production in these countries continues to be low which may be attributed to non-adoption of the latest technologies by farmers. According to an FAO report (1985), in many developing countries wide adoption of research results by majority of farmers remains quite limited.

Pakistan being a part of the developing world is not an exception in this regard. The country's average per hectare yield of various crops is still one of the lowest in the world (Khan, 1982). Nevertheless, this sector, if properly managed, can play a pivotal role in strengthening the economy of the country. It is important to note here that there is an ample scope for increasing crop yields due to a very large gap between the potential and the national average; there is a

possibility of at least four-fold increase in the existing yields of various crops. A review of available evidence suggests a number of constraints in agricultural development, including lack of finance, non-availability of inputs at proper time, widespread illiteracy and ignorance on the part of the people living in rural areas of the country, and consequently, non-adoption of the latest agricultural technologies by them. This view is supported by a number of studies which have been carried out in the country over the past 20 years. Although all these factors are very important in the process of adoption, yet the ignorance of the farmers has a clear edge over the others as the access of the small farmers to the relevant technical knowledge and skills has been considered more important than other factors in the adoption decision. Whenever the small farmers had access to knowledge and skills needed for the utilization of an innovation, they adopted it despite relative lack of other factors of production (Melkote, 1988). Lack of technical knowledge at the farm level has been considered as a principal factor limiting agricultural progress (Adams, 1982). It emphasizes the need for appropriate guidance and education of farmers through exposing them to a variety of information sources. The more the farmers have access to information, the better adopters they are likely to be. The present paper aims to assess the information exposure of farmers in relation to their adoption behaviour,

MATERIALS AND METHODS

An empirical study was undertaken in the Punjab province. Data were collected in one tehsil of Faisalabad district from March to October 1992. Sixty-four Contact farmers (CFs) and 128 non-contact farmers (NCFs) were randomly selected from 16 Villages selected through stratified random sampling technique from two relatively homogeneous strata of villages. The technology used in the instrument designed for the respondents to assess their awareness and adoption levels was concerned with sugarcane crop. The data were mainly collected through personal interviews. In addition, observation technique was also used to obtain an inside picture of the system through observing certain farm operations undertaken by farmers in their real setting. The data were analyzed using 'Minitab' statistical package.

The following statistical techniques have been used for data analysis:

Chi-square (χ^2) test was used to explore the significance levels of relationship between independent and dependent variables.

In order to determine significance levels, Yates corrected χ^2 value was used as it gave improved χ^2 approximation (for 2x2 tables) by using correction factor developed by Yates (1934) cited in Everitt (1977).

Significance levels have been shown at three levels:

* = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$.

Computation of Independent and Dependent Variables Information Exposure: An information exposure Score was calculated for each individual, based on the number of information sources the respondent reported, the extent to which the respondent used each source, and the overall effectiveness of each source as perceived by the whole set of respondents. Reported extent of use was measured for each respondent on a scale of 1 (to some extent) to 3 (to a large extent). A relative effectiveness Score for each source was calculated by multiplying the percentage of users of the source who reported each level of effectiveness by a scale value between 0 (ineffective) and 3 (very effective). Finally, the information exposure Score for each respondent was calculated for both CFs and NCFs and was then used to divide each set of respondents into groups of high and of low exposure.

Awareness: Awareness level was calculated on the basis of respondents' information about the recommendations included in the study. Since the recommendations differed from each other to a great extent on the basis of their knowledge by the respondents, it was considered inappropriate to allot equal weight to all the recommendations. It was considered legitimate to allot a higher weight to those recommendations which were known to a relatively lesser number of respondents and vice versa. For this purpose, initially, weighted score for each recommendation was calculated by multiplying the count of aware respondents against each recommendation with 0.159 in case of CFs and 0.703 in case of NCFs. It was done on the assumption that CFs constitute only 10% of the total population and the rest 90% come under NCFs. Thus each Contact farmer of the sample represented 0.159% and each non-contact farmer of the sample represented 0.703% of the entire population. This gave weighted score for all the recommendations which was then used to calculate awareness level for each respondent.

For the purpose of categorization of respondents into different groups, initially the recommendations were arranged in ascending order on the basis of the weighted Score. Then the recommendations were categorized into five different categories by drawing lines at natural cut-off points. Those practices which were not known to anybody were not included for the calculation of awareness score. In this way a weighted score from 1-4 was allotted to the remaining categories. The weighted Scores worked out in this way were then used to calculate individual awareness score by assigning them to each recommendation known to the individual respondent and then adding up all the weighted scores of known recommendations against each respondent. Now the task at hand was to categorize the respondents into different categories by using the weighted Score. Since the data were not normally distributed, median instead of mean was used for categorization. In order to have the same measuring scale for both categories of respondents, an average median value for both CFs and NCFs was worked out to divide the respondents into two groups.

Adoption: Adoption Score was calculated on the basis of the adoption of recommendations by the respondents. Like awareness, the recommendations differed greatly

Table 1. Association of information exposure with awareness

Information exposure	Awareness					
	Contact farmers			Non-contact farmers		
	Low	High	Total	Low	High	Total
Low	22	2	24	70	11	81
High	6	33	39	15	32	47
Total	28	35	63	85	43	128

$$\chi^2 = 31.99^{***} \quad df = 1 \quad X^2 = 37.20^{***} \quad df = 1$$

Table 2. Association of information exposure with adoption

Information exposure	Awareness					
	Contact farmers			Non-contact farmers		
	Low	High	Total	Low	High	Total
Low	19	5	24	71	10	81
High	2	37	39	11	36	47
Total	21	42	63	82	46	128

$$\chi^2 = 33.99^{***} \quad df = 1 \quad X^2 = 50.58^{***} \quad df = 1$$

Table 3. Association of information exposure with adoption precision

Information exposure	Awareness					
	Contact farmers			Non-contact farmers		
	Low	High	Total	Low	High	Total
Low	13	6	19	65	9	74
High	3	24	27	14	18	32
Total	16	30	46	79	27	106

$$\chi^2 = 13.72^{***} \quad df = 1 \quad X^2 = 20.61^{***} \quad df = 1$$

from each other with regard to their adoption by the respondents. Therefore, a similar strategy was followed as for calculating awareness score. At the first stage the weighted score for each recommendation was calculated by multiplying the count of adoption against each recommendation with 0.159 in case of CFs and 0.703 in case of NCFs.

At the second stage the recommendations were arranged in an ascending order on the basis of the weighted scores. Then the recommendations were grouped into five different categories by drawing lines at natural cut-off points. Those practices which were adopted by more respondents were allotted the lowest score and vice versa. However, those practices which were not at all

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adopted by any of the respondents were not considered for calculating the adoption score. The weight allotted in this way to different practices was then used to calculate individual adoption scores by assigning them to each recommendation adopted by the individual respondent and then adding up all the weighted scores of the recommendations against each respondent. Having calculated the individual adoption score, the average of the median values for both CFs and NCFs was used to separate respondents into two categories.

Adoption Precision: It is not only adoption itself which matters towards obtaining better crop yields; the precision with which the farmers undertake various farm operations also contributes a lot to the realization of maximum yield potential. Therefore with this idea in mind, it was regarded as essential to look into the variables which were associated with adoption precision. For this purpose, first of all, the adoption precision score was calculated based on the personal observation of various farming aspects by the first author. The mean of the medians for both CFs and NCFs was used to divide the respondents into two groups.

RESULTS AND DISCUSSION

The significance of association of various dependent variables was tested against information exposure. The data in this regard presented in Tables 1-3 depict that information exposure was found to have a highly significant positive association with awareness. This finding was in agreement with Rogers (1983) who found that more exposure the farmers had to the outside world the greater was their awareness. Similarly, information exposure showed a highly significant positive association with adoption and adoption precision. A common sense explanation of this relationship is that without knowledge about an innovation, an individual may not be in a position to consider it for adoption. But an equally plausible interpretation would be that those who could adopt the recommendations (or in other words who could afford

to adopt): or managed to have contact with more information sources, became aware of the recommendations and adopted.

Conclusions: It can be concluded that by and large farmer's information exposure is most likely to be an important factor influencing adoption behaviour. Of course, greater exposure is likely to enhance awareness about the latest recommendations and to lead to farmer's putting these recommendations into practice in a precise manner.

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