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Factors Influencing the Utilization Pattern of Kisan Mobile Advisory Service

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ABSTRACT

The research was undertaken on 123 respondents of Banaskantha district of Gujarat state selected through multistage sampling method with the target to establish the relationship between farmer-subscribers' profile characteristics and their Kisan Mobile Advisory Service (KMAS) utilization pattern. The data was collected using a structured schedule and the respondents were interviewed personally. The information was analysed with mean, standard deviation, frequency, percentage, multiple regression and stepwise regression for a meaningful interpretation. The multiple regression analysis indicated that the 'Z' values of age, education, scientific orientation, extension participation and attitude had essentially accorded in disclosing the variety to the utilization pattern of KMAS. The stepwise regression investigation showed that extension participation was the most (69.80%) impacting attribute for usage of KMAS. As such, these factors ought to be considered while determination of the farmers for execution of extension programmes.

INTRODUCTION

Notwithstanding previous periods of great economic expansion, India's agriculture sector has had modest productivity growth. For productivity growth to be faster, there are many challenges to be addressed, including inadequate infrastructure, supply chain inefficiencies, along with access to and diffusion of information. Regaining agricultural dynamism is the key challenge for government and policy makers. Developing the next generation of technology and infrastructure in India is crucial for achieving a greater agricultural growth rate during the second green revolution. Small and marginal farmers, who make up the bulk of farmers in India, frequently lack access to correct information targeted at raising yields and pushing up crop prices (Mittal et al., 2010; Panda et al., 2019; Panda et al., 2020).

The availability of adequate information is critical for increasing agricultural productivity (Sharma et al., 2012; Nain et al., 2015). Information and Communication Technology (ICT) could make the greatest contribution by telescoping distances and reducing the cost of interaction between stakeholders. ICT has the potential to help farmers in the entire cycle of production, i.e., from production to sales. Both detectable and undetectable exchange costs are impacted by ICT as suggested by Bhatnagar (2008). Most efforts to make ICT available to rural farmers have sought to improve the availability and quality of information either indirectly through producer associations, extension workers and the like, or directly through broadcast radio information, telecentres, and mobile short messaging services (SMS) (Bertolini, 2004). An investigation carried out by De Silva & Ratnadiwakara (2008) likewise, discovered that gherkin farmers belonging to Sri Lanka had the option to work on their livelihoods through straightforward cell phone applications that diminished waste through a criticism framework. Most of the farmers applied the advisories given by KVK on day to day farming activities and they were satisfied with the use of information sharing app (Patel et al., 2020). The execution of the Kisan Mobile Advisory Service (KMAS) scheme in Krishi Vigyan Kendra's front-line extension system is another ICT drive pointed toward meeting farmers' data needs and assumptions. KMAS was made by the Indian Council of Agricultural Research (ICAR) determined to give free agricultural information to however

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many farmers as would be prudent in their local language by means of SMS. It is managed by KVKs all throughout India. Agronomy, plant protection, horticulture, animal science, home science, dairy, and other topics are covered in KMAS. Farmers benefit greatly from KMAS because it gives free information, delivers location-specific information, provides information in local languages, and is cost-effective. KMAS has been implemented in 192 KVKs across India, one of which being KVK Deesa. The Kisan Portal of the Ministry of Agriculture, Government of India, is utilized by KVK to send SMS to farmers. As its crucial to understand the elements that influence the utilization of KMAS by farmer-subscriber for its improvisation. So keeping this in view the study was mainly focused to reveal the relationship between the profile characteristics of the farmers of Banaskantha district and utilization pattern of KMAS.

METHODOLOGY

The multistage sampling technique was used for drawing the sample. The research was conducted in Banaskantha district, in the state of Gujarat. Agricultural technological information is being provided through KMAS by Krishi Vigyan Kendra (KVK) in that area. ICAR has selected KVK Deesa for mobile consulting services since the year 2009 from the 192 KVKs that were chosen in the first phase. Since KVK Deesa's work area is the Banaskantha district, it was purposefully chosen. Banaskantha district is divided into 14 talukas, out of which, six talukas namely Tharad, Deesa, Dhanera, Lakhani, Deodar and Amirgadh talukhas were selected according to the highest number of KMAS farmer subscribers. Three villages in each taluka were purposefully chosen based on the number of subscribers of KMAS. Random sampling method was used in selection of respondents in proportion to 30 per cent of the subscribers from each selected village. Altogether, a sample comprising of 123 farmers was chosen. Keeping in view the objectives of the study, relevant variables for the study were selected on the basis of reviewed literature and by consulting the experts. The data was gathered using a structured schedule through one-on-one interviews with respondents.

Multiple regression analysis was carried to find out the combined effect of independent variables in explaining variation of the dependent variables. The stepwise regression analysis was done to know the significant factors with their prescient capacity in clarifying the variety in the reliant variable (Snedecor & Cochran, 1967).

RESULTS AND DISCUSSION

All the independent variables listed in Table 1 together explained as much as (83.20%) of total variation in utilization pattern of KMAS among the respondents. The unexplained variation (16.80%) could be attributed to factors beyond the present study.

Table 1 further shows that 'Z' values of five variables i.e., age (-2.481), education (4.335), extension participation (2.649), scientific orientation (2.498) and attitude (2.359) were significant either at 1% or at 5% level. Thus, these five variables greatly aided in analyzing the differences in KMAS usage patterns. At the 5% level, age had a negative and significant impact on KMAS utilization pattern. The most likely explanation is that young farmers are more enthusiastic than older farmers. As a result, younger farmers used KMAS more than older farmers. Farmers in their golden years had more farming experience, as a result, may be aware of certain elements. This could be behind the lesser usage of the KMAS by older farmers. The results are contrary with Hinduja et al., (2017) and similar with Patil & Patel (2021).

Table 1. Multiple regression analysis of the selected independent variables with utilization pattern of KMAS

S.No.	Independent variables	Regression Coefficient (b)	S.E. of 'b'	'Z' value
1.	Age	-0.133	0.053	-2.481*
2.	Education	1.198	0.276	4.335**
3.	Farming experience	-0.006	0.058	-0.099^{NS}
4.	Farming system	0.176	0.341	0.516^{NS}
5.	Land holding	0.033	0.229	-0.144^{NS}
6.	Annual income	-0.229	0.204	-1.126^{NS}
7.	Sources of information	-0.102	0.089	-1.147^{NS}
8.	Extension participation	0.481	0.182	2.649**
9.	Scientific Orientation	0.337	0.135	2.498*
10.	Attitude	0.170	0.072	2.359*

Constant = 26.726, R^2 = 0.832, Multiple 'R' = 0.912, * Significant at 5% level, ** Significant at 1% level, NS Not significant

It's possible that the above patterns are related to the fact that education benefits people by acquiring them knowledge, broadening their horizons and motivating higher outcomes. Education turns outwards and opens up new opportunities in life. Literacy farmers may be able to locate, comprehend, interpret, evaluate, and apply information obtained through KMAS. The results related to education are in line with Joshi & Dhaliwal (2019).

Participation in agricultural extension commits to the agrarian society's full and equal engagement in technology transfer. In addition, the involvement of farmers in various extension programs offers many opportunities to obtain detailed information that can help farmers selected by KVK as KMAS subscribers.

Science-oriented farmers tend to cultivate using scientific methods. Another cause could be that better incomes and active participation in various extension programmes have helped in the development of a progressive and scientific mindset, which may lead to farmers using more KMAS services (Singh & Verma, 2021; Malik et al., 2021). A positive attitude towards new innovation is the first condition for its acceptance. A positive attitude always makes it easier and faster to accept technology. Therefore, the positive attitude of farmers can help them to use KMAS more as found by Patil & Patel (2017).

It is apparent from the Table 1, that variables viz., farming experience, farming system, land holding, annual income and source of information were not significant. Thus these variables failed to contribute significantly to utilization pattern of KMAS. The results are in accordance with Shinde et al., (2019); Joshi & Dhaliwal (2019). Farming is, in general, a hereditary profession, and most farmers begin farming at an early age. As a result, the older the farmer is, the greater farming experience he has. As a result, it's possible that they may be unaware of the significance of some of the messages. As age was found to be negatively related with

Table 2. Stepwise regression analysis of the independent variables with utilization pattern of KMAS

S.No.	Independent variables	Partial Regression Coefficient (b_i)	S.E. of b_i	'Z' value	Std. Partial Regression Coefficient (b'_i)	Rank
1.	Extension participation	0.587	0.169	3.476**	0.274	III
2.	Education	1.326	0.246	5.338**	0.293	II
3.	Age	-0.156	0.028	-5.585**	-0.312	I
4.	Scientific orientation	0.346	0.134	2.586*	0.175	IV

Constant = 30.493; R^2 = 0.820; Multiple 'R' = 0.906; * = Significant at 5% level; ** = Significant at 1% level

KMAS utilization pattern, a negative relationship between farm experience and KMAS utilization pattern seems plausible. Because most of the farmers used agriculture + animal husbandry farming system, which turned out to be widespread across the entire research area's farmers, the utilization pattern may not have been influenced. A farmer's land holdings are largely inherited from his parents and have no bearing on his education, extension activities, scientific approach, or attitude. Because the farmers who utilized KMAS had a variety of land holdings ranging from small to large, the results looked to be accurate. Farmers' annual income may not have had an impact on KMAS usage patterns because KMAS transmits information to them at no cost.

Stepwise regression analysis

The stepwise regression analysis was carried out for explaining the variation in the dependent variable. All the 10 selected independent variables were taken into account in the stepwise regression analysis as described in Table 2.

Four variables *viz.*, extension participation, education, age and scientific orientation all together explained as much as 82.0 per cent of total variation in the respondents' utilization pattern of KMAS (Table 2). The unexplained variation of (18.0%) could be attributed to factors other than the ones listed above. Table 2 shows the 'z' values for extension participation, education, age and scientific orientation variables were found significant either at 5% or at 1% level indicating significant contribution of these four variables in utilization pattern of KMAS. The partial regression coefficient indicates a change of one unit in extension participation, education, age and scientific orientation would change (0.587), (1.326), (-0.156) and (0.346) units in respondents utilization pattern, respectively. Based on the results of stepwise regression analysis, following regression model was obtained.

$$Y = a + b_8X_8 + b_2X_2 + b_1X_1 + b_9X_9$$

Where, Y= Predicted dependent variable, a= The intercept *i.e.*, 30.493, $b_{8=}$ Partial regression coefficient of Y on X_8 (Extension participation), b_2= Partial regression coefficient of Y on X_2 (Education), b_1= Partial regression coefficient of Y on X_1 (Age), b_9= Partial regression coefficient of Y on X_9 (Scientific orientation)

By substituting the value of 'a' and 'bi' the model take place as under:

$$Y= (30.493) + (0.587)\ X_8 + (1.326)\ X_2 + (-0.156)\ X_1 + (0.346)\ X_9$$

Because each independent variable has its own unit of measurement, the partial regression coefficient value could not be compared. The partial regression values were translated into standard partial values, which were free of measurement units, to make comparisons easier. Following that, the independent variables were sorted using standard partial regression coefficient values (b'i), as shown in Table 3. From highest to lowest, the order of these four factors was (i) age (-0.312), (ii) education (0.293), (iii) extension participation (0.274), (iv) scientific orientation (0.175). From the preceding results of stepwise regression analysis, it can be determined that (82.00%) of the variation was accounted for by extension participation (X8), education (X2), age (X1) and scientific orientation (X9) put together on utilization pattern of KMAS.

Table 3 further shows that the variable, extended participation alone, accounted for a significant 69.80% variation in utilization pattern of KMAS, followed by extension participation + education (06.00%), extension participation + education + age (05.20%) and extension participation + education + age + scientific orientation (01.00%). Finally the stepwise regression analysis clearly indicated that extension participation emerged as an important attribute and highly influenced the utilization pattern of KMAS by the farmers. Further higher education, younger age and scientific outlook of the farmers also affected the utilization pattern as per order of importance.

Table 3. Stepwise variation accounted by selected independent variables towards utilization pattern of KMAS

S.No.	Independent variables	Multiple 'R'	Total variation accounted (R^2)	Variation between step
1.	X_8	0.835	0.698 (69.80 %)	69.80
2.	X_8+X_2	O.871	0.758 (75.80 %)	06.00
3.	$X_8+X_2+X_1$	0.900	0.810 (81.00 %)	05.20
4.	$X_8+X_2+X_1+X_9$	0.906	0.820 (82.00 %)	01.00
	Total			82.00

Note: X_8= Extension participation, X_2=Education, X_1=Age, X_8= Scientific orientation

CONCLUSION

From the above discussion, it could be concluded that practically all farmers had a positive view about KMAS. As a result, KMAS has a broad scope in delivering information services to farmers in our nation so that they may make informed judgments about successful farming in areas where the ratio of extension staff to farmers is low. Among all the variables extension participation was the most influencing attribute for utilization pattern whereas, education, age, scientific orientation and attitude were the important variables contributing to the extent of utilization of KMAS by the farmers. Based on the findings, it is possible to conclude that these variables should be considered while selecting farmers for extension programme implementation.

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