RESEARCH PAPER

Assessment of agricultural information needs and search behaviour of farmers in Andhra Pradesh state

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Abstract : Farmers need information at all stages of crop production to post-harvest management. To assess the agricultural information needs and search behaviours of farmers study was under taken in two districts *viz.,* Krishna and Guntur districts of Andhra Pradesh state on selected 100 progressive farmers. From the obtained data farmers were divided into three search behaviours and the significance with socio-economic characteristics and information needs were assessed using chi square and Kruskal Wallis test and found literacy status, land holding, usage of mobile phone and technical information, price or market related information were shown significance. Then logit regression was done to identify the type of impact the variables showing on search behaviours and found that secondary education, mobile phone usage and cultivation practices were shown significance impact in negative way.

Key Words : Agriculture, Information, Search behaviours

INTRODUCTION

Information is defined as facts or details about something or somebody. It is the first step towards creating an idea or motivation towards anything. Farmers need information at all stages of crop production to post-harvest management. India being self-sufficient in food production, the economic condition of a farmer is still a question mark. This situation sensitized the further evolution of extension services from a production led extension to a market-led extension where the real-time information needs of farmers are identified for financial sustainability. Due to the evolution of mass media, timely warnings, live demonstrations and feedback system are made possible to reach every person. In this context this to study the changing preference of farmers information needs a study was conducted to assess the agricultural information needs and search behaviours of farmers.

MATERIAL AND METHODS

Krishna and Guntur districts of Andhra Pradesh state were purposively selected for the present study because these two districts were undertaking intensive agricultural activities and are also major contributors of gross value addition to primary sector. Data was collected from 50

farmers in each district thus, making 100 farmers in total. Identified progressive farmers were purposively selected using purposive cum random sampling design. Data was collected from sample farmers using a well-defined and pre-tested schedule through personal interview. Tools like percentage analysis, chi square test, Logit model were employed to derive results from data.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Grouping of the sample farmers based on information search behaviour:

For grouping the sample farmers, the data pertaining to access to number of information sources, usage among them and their mean usage frequency were collected. The Information sources include peer farmers, extension worker, input Dealers, cooperative societies, input companies, local markets, KVK, SAU, Kisan Melas, KCC, Traders, traditional media sources like newspapers, magazines, TV, radioand modern media sources like mobile phone, applications, websites, knowledge portals. Likert scale technique was used to rate the responses for frequency of usage of Information from various sources (Daily=4, monthly=3, bimonthly=2, seasonal=1) and mean of frequency of usage of accessible Information sources was worked out.

Product scores were worked out by multiplying the variables namely sum of accessed Information sources, the sum of used sources and mean of frequency of usage of Information sources. Then sample farmers were divided into two quartiles according to product scores *i.e.,* two quartiles having of three groups were identified

from the data. Sample farmers having product score below 234 were grouped as 1st group, those having product score in range of 234-374 were grouped as 2nd group and those having product score above 374 were grouped under 3rd group.

As per the Table 1. Mean of the accessible information sources by sample farmers was 13.95 with a standard deviation 2.38, mean of usage of accessible information sources was 9.55 with standard deviation 2.77 and the mean of frequency of usage was 2.39 with standard deviation 0.37. This indicated that on an average sample farmers were obtaining information from nine sources and the frequency of usage was monthly.

The first group having product score of less than 234 was grouped under low search behaviour, whereas the second group having product score in range of 234-374 grouped under medium search behaviour and the third group with product score more than 374 was under high search behaviour. The mean and standard deviations of identified search behaviours were computed and the results are presented in Table 2.

From Table 2. We can infer that for low search behaviour group the mean of sources accessed, sources used and frequency of usage of information sources was 11.65, 6.55 and 2.39, respectively. Similarly for medium search behaviour group the mean of sources accessed, sources used and frequency of usage of information sources was 14.43, 9.69 and 2.37, respectively. In a similar way for high search behaviour group the mean of sources accessed, sources used and frequency of usage of Information sources was 15.56, 12.15 and 2.46, respectively. There was no much difference among three search behaviours with respect to mean frequency of usage of information sources 2.39, 2.37 and 2.46.

Farmers in high search behaviour group have more

Table 1 : Over all mean and standard deviation of variables

Variable	Mean	Standard deviation
Sum of accessible sources	13.95	2.38
Sum of sources used	9.55	2.77
Mean frequency of usage	2.39	0.37

Table 2 : Mean and standard deviation of identified search behaviour groups

Search behaviours	Sources accessed		Sources used		Frequency of usage	
	Mean	SD	Mean	SD	Mean	SD
Low search	11.65	2.05	6.55	1.74	2.39	0.445
Medium search	14.43	1.97	9.69	1.38	2.37	0.381
High search	15.56	1.16	12.15	1.69	2.46	0.274

access to sources than other two search behaviours and irrespective of search behaviour the mean of frequency of usage of information sources was on monthly basis.

Assessment of significance of socio-economic characteristics and information needs of sample farmers on information search behaviour:

In order to assess any significant association between the socio-economic characteristics of the sample farmers with the identified search behaviours chi square was undertaken. The results of the test were shown in the Table 3 to 5. Chi square test revealed that there was significant difference between the frequencies of three search groups with socio-economic characteristics namely literacy status, land holdings at 5 per cent level of significance and usage pattern of mobile phones at 1 per cent level of significance. Usage pattern of mobile phones was highly significant compared to literacy status and land holdings.

Assessment of the significance of information needs of sample farmers on search behaviour:

Thirty information needs were identified and their relevance is evaluated with Likert scale technique (very important =5, Important =4, neutral=3, least important =2, not important=1). Kruskal Wallis test was employed to test whether there were any significant differences among different search groups with respect to various information needs.

It can be understood from Table 6. That there was significant difference between the mean scores of three search groups with the types of information needs like seed variety, pest management, open market price are significant at 5 per cent level of significance while fertilizer management, minimum support price, were significant at 1 per cent level of significance.

There was significant difference among three search behaviour groups with respect to information need for seed variety, pest management and fertilizer management and these needs were prominent for low search behaviour group with mean scores 59.98, 63.52 and 64.47 and with p values 0.043, 0.004 and 0.001, respectively. Similarly there was significant difference among three search behaviours with respect to open market price and minimum support price and these needs were prominent for high search behaviour group with mean scores 59.44 and 64.29 and with p values 0.007 and 0.001, respectively.

Thus, it can be inferred that varietal information of seed, pest and fertilizer management has shown

Table 3: Literacy status with search behaviour

Search behaviour of farmers	Literacy status			Total	Chi-square	p value
	Primary education	Secondary education	Intermediate and graduation			
Low search behaviour	5 (16.1%)	15 (48.4%)	11 (35.5%)	31 (100.0%)	9.607	0.048*
Medium search behaviour	4 (11.4%)	9 (25.7%)	22 (62.9%)	35 (100.0%)		
High search behaviour	4 (11.8%)	6 (17.6%)	24 (70.6%)	34 (100.0%)		
Total	13	30	57	(100)		

Table 4: Land holding status with search behaviour

Search behaviour of farmers	Land holding			Total	Chi-square	p value
	Small	Medium	Large			
Low search behaviour	11 (35.5%)	15 (48.4%)	5 (16.1%)	31 (100.0%)	17.112	0.002*
Medium search behaviour	4 (11.4%)	19 (54.3%)	12 (34.3%)	35 (100.0%)		
High search behaviour	1 (2.9%)	16 (47.1%)	17 (50.0%)	34 (100.0%)		
Total	16 (100)	50 (100)	47 (100)	(100)		

Table 5: Usage pattern of mobile device with search behaviour

Search behaviour of farmers	Usage pattern of mobile device		Total	Chi-square	p value
	Mobile phone	Smart phone			
Low search behaviour	24 (77.4%)	7 (22.6%)	31 (100.0%)	13.448	0.001**
Medium search behaviour	17 (48.6%)	18 (51.4%)	35 (100.0%)		
High search behaviour	11 (32.4%)	23 (67.6%)	34 (100.0%)		
Total	52	48	(100)		

significant difference with low search behaviour farmers indicating availability of technical information was sufficient for low search behaviour groups. In a similar fashion open market price and minimum support price has shown significant difference with high search behaviour group indicating that high search behaviour group farmers have more access and usage of information sources and were seeking real time information.

Assessment of the impact of the selected variables on information search behaviour using Logit model:

The sample farmers were categorised into high and low search behaviour groups based on the product scores obtained. Median value of product score was worked out and those sample farmers who fall in group above 323.5 were considered as high search and those sample farmers who fall in group below the median value were categorised as low search behaviour group.

Eight variables *i.e.* age, literacy status, income levels, landholding, usage pattern of mobile phones, Information on cultivation practices, marketing aspects and value addiction practices were considered as explanatory variables. The effect of these independent variables on search behaviours of farmers was studied using Logit Model.

Age, income levels, literacy status, usage pattern of communication device and land holdings was further

Table 6: Significance of information with search behaviours

Type of information	Chi-square	P value	Search behaviour		
			Low	Medium	High
Land preparation	5.579	0.061	52.77	57.00	41.74
Sowing time	2.752	0.253	56.44	47.13	48.56
Seed variety	6.310	0.043	59.98	44.91	47.60
Seed treatment	0.355	0.837	52.61	50.51	48.56
Soil health management	2.605	0.272	44.35	51.37	55.21
Method of sowing	0.117	0.943	49.27	50.53	51.59
Credit information	0.848	0.655	48.74	48.66	54.00
Insurance information	0.152	0.927	49.47	50.10	51.85
Weather information	2.151	0.341	55.02	46.04	50.97
Source of input	0.813	0.666	49.76	47.93	53.82
Price of input	0.952	0.621	52.53	52.40	46.69
Water management	1.183	0.554	48.37	54.34	48.49
Weed management	5.961	0.051	60.13	45.94	46.41
Pest management	11.192	0.004	63.52	46.83	42.41
Fertilizer management	13.577	0.001	64.47	47.53	40.82
Farm machinery	4.323	0.115	41.94	54.01	54.69
Grading of produce	0.898	0.638	47.92	53.81	49.44
Storage of produce	1.012	0.603	46.82	50.74	53.60
Packaging	0.900	0.638	47.39	52.89	50.88
Labeling	0.461	0.794	47.39	52.89	50.88
Transport of produce	1.683	0.431	47.50	54.61	49.00
Value addition practices	3.050	0.218	47.77	47.50	56.07
Markets for produce	0.073	0.964	50.95	49.50	51.12
Buyers information	1.227	0.542	49.00	54.50	47.75
Price of produce in different markets	0.270	0.874	50.50	48.93	52.12
Open market price	10.021	0.007	39.23	51.80	59.44
Minimum support price	13.583	0.001	42.08	44.56	64.29
Procurement price	0.094	0.954	50.84	49.43	51.29

categorized into different sub groups. The age variable was categorized into three group's *viz.,* sample farmers between the age group of 15-30 years, 31-45 years and more than 45 years. Literacy status variable was categorized into three groups *viz.,* farmers having primary education, secondary education and farmers with intermediate and graduation level education. Income level variable was categorized into two groups *i.e.* farmers having net farm income of less than Rs. 1,00,000 and more than Rs. 1,00,000. Age group above 45 years, literacy status of intermediate and graduation level, farm net income of more than Rs. 1,00,000 and usage of smartphone with internet connectivity were taken for reference to explain results of model.

Table 7 indicated that independent variables secondary education, basic featured mobile and cultivation practices information were statistically significant. The Nagelkerke R^2 value for the above model was 0.359. This indicated that 35.9 per cent of the variance in farmer's information search behaviour was from 74 per cent of sample farmer's.

We can understand that farmers who had secondary education showed negative tendency significantly (B value -1.755, p value 0.007) from shifting their search behaviour from low to high when compared to respondents who has education level of intermediate and graduation. In other words with reference to odds ratio farmers having secondary education have 0.173 times less tendency to become high search behaviour when compared to sample farmers having education level of intermediate and graduation.

Similarly, farmers who are using mobile phones had shown negative tendency significantly (B value -1.279, p value 0.013) from shifting their search behaviour from low to high when compared to respondents who has smart phones with internet connectivity. In other words farmers using basic mobile phone were 0.278 times had fewer tendencies to become high search behaviour. It is quite natural because education plays a vital role when working with usage of information sources.

Cultivation practices information increasing their negative tendency (B value -1.279, p value 0.013) to shift from low to high search behaviour. Odds ratio 0.860 indicates farmers who were obtaining more information regarding cultivation practices are 0.860 times away from being high search behaviour. This indicates that sample farmers taking more information regarding cultural practices was in low search behaviour compared to farmers who was taking all type of information's equally. Similar work related to the present investigation was also carried out by Babu *et al.* (2011); Burman *et al.* (2013); Franklyn and Tukur (2012); Hassan (2011); Kumar *et al.* (2018); Narine *et al.* (2019) and Inernational Crop Research Institute for Semiarid Tropics (2017).

Conclusion:

From the given data three search behaviours were identified and it was found that literacy status, land holdings and mobile phones were influencing the search behaviour. Krushkal Wallis test revealed that technical information was needed by low search behaviour groups.

Table 7 : Evaluation of the effect of independent variables on the search behaviour of farmers

Variables	B	S.E.	Wald	df	P value	Odds ratio
Age			0.087	2	0.957	
Young age	0.027	0.731	0.001	1	0.970	1.027
Middle age	-0.148	0.593	0.063	1	0.803	0.862
Literacy status			7.535	2	0.023	
Primary education	-1.014	0.779	1.696	1	0.193	0.363
Secondary education	-1.755	0.645	7.406	1	0.007	0.173
Income between Rs. 50000-100000	0.819	0.619	1.751	1	0.186	2.268
Small farmers	0.067	0.042	2.517	1	0.113	1.069
Basic featured mobile phone user	-1.279	0.514	6.201	1	0.013	0.278
Cultivation practices information	-0.151	0.066	5.157	1	0.023	0.860
Marketing information	-0.118	0.090	1.717	1	0.190	0.889
Value addition practices information	0.118	0.086	1.892	1	0.169	1.125
Constant	6.106	3.602	2.873	1	0.090	448.550

*Note: Highest form of variable was taken as basic so we got B in negative values

In a similar fashion high search behaviour group farmers were seeking real time information like price. Secondary education, basic featured mobile and cultivation practices information were statistically significant at 5 per cent and 1 per cent level of significance, respectively. But variables have negative effect on shifting from low to high search behaviour.

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