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Utilization Pattern of Mobile Apps Among Farmers for Agricultural Production

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ABSTRACT

The study was undertaken in the four specifically chosen districts of Haryana state in diverse geographical locations and had different crop patterns. In a number of districts, the main cropping pattern was rice and wheat, combined with pearl millet and mustard. This study aimed to determine how agricultural mobile apps were used by farmers for agricultural productivity by using a utility index. In accordance with a well-planned and pre-tested interview schedule, the data were gathered from 240 respondents, including 15 respondents each from randomly chosen 16 villages. Utilization pattern checked for general information of agriculture practices, utilization of mobile apps for gaining market related information and utilization of mobile apps to contact the agriculture experts in order to find out the solution of agriculture problems. More than half of the respondents perceived medium level of utilization pattern of agriculture mobile apps on agricultural practices. To increase the extent to which farmers use agricultural mobile apps for agricultural production, outreach programs and trainings are required.

INTRODUCTION

Today the Indian agricultural sector is facing a serious challenge for continuously increasing demand for food, declining agricultural production and productivity due to natural resources limitation and increasing competition in international agriculture markets (Jena et al., 2019). Infrastructure limitations, inadequate supply chains, significant issues with the diffusion of new technologies, and limited access to information and resources are the key causes of India's declining output growth. After the green revolution in India in the middle of the 1960s, there haven't been any notable technological advancements that could have increased agricultural output. A significant step towards higher agricultural productivity will require an information-based, decision-making agricultural system (GOI, 2016). The majority of farmers in India are small and marginal farmers, who frequently lack access to accurate information aimed at increasing yields and driving up crop prices (Mittal et al., 2010; Hinduja et al., 2017; Joshi et al., 2019; Patel et al., 2020).

The complexities of the agricultural production function implicit that farmers need information on every critical stage of crop cultivation. On a variety of subjects and phases, including weather reports, pest infestations, inputs, advanced cultivation techniques, pest and disease control, and commodity prices, farmers require accurate and timely information.

This is obviously due to the cost of getting that information through personal travel, radio, newspaper or other means, which can be relatively expensive because of limited infrastructure availability and resources. Despite these large-scale major steps and a great investment in ICT infrastructure in India, low information accessibility has not yet been well addressed, especially in remote areas. Information and communication technology (ICT) plays a crucial role in developing as well as transforming Indian agriculture Bhatnagar (2008). It provides more appropriate and timely agricultural information to the farmers to improve their standard of living (Sharma et al., 2012; Nain et al., 2015).

As a result, several agricultural institutes across the country have developed farmer-friendly mobile apps for different crops

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like flower crops, vegetable crops, chickpea, rice, millets, different types of soil management, etc. The exhaustive network of KVKs (731) across all the districts of the country has also developed some user-friendly mobile apps as per specific requirements of their district's climatic conditions which are gaining popularity among the farming community These Apps provide valuable information to the farmers, this information including the package of practices of different crops (Nain et al., 2019). These Apps are also very useful in significantly increasing the production and productivity of farmers and they can boost farming in India (Singh et al., 2021). Further, it is very helpful to solve different types of problems of farmers at doorstep, providing information about various government schemes and improves their livelihoods (Marketer, 2016). Many agricultural Apps such as Kisan Suvidha, IFFCO Kisan, Agri App, Agrimarket, Agmarknet, e-sagu and Plantix App are very famous among the farmers (mKisan, 2016).

METHODOLOGY

For this study, four districts were selected, namely, Kurukshetra and Karnal from the North-East zone of Haryana and Rewari and Jhajjar from the South-West zone of the Haryana purposively. Because these two zones are quite different in cropping system so their perception was also somewhat different towards any new technology. From each of the four districts, two blocks were selected randomly. Further from each of these eight blocks, two villages were selected randomly so, thereby a total of 16 villages were selected for data collection. Thus, 16 villages from four districts were randomly selected, namely, Bawal and Harchandpur from Bawal block and Surkhpur and Ratanthal from Nahar block of Rewari district. Gudha and Khatiwas villages from Jhajjar block and Jahazgarh and Palra villages from Beri block of Jhajjar district. Palwal and Umri villages from Thanesar block and Kalsana, and Nalvi villages from Shahabad block of Kurukshetra district. Gheer and Chaurakhalsa from Karnal block and Taraori and Nilokheri from Nilokheri block of Karnal district. As a consequence, 240 respondents in total were chosen for the study. A structured questionnaire was used to help collect the data through the use of personal interviews, and version 23 of the Statistical Package for Social Sciences (SPSS) was used for analysis. With the aid of the following formulas, a score was assigned to each statement, and the total aggregated score, weighted mean score, and utility index were all calculated.

Utility index was used a four-point measurement scale. Respondents were asked about the utility pattern of information sources they used, with scores of 3, 2, 1 and 0 assigned to fully, medium, partial and nil, respectively.

$$UI = \frac{O_i}{S} \times 100$$

Where, UI = Utility index, O_i = Sum of utility score obtained by respondents for i^{th} information source, S = Total obtainable score.

RESULTS AND DISCUSSION

Utilization of mobile apps for agricultural production

The data given in Table 1 show the utilization of mobile apps by respondents for different aspects of agricultural practices. It was observed that utilization of mobile apps for management of

Table 1. Utilization pattern of mobile apps

S.N.	Statements	Response (%)			WMS	UI	Rank
		Never	Occasionally	Regularly			
a)	For agricultural production						
1	Field preparation	21.67	42.50	35.83	2.14	71.39	III
2	Selection of variety	11.25	69.58	19.17	2.07	69.30	VIII
3	Seed treatment	28.34	34.16	37.50	2.09	69.72	VI
4	Sowing and transplanting	25.84	40.00	34.16	2.08	69.44	VII
5	Weed management	16.25	54.58	29.17	2.12	70.97	V
6	Management of nutrient	25.83	34.58	39.58	2.13	71.25	IV
7	Management of irrigation	09.58	63.75	26.67	2.17	72.36	II
8	Management of pest and disease	09.16	52.50	38.33	2.29	76.39	I
9	Harvesting and storage	27.08	38.75	34.17	2.07	69.02	IX
b)	For gaining information about marketing						
1.	Sources of inputs	21.67	41.67	36.66	2.15	71.67	I
2.	Location of market for selling crop produce	29.17	36.66	34.17	2.05	68.34	IV
3.	Current price of crop produce	14.58	60.00	25.42	2.10	70.27	II
4.	MSP (Min. Support Price)	17.50	57.50	25.00	2.07	69.17	III
b)	To contact						
1.	Scientists of agricultural universities	62.50	22.92	14.58	1.52	50.69	VI
2.	D.E.S's of KVK	33.34	40.41	26.25	1.92	64.30	III
3.	ATIC for getting information	37.92	35.83	26.25	1.88	62.78	IV
4.	ATMA for gaining information	44.58	0.42	25.00	1.80	60.14	V
5.	Farmers portal	7.08	49.58	23.34	1.96	65.41	II
6.	Local leaders, progressive farmers	20.42	52.08	27.50	2.07	69.02	I

WMS- Weighted mean score, UI- Utility Index

pest and disease was found maximum as indicating the utilization index 76.39 was assigned first rank followed by for management of irrigation with utilization index 72.36 was assigned second rank, for field preparation with utilization index 71.39 was assigned third rank, for management of nutrient with utilization index 71.25 was assigned fourth rank, for weed management with utilization index 70.97 was assigned fifth rank, for seed treatment with utilization index 69.72 was assigned sixth rank, for sowing and transplanting with utilization index 69.44 was assigned seventh rank, for selection of variety with utilization index 69.30 was assigned eighth rank and for harvesting and storage with utilization index 69.02 were ranked ninth. Table 1 reveal that majority of the respondents (42.50%) occasionally utilized the information related to field preparation, selection of variety, sowing and transplanting, irrigation and harvesting and storage. Whereas in management of nutrition and seed treatment respondents regularly used the agricultural mobile apps. These results are consistent with those of the studies conducted by Panda et al., (2019); Reddy et al., (2017) & Arya (2020).

The utilization of mobile apps for sources of agricultural inputs was found to maximum with utilization index 71.67 was assigned first rank followed by current price of crop produce with utilization index 70.27 was assigned second rank, for minimum support price with utilization index 69.17 was assigned third rank and for location of market for selling the crop produce with utilization index 68.34 was assigned fourth rank. These results are consistent with investigations by Al-Hunaiyyan & Al-Hajri (2018).

Further, utilization of mobile apps to contact with local leader and progressive farmers was found maximum as illustrated utilization index 69.02 assigned first rank followed by contact with farmers portal with utilization index 65.41 was assigned second rank, contact with district extension specialists of KVK with utilization index 64.30 was assigned third rank, contact with ATIC with utilization index 62.78 was assigned fourth rank, contact with ATMA with utilization index 60.14 was assigned fifth rank and contact with scientists of agricultural universities with utilization index 50.69 was assigned sixth rank. Whereas majority of the respondents (49.58%) utilized these apps to contact farmer portal and contact with local leader, progressive farmers of the area. These results are consistent with the research conducted by Khan et al., (2019).

Overall utilization pattern of mobile apps by the respondents for agricultural purpose

The data state that more than half of the respondents (60.00%) perceived medium level of utilization pattern of agricultural mobile apps followed by 12.50 per cent of users who perceived a low level of app usage pattern and 27.50 per cent of respondents who perceived a high level of app usage pattern for agricultural operations. It can be concluded that maximum number of respondents had positive response towards agricultural mobile apps and utilized to a great extent for various services provided through mobile apps. The possible reasons for these findings were that majority of the respondents were of young age group and they were digitally aware and educated. These findings are in conformity with the study of Kumar (2012).

CONCLUSION

Limited access to information and input resources is the primary cause of the poor agricultural growth, which exacerbated the gap in the adoption and exploitation of new technologies. An information-based, decision-making agricultural system is necessary to take a substantial step toward increased agricultural output. Greater utilization of agricultural mobile apps for agricultural production is directly linked to the growth of the agriculture sector. The suggestions based on findings of the present study should make optimum use of results for the farming community. From the above study, it is concluded that farmers have good knowledge of agricultural mobile apps but farmers should proper utilize and implement the recommendations suggested by agriculture experts through mobile apps.

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