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Smartphones Utilisation Pattern and Information Seeking Behaviour of Farmers: An Assessment

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ABSTRACT

Agricultural growth relies heavily on knowledge and information, which is essential in the 21st century for ensuring profitable and sustainable development. Promoting the extensive use of modern information technology is crucial for effective communication between researchers, extension workers, and farmers. Information and Communication Technology (ICT) plays a vital role in agricultural extension, providing a cost-effective means to transfer technology and information. With the rise of smart mobile phones, Short Message Service (SMS) services, call advisories and applications tailored to agricultural needs, such as information, pest and disease identification, weather forecasts, farming advisories, market access, and expert advisory systems. The present study was conducted (Year 2022-24) in the Deoria district of Uttar Pradesh with the objective of determining the smartphone utilisation patterns and the types of information obtained by farmers. The Pathar Dewa block was randomly selected for the study. Pathar Dewa block comprises 76 villages. Out of 76 villages, 5 villages, namely Babu Patti, Harpur, Rampur, Pipra and Udai Pura, were selected randomly. Of the 5 selected villages, 100 respondents (Smart mobile phone users) were selected for the study; 20 respondents were from each village. The selected respondents were those who had farming as one of their major occupations and owned a smartphone. The respondents were interviewed using a structured schedule designed for the purpose. The data were analysed using frequencies, percentages, and ranks. The study found that farmers used smartphones to access information via YouTube (8.09%) and WhatsApp (7.75%).

Keywords: Smartphone; Information; Utilisation patterns; Agriculture

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INTRODUCTION

In the 21st century, access to accurate and timely information has become essential for effective decision-making and the successful utilisation of opportunities across all areas of life. Agriculture, being a knowledge-intensive sector, largely depends on information and communication to ensure profitable and sustainable development. Modern agriculture has gradually shifted towards precision farming, which is an information-driven decision-making system aimed at optimising agricultural production and resource utilisation. Farmers today require updated knowledge regarding improved technologies, weather conditions, pest and disease management, market prices, and government schemes to enhance productivity and income.

Traditionally, agricultural information has been disseminated through extension workers and agricultural officers. However, the traditional extension system is often insufficient to meet the growing informational needs of farmers due to the limited reach of extension personnel and the inability of farmers to maintain regular contact with them. This communication gap restricts the timely transfer of modern agricultural technologies and innovative farming practices to rural communities. In this context, the promotion and extensive use of modern Information and Communication Technology (ICT) has become highly important for strengthening communication among researchers, extension workers, and farmers. ICT provides an efficient and cost-effective platform for disseminating agricultural information and technologies. It enables farmers to access relevant information quickly and conveniently, thereby supporting informed decision-making and improving agricultural productivity.

Today, smartphones have emerged as an important information communication technology tool in rural and agricultural development. A smartphone is an advanced mobile phone capable of performing various functions such as making calls, sending messages, accessing the internet, running applications, taking photographs, and utilising digital services. The rapid development of the Indian telecom industry and increasing availability of affordable smartphones and internet services have created new opportunities for the application of ICT in agriculture. Kailash (2016), in his study on the "Use of Mobile Phone Technology (Smartphone) by Farmers of Nagaur District in Rajasthan," revealed that 9.09% of farmers belonged to the young age group, 74. 54% belonged to the middle age group, and 16. 36% belonged to the old age category. The majority of respondents belonged to the Other Backward Classes (OBC) category (74.54%), with the rest being from the General and Scheduled Castes (SC) categories (12.72% each).

Smartphone technology has the potential to transform agricultural practices by providing farmers with accurate, timely, and need-based information in a user-friendly manner. Rashid and Elder (2009) revealed in their study that mobile phones offer various services, such as voice communication and data transfer, which can be utilised for multiple purposes, including agriculture, health, commerce, education, and governance. The widespread adoption of smartphones in rural areas has significantly changed the way farmers communicate, access agricultural knowledge, receive weather forecasts, obtain market information, and connect with agricultural experts and fellow farmers. Mobile applications such as YouTube, WhatsApp, email, the Internet, Hello Kisan, Kisan Call Centres, and Facebook have further strengthened the role of smartphones in agriculture by offering various agricultural advisory and marketing services. Kashem (2010) conducted a study that revealed that 54% of farmers had a medium level of use in receiving agricultural information via mobile phones, while 14% had low use and 32% had high use.

In Deoria District, the utilisation of smartphones and the kinds of information-seeking among farmers are important areas of study for understanding how mobile technology is helping to bridge the agricultural information gap. The growing use of smartphones in rural communities indicates their increasing significance in accessing agricultural information, communicating with peers and experts, improving farming practices, and enhancing productivity. Therefore, the present study provides valuable insights into the role of ICT in rural and agricultural development. It has also helped identify the opportunities and challenges associated with smartphone use in agriculture and suggests ways to effectively integrate ICT tools into the agricultural extension system.

Hence, considering the study's necessity and importance, the present investigation was undertaken with specific objectives in the Deoria district.

1. To study the utilization Pattern of smartphones by the respondents.
2. To study the types of information obtained by respondents through smartphones.

Research Methodology

The Ex-post facto research design and survey method have been used. The study was conducted in (Year 2022-24) Deoria district of Uttar Pradesh. It was selected purposely because the district falls under Gorakhpur Mandal, which is a priority area of development of the chief minister there, to know the smartphone utilisation pattern of farmers in Deoria district. Deoria district has 16

administrative blocks: Baitalpur, Bankata, Barhaj, Bhaluani, Bhagalpur, Bhatni, Bhatpar Rani, Deoria Sadar, Desai Deoria, Gauri Bazar, Lar, Mayeel, Pathar Dewa, Rampur Karkhana, Rudrapur, and Salempur. Pathardewa was randomly selected for the study in these blocks. Pathardewa block comprises 76 villages. Out of 76 villages, 5 villages, namely Babu Patti, Harpur, Rampur, Pipra and Udai Pura, were selected randomly. Of the 5 selected villages, 100 respondents were selected for the study. 20 respondents were selected randomly from each village. The selected respondents were those who had farming as one of their major occupations and owned a smartphone. The respondents were interviewed using a structured schedule designed for this purpose, and they were assigned scores. The data were analysed using frequency and percentage.

Sample Selection Procedure

S. No	Unit	Particulars	Sampling design
1.	**District**	Deoria	**Purposive Sampling**
2.	**Block**	Pathar Dewa	**Random sampling method**
3.	**Village**	Babu Patti Harpur Rampur Pipra Udaipura	**Random sampling method**
4.	**Respondents**	20 20 20 20 20 **100**	**Random sampling method**

Results and Discussion

The study's results are presented below;

1. Utilisation pattern of Smartphones by the respondents.

From the data presented in Table 1, it can be observed that the highest percentage of farmers getting information from YouTube (8.09%) ranked 1st due to its audio-visual format, which enables farmers to easily understand complex agricultural practices through demonstrations, videos, and expert guidance. Visual learning is particularly beneficial for farmers with varying literacy levels, making agricultural information more accessible and practical, and WhatsApp (7.75%) got IInd rank the WhatsApp groups facilitates the rapid exchange of farming-related information, photographs, videos, and experiences among farmers, extension personnel, and agricultural experts these were followed by the internet (7.54%) rank IIIrd, the availability of diverse sources of information on crop production, weather forecasts, pest and disease management, and market prices may have encouraged farmers to use the internet as a valuable information resource, calls to other farmers or relatives (7.25%) IVth, and calls to retailers (7.16%)Vth were also among the major sources of information. This indicates that interpersonal communication continues to play a crucial role in farmers' decision-making processes. Farmers often rely on experienced peers, relatives, and agricultural input dealers for practical advice and immediate solutions to farming problems. Two sources included the Kisan Call Center (6.75%) and M-KISAN SMS (6.39%). These services provide reliable and expert-based agricultural information; however, their utilisation may be influenced by factors such as awareness, accessibility, and familiarity with these government-supported initiatives, as well as other significant sources, such as online videos or webcasts (6.08%) and email (6.04%). Facebook (5.87%), Hello Kisan (DD Kisan) (5.66%), newsletters (6.20%), the online versions of farm publications (4.32%), Twitter (4.48%), and online audio content (3.91%) are also used by farmers to get agriculture-related information.

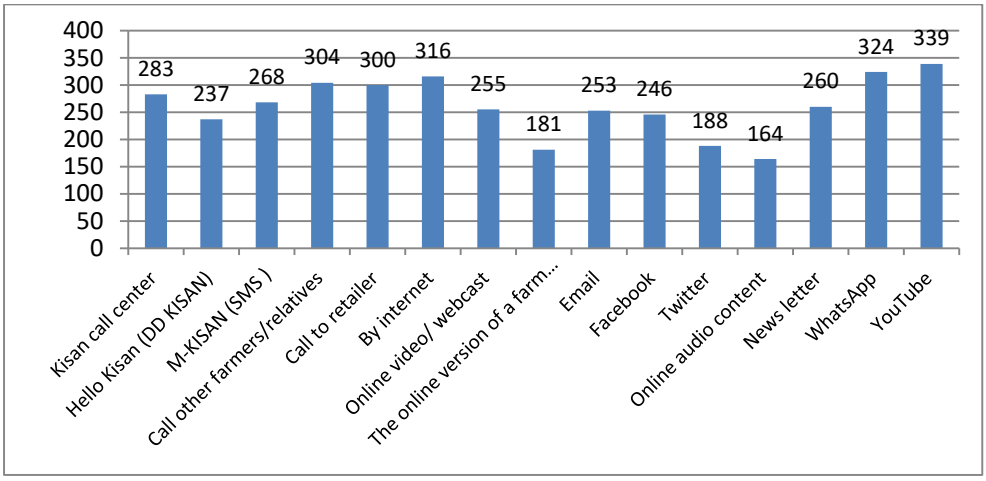
Table 1: Distribution of the respondents on the basis of the utilisation pattern of smartphones by the respondents. (n=100)

S. No.	Sources	Score	Percentage	Rank
1.	Kisan call center	283	6.75	VI
2.	Hello Kisan (DD KISAN)	237	5.66	XII
3.	M-KISAN (SMS)	268	6.39	VII
4.	Call other farmers/relatives	304	7.25	IV
5.	Call to retailer	300	7.16	V
6.	By internet	316	7.54	III

7.	Online video/ webcast	255	6.08	IX
8.	The online version of a farm publication	181	4.32	XIV
9.	Email	253	6.04	X
10.	Facebook	246	5.87	XI
11.	Twitter	188	4.48	XIII
12.	Online audio content	164	3.91	XV
13.	News letter	260	6.20	VIII
14.	WhatsApp	324	7.75	II
15.	YouTube	339	8.09	I

These findings align closely with the results reported by Atas (2019).

Fig: 1: Distribution of the respondents on the basis of the utilisation pattern of smartphones by the respondents.



2. Types of information obtained by respondents through smartphone.

The data indicates in table 2, that farmers receive various types of information through Smartphone, with the highest percentage (9.19%) being weather updates at rank 1st, highlighting the crucial role of weather information in agricultural decision-making. Timely weather forecasts help farmers plan activities such as sowing, irrigation, fertiliser application, and harvesting, thereby reducing production risks. Information on pricing and marketing conditions follows at 8.52% rank IInd; access to market prices enables farmers to make informed decisions.

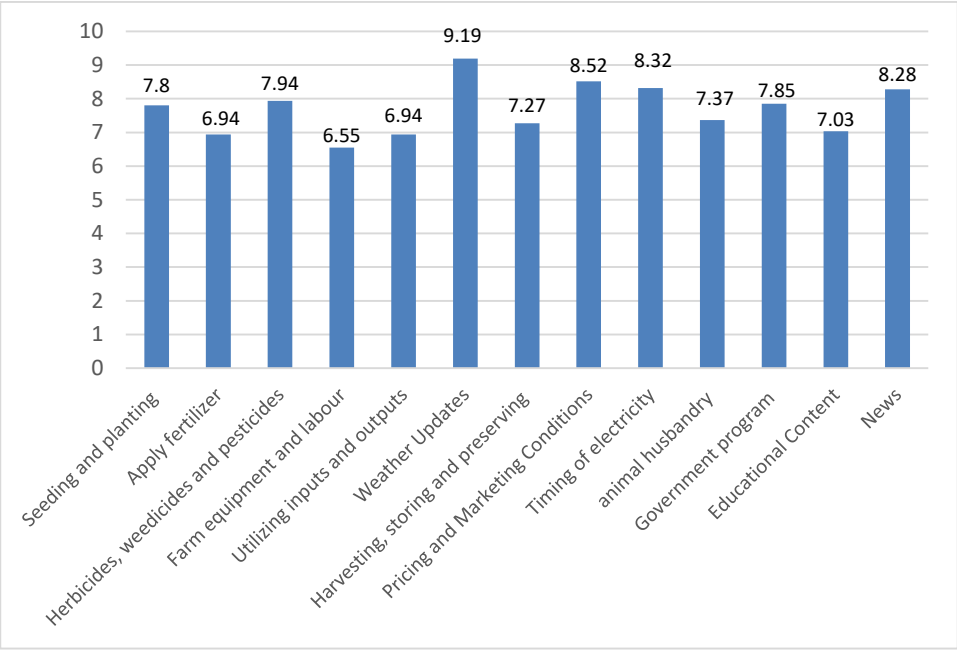
Table 2: Distribution of the respondents on basis of the types of information obtained by respondents through smartphones (n=100)

S. No.	Type of Information	Score	Percentage	Rank
1.	Seeding and planting	163	7.80	VII
2.	Apply fertilizer	145	6.94	XI
3.	Herbicides, weedicides and pesticides	166	7.94	V
4.	Farm equipment and labour	137	6.55	XII
5.	Utilising inputs and outputs	145	6.94	XI
6.	Weather Updates	192	9.19	I
7.	Harvesting, storing and preserving	152	7.27	IX
8.	Pricing and Marketing Conditions	178	8.52	II
9.	Timing of electricity	174	8.32	III
10.	Animal husbandry	154	7.37	VIII
11.	Government program	164	7.85	VI
12.	Educational Content	147	7.03	X
13.	News	173	8.28	IV

Selling decisions and improving their bargaining power, and timing of electricity at 8.32% rank III$^{rd.}$ indicating the dependence of farming operations, particularly irrigation, on reliable electricity availability. News is also significant at 8.28%, ranking IV^{th,} while news updates keep them informed about developments that may influence agriculture and rural livelihoods. Other important types of information include herbicides, weedicides, and pesticides at 7.94% rank Vth, government programs at 7.85% rank VIth and seeding and planting at 7.80% rank VIIth. Animal husbandry information ranks 7.37% (8th), while harvesting, storing, and preserving rank 7.27%. Educational content accounts for 7.03%, and both applying fertiliser and utilising inputs and outputs are at 6.94%. Although these categories received comparatively lower percentages, they remain important for improving farm productivity and resource management. Lastly, farm equipment and labour information is at 6.55%. The data indicates that farmers receive various types of information through smartphones, with the highest percentage being weather updates at 9.19%. Similar findings were reported by Al-Daihani and S. M. (2018). Overall, the results suggest that farmers primarily use

smartphones to obtain time-sensitive, decision-oriented information, particularly weather forecasts, market prices, electricity schedules, and crop protection measures. Results also indicated that smartphones are multifunctional tools supporting a wide range of agricultural, economic, and educational needs.

Fig 2: Distribution of the respondents on the basis of the types of information obtained by respondents through Smartphone



Conclusion

Smartphones are commonly perceived in rural India as devices primarily used for communication and entertainment. However, the findings of the present study indicate that farmers are increasingly using smartphones as powerful tools to access agricultural information and services. Farmers use Smartphone features and applications such as YouTube, WhatsApp, Call centers, SMS services, X, and Facebook to obtain information related to sowing and planting practices, fertiliser application, farm machinery, weather forecasts, weed and pest management, market prices, marketing opportunities, and government programs. The study demonstrates that Smartphones have significant potential to contribute to agricultural development by improving farmers' access to timely and relevant

information. Therefore, greater awareness, training, and knowledge enhancement programs on the effective use of Smartphone features and agricultural applications should be promoted among farmers to maximise the benefits of digital technologies in agriculture.

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