



Research Article

CONSTRAINTS FACED BY THE FARMERS IN THE USE OF MOBILE PHONE FOR AGRICULTURE

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Abstract- 21st century is the era of technology, in agriculture the information and communication technology is a new approach for development of agriculture through dissemination of new technology and agriculture information, timely and in appropriate format to the each and every farmer of country. Mobile phone is a tool of ICT with high potential of dissemination of information. This study was conducted to identify the constraints faced by the farmers in the use of mobile phone services for getting agriculture information for crop management in Bundi district of Rajasthan.

Mobile phone is adequate to get information about crop management from availability of seed of new variety in market to sale of crop produce in market. However, factor such as "Fluctuating telecommunication network", "Inability to use GPRS and 3G & 4G services", "High cost of telecommunication network services" and "Lack of satisfactory solution of individual problem" were identified as major constraints to use mobile phone by farmers for getting agriculture information.

Keywords- Information and communication technology, Crop management

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Introduction

In 21st century agriculture continues to be the key sector to provide foundation for sustainability of millions of Indian farmers' families. For development of agriculture it is necessary to reform agricultural extension system that is under-funded, highly compartmentalized and has several inherent weaknesses. The use of ICT is the only way to bypass several stages and sequences in the process of agricultural development. Mobile phone that is a tool of ICT is widely recognized as a potentially transformative technology platform for developing nations. Nowadays mobile phone technology has provided producers with information and knowledge on the correct market price, quantities, availability of a particular product and technical advice. Access to appropriate knowledge and information is an overriding factor for successful natural resource management (NRM) planning, implementation and evaluation processes and it is known to be one of the most important determinants of agricultural productivity. But there are many factors like lack of awareness of the utility of communication technologies for agriculture development, language, illiteracy, poor signal, high cost and unavailability of electric power were the major constraints, poor ICT infrastructure development, high cost of broadcast equipment, high cost of access / interconnectivity and electricity power problems, fluctuating telecommunication services, inadequate access to mobile services, etc. are acting as major constraint to use mobile phone services by farmers and hindering them to utilise the potential of mobile phone technology for agricultural purpose[1,2].

Materials and Methods

The study was conducted in Bundi district of Rajasthan, during the year 2014-15. Bundi district consists five tehsils, out of which, two tehsils Hindoli and Nainwa

were selected and from each selected tehsil, two gram panchayats were selected

on the basis of random sampling technique. Two villages from each of gram panchayats were selected by simple random sampling technique. Likewise from all eight selected villages a sample of 80 mobile phone user respondents was selected for research purpose.

To measure the constraints responsible for hindering the use of mobile phone services in rice crop management, a schedule was developed by way of enlisting all the possible constraints, which were faced by farmers in the use of mobile phone services. To study the constraints more effectively, they were divided mainly into four parts namely Infrastructural constraints, Technical constraints, Economic constraints and Miscellaneous constraints. Each of these parts was further described into several relevant items. The total score obtained by beneficiary farmers as well as for each statement was calculated [3,4].

Statistics

The constraints faced by beneficiary farmers were divided into three categories (low level of constraints, medium level of constraints and high level of constraints) on the basis of mean score and standard deviation.

Percentage and frequency

The percentage and frequency of each studied item was calculated and a comparison was made in interpreting the results.

Mean score

It was obtained by dividing total score of each statement by total number of respondents.

$$\text{Mean score} = \frac{\text{Total score of each statement}}{\text{Total number of respondents}}$$

Mean Percent Score (MPS)

It was calculated by multiplying total obtained score of the respondents by 100 and divided by the maximum obtainable score.

$$\text{Mean Per cent Score} = \frac{\text{Total score obtained}}{\text{Maximum obtainable score}} \times 100$$

Standard deviation

The standard deviation was used for categorization of respondents in three groups on the basis of observed constraints of farmers about sugarcane cultivation practices. The formula for standard deviation is as follows:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Where, σ = Standard deviation (S.D.)

$\bar{x}$ = Mean of samples

x_i = An observation

N = Number of samples

Results and Discussion

To get an overall view of constraints faced by farmers in the use of mobile phone for getting agriculture information the mean and standard deviation were calculated. Based on calculated mean ($\bar{X}$ = 43.95) and standard deviation (σ = 20.17) the score of constraints were calculated and based on score of constraints faced by farmers they were categorized into three levels of constraints faced by the farmers i.e. low level of constraints, medium level of constraints and high level of constraints and study show that most of the respondents (60 %) faced medium level of constraints in the use of mobile phone services followed by low level of constraints (22.50 %). Only 17.50 % respondents faced high level of constraints in the use of mobile phone services [5,6].

All the constraints faced by farmers in the use of mobile phone services were categorized into infrastructural, technical, economic and miscellaneous constraints. The results are presented under different four headings as given below:

Infrastructural constraints

Different Infrastructural constraints perceived by the respondents in use of mobile phone for getting agriculture information are "Fluctuating telecommunication network" with MPS 67.50, "Lack of access to internet" with MPS 64.17 and "Non availability of recommended inputs in the market" with MPS 60.00 were ranked I, II and III, respectively followed by "Lack of electric supply" with MPS 48.75, "Lack of maintenance" with MPS 33.33 and "Non availability of KCC services on Sunday and holidays" with MPS 12.92 were ranked IV, V and VI, respectively.

Table-1 *Infrastructural constraints faced by farmers in the use of mobile phone services n = 80*

1	Infrastructural constraints	MPS	Rank
i	Fluctuating telecommunication network	67.50	I
ii	Lack of electric supply	48.75	IV
iii	Lack of maintenance	33.33	V
iv	Lack of access to internet	64.17	II
v	Non availability of recommended inputs in the market	60.00	III
vi	Non availability of KCC services on Sunday and holidays	12.92	VI

MPS = Mean per cent score

Technical constraints

Different Technical constraints perceived by the respondents in use of mobile phone services for getting agriculture information are "Inability to use GPRS and 3G services" with MPS 89.17, "Lack of timely availability of agriculture information" with MPS 77.50 and "Difficulty in making use of given theoretical information" with MPS 70.00 were ranked I, II and III, respectively and followed by "Complexity in using internet and video messages" with MPS 64.17, "Non-availability of details of information given in text SMS format" with MPS 56.67, "Lack of practical knowledge about given new recommendation" with MPS 56.25, "Inability to read

text SMS and e-mail (Illiteracy)" with MPS 38.33, "Inability to operate mobile phone" with MPS 30.83 and "Inability to understand language of service provider" with MPS 11.67 were ranked IV, V, VI, VII, VIII, and IX, respectively.

Table-2 *Technical constraints faced by farmers in the use of mobile phone services n = 80*

2	Technical constraints	MPS	Rank
i	Inability to operate mobile phone	30.83	VIII
ii	Inability to read text SMS and e-mail (Illiteracy)	38.33	VII
iii	Inability to understand language of service provider	11.67	IX
iv	Inability to use GPRS and 3G services	89.17	I
v	Complexity in using internet and video messages	64.17	IV
vi	Non availability of details of information given in text SMS format	56.67	V
vii	Difficulty in making use of given theoretical information	70.00	III
viii	Lack of practical knowledge about given new recommendation	56.25	VI
ix	Lack of timely availability of agriculture information	77.50	II

MPS = Mean per cent score

Economic constraints

Different Economic constraints perceived by the respondents in use of mobile phone for getting agriculture information are "Inability to purchase recharge cards" with MPS = 51.67, "High cost of multimedia mobile phones" with MPS = 50.00 and "High cost of telecommunication network services" with MPS = 42.08 were ranked I, II and III, respectively.

Table-3 *Economic constraints faced by farmers in the use of mobile phone services n = 80*

3	Economic constraints	MPS	Rank
i	High cost of multimedia mobile phones	50.00	II
ii	High cost of telecommunication network services	42.08	III
iii	Inability to purchase recharge cards	51.67	I

MPS = Mean per cent score

Miscellaneous constraints

Different Miscellaneous constraints perceived by the respondents in use of mobile phone for getting agriculture information are "Lack of satisfactory solution of individual problem" with MPS = 61.25, "Adoption of prescribed technologies by farmers is very low" with MPS = 60.83 and "Call drop problem" with MPS = 59.58 were ranked I, II and III, respectively followed by "Lack of availability of timely and accurate marketing and price information" with MPS = 59.17, "Lack of confidence in provided service/information" with MPS = 58.75, "Result of earlier recommendation was not satisfactory" with MPS = 54.18, "Absence of personal contact (trust) with information provider" with MPS = 54.17, "Inadequate response from the service provider" with MPS = 51.67, "Busy network of Kisan Call Center (KCC)" with MPS = 48.75, "Lack of knowledge about availability of agricultural advisory services on mobile phone" with MPS = 30.42 and "Lack of contact details (number) of agricultural advisory system" with MPS = 0.0 were ranked IV, V, VI, VII, VIII, IX, X and XI, respectively.

Table-4 *Miscellaneous constraints faced by farmers in the use of mobile phone services n = 80*

4	Miscellaneous constraints	MPS	Rank
i	Lack of knowledge about availability of agricultural advisory services on mobile phone	30.2	X
ii	Lack of contact details (number) of agricultural advisory system	00	XI
iii	Inadequate response from the service provider	51.67	VIII
iv	Lack of satisfactory solution of individual problem	61.25	I
v	Absence of personal contact (trust) with information provider	54.17	VII
vi	Result of earlier recommendation was not satisfactory	54.58	VI
vii	Adoption of prescribed technologies by farmer is very low	60.83	II
viii	Busy network of Kisan Call Center (KCC)	58.75	V
ix	Lack of confidence in provided service / information	48.75	IX
x	Lack of availability of timely and accurate marketing and price information	59.17	IV
xi	Call drop problem	59.58	III

MPS = Mean per cent score

Furthermore, the overall constraints faced by farmers were also analyzed separately. The relative importance of all the four constraints faced by farmers was highlighted by ranking them on the basis of mean per cent scores (MPS) of use and data has been presented in [Table 5].

Table-5 Over all Constraints faced by farmers in the use of mobile phone services
n = 80

S.N.	Constraints	Mean Percent Score	Rank
1	Infrastructural constraints	47.78	IV
2	Technical constraints	55.00	I
3	Economic constraints	47.92	III
4	Miscellaneous constraints	49.09	II
	Average	49.95	

MPS = Mean per cent score

The data in [Table-5] reveal that among the four categories of constraints i.e. Infrastructural, technical, economic and miscellaneous constraints the technical constraints had shown highest intensity with MPS 55.00 followed by miscellaneous constraints, economic constraints and Infrastructural constraints and were perceived with least intensity with MPS 49.09, 47.92 and 47.78, respectively. The overall average of MPS of all four constraints was 49.95.

Conclusion

The results of study showed that the majority of farmers (60 per cent) facing medium level of constraints because of less technical knowledge about the use of mobile phone services like inability to operate mobile phone, illiteracy that affect the use of internet, SMS etc.

The study indicated that infrastructural constraints like "Fluctuating telecommunication network" with MPS 67.50 and "Non availability of KCC services on Sundays and holidays" with MPS 12.92 were most and least important constraints respectively. In technical constraints "Inability to use GPRS and 3G services" with MPS 89.17 and "Inability to understand language of service provider" with MPS 11.67 were most and least important constraints respectively. In economic constraints "Inability to purchase recharge cards" with MPS 51.67 and "High cost of telecommunication network services" with MPS 42.08 were most and least important constraints respectively. In miscellaneous constraints "Lack of satisfactory solution of individual problem" with MPS 61.25 and "Lack of contact details (number) of agricultural advisory system" with MPS 0.0 were most and least important constraints, respectively.

The most severe constraints faced by respondents were "Inability to use GPRS and 3G services", "Lack of timely availability of agriculture information" and "Difficulty in making the use of given theoretical information".

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Abbreviations:

% -Per cent
f -Frequency
MPS -Mean Per cent Score
n -Number of respondent

Conflict of Interest: None declared

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