RESEARCH NOTE

Utilization Pattern of Mobile Phone Technology (Smart Phone) Among the Farmers of Nagaur District in Rajasthan

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ABSTRACTS

Now a days, one of the most important emerging tools of ICT is the mobile phones with a remarkable growth during last decade. Mobile phone technologies have provided a good platform for farmers to share their knowledge and information among each other in time such as weather information, crop and variety selection, fertilizer and irrigation management, disease and pest management market prices of the product and on-going government programmes. Keeping this in view, a study was conducted assess the utilization pattern of mobile phones for sharing agricultral information among farmers in Merta block of Nagaur district of Rajasthan.A total of 110 respondents were selected for the study. This study has show that a majority (83.63%) of the farmer used call to retailorthan call to relative farmer (80%), internet user (29.09) and perceived as most information on weedicide, pesticide & disease control (89.9%) through mobile phones. The correlation studies indicate a significant association between educations, with extension agency contact and mass media of the farmer. The analysis the poor connectivity, economic problem, high cost internet services and lack of updated information were some of the problems reported by the respondents.

Key word: *m-Learning; ICT; Mobile enabled information; Problems;*

Today the agricultural sector is facing with a serious challenges for spiralling demand of food, declining agricultural productivity due to natural resources degradation and increasing competition in international markets. Agricultural information has become an important input to increase smallholder agricultural production and getting remunerative markets, thus leading to improved rural livelihood, food security and national economies. Improvement of agricultural productivity will be realized when farmers are linked to market information. However, one major problem in many rural areas is that farmers generally do not have knowledge of prices before they travel to the market. They often have to rely on middlemen who take advantage of this ignorance. Accurate and timely market information, particularly of perishable items, can significantly reduce transaction and travel costs (*Rashid and Elder, 2009*).

Information and Communication Technology (ICT) is one of the promising driving forces to disseminate the agricultural knowledge. A recent study by *Kale et al., (2015b)* reported that extension functionaries have a positive perception towards ICTs for the extension work. The amount, quality and speed of the research, education and extension performance have been improved significantly as a result of the ICT intervention (*Kale et al., 2015a*). It shows an ample scope to harness the benefits of ICTs in service delivery of the extension system. With effective use of ICTs farmers can get timely farm information and thus increase their productivity and income. With the use of mobile phones farmers can directly communicate with buyers and customers for selling their produce at good price. *Wadkar et al., (2015)* revealed the positive attitude towards the e-Agriservice among farmers. Mobile phone technologies have provided a good platform for

farmers to share their knowledge and information among each other in time such as market rates and weather information in developing countries (*Munyua, 2007*). The agricultural information system needs to be developed based on the mass communication technology such as mobile systems. Agricultural practices need precise and accurate information to be disseminated promptly to farmers so that better decisions such as managing farm fields, making continuous and scientific changes in their production systems and grabbing advantage of market opportunities can be made (*Jainet al.2015*). ICTs are being proven for the effective agricultural knowledge management in various aspects (*Kale et al., 2015c*). *Aker (2011)* supported the role of mobile phones in supporting access to information about agricultural technologies and extension services among the agricultural communities.

According to Telecom Regulatory Authority of India (TRAI), the number of telephone subscribers in India increased from 1,036.41 million at the end of December, 2015 to 1,043.29 million at the end of January, 2016, there by showing a monthly growth rate of 0.66 per cent. The share of urban subscribers and rural subscribers at the end of January, 2016 was 57.88 per cent and 42.12 per cent respectively (Table 1).

Table 1. The number of telephone subscribers in India

Total Telephone Subscribe (in Millions)			Increasing (%)
	December, 2015	January, 2016	Monthly (%)
Urban	600.66	603.85	0.53
Rural	435.75	439.43	0.85
Total	1036.41	1043.29	0.66

Concept of m-learning and m-Agriculture : O' Malley et al., (2003) have defined mobile learning as any sort of learning that happens when consuming, interacting with or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity and fits in a pocket or purse.

Mellow (2005) identifies the advantages of m-learning as follows:

- True flexibility to control the time, place and pace of learning
- Specificity of content
- Tutor-constructed study
- Using technology that is engaging and comfortable for the student
- Non-threatening, private availability of on-demand study support

Jirli and De (2012) opined that m-learning is an art of using mobile technologies to enhance the learning experience. The most important feature that defines m-learning is the mobility that enables information on demand, which is the ability to access information wherever you are and wherever you went.

Kale et al (2015b) m-Agriculture is defined as the delivery of agriculture related information and services via mobile communications technology, in particular mobile phones, smart phones, and tablet devices such as the iPad.

Having made an attempt to understand the concept of m-learning as an educational tool, a few experiments where mobile phone was used as an educational tool are being discussed below

Some successful experiments on tool mobile learning as an educational tool in India are as follows:

Tele- center based : Kissan call centers GOI, 2004 BSNL help line; Hello kisan (on DD-Kisan), 2015.

Mobile-SMS based: m-kisan (message –kisan portal), 2013; Reuters market light (RML). 2007; Kisansanchar, 2010; Kissan kerala, 2013.

Internet based village knowledge centers, 1998: ITC e- chaupal, 1999; e-sagu, 2004;

Mobile based application: Kisan suvidha mobile app, 2016; Pusakrishi app., 2016; IFFCO kisan app.; Agrimarket app., 2016;

Video based: Digital green, 2009; Video 4 farmer, 2016;

Mobile-voice message based : IFFCO kisan sanchar limited (IKSL), 2007; Mandi on mobile service by BSNL, 2011; m4agriNEI, 2013

Keeping in view the importance of these different applications of the mobile phone technology the present study is undertaken to study the utilization pattern of mobile phone technology (smart phone) by amomg the farmers of Nagaur district in Rajasthan.

METHODOLOGY

This study was couducted in randomly selected eleven villages from Merta block of Nagaur district of Rajasthan. Since all villages were having near about similar population so 10 respondents who possess mobile phone were selected randomly from each villages. Thus the total sample size for the study comprises 110

respondents. An interview schedule was prepared and pre-tested in non sampled area in view of the objective of the study and data were collected by personal interview from the selected Mobile phone user. The research design adopted for the present study was exploratory research design.

RESULTS AND DISCUSSION

It is clear from Table 2 that majority of farmers (74.54%) belonged to middle age group while 16.36 per cent farmer belonged to old age category followed by farmer who belonged to young age group (9.09%). The analysis of educational background of the respondents (26.36%) had qualification up to high school level followed by 25.45 per cent farmer up to middle level, 19.09 per cent had graduation level, 14.54 per cent had primary level, 9.09 per cent were intermediate passed. Only 5.45 per cent of the farmers did not have any formal education. The frequency showed that 74.54 per cent farmers belonged to Other Backward Caste (OBC). General caste and schedule caste (SC) shared equal population (12.72%). The analysis of land holding of the farmers showed that majority (80.90%) had large size of land holding followed by farmers having small size of land holding (11.81%) and marginal size of land holding (7.27%) and the other frequency showed that more than half of the respondent i.e. (54.54 %) have occupation of only farming and followed by 24.54 per cent and 20.90 per cent from farming & business, and farming & service. This result is in conformity with those of *Ansari and Pandey (2013)* wherein they do a comparative analysis of assessing the potential and use of mobile phones in India.

Pattern of use of mobile applications in attaining the agricultural information: The use of mobile applications for getting agricultural information by the respondents is categorized into two forms *i.e.*, non-multimedia (by call) and multimedia (by smartphone)

Table 3 reveals that the respondent's attained maximum information from call to retailer (83.63%) followed by call to farmer/ relative (80%), Kisan call center (50.90%), Kisan help line (22.72%), Hello kisan (20%) and m-kisan (2.72%). The probable reason for limited use of kisan help line, Hello kisan and m-kisan might be the lack of awareness about their services among the farmers. Similarly in multimedia (by Smartphone) usage the majority were found to be internet users (29.09%) followed by what's app (27.27%), facebook (19.09%), newsletter (18.18%), farm publication and online video (13.63% each), e-mail (10%) and twitter (4.54%). Internet use through mobile phones is increasing especially in young farmers to

Table 2. Distribution of respondents based on their socio-economic characteristics (N= 110)

Characteristic	Category	No.	%
Age	Young (Up to 25)	10	09.09
	Middle (25 to 50)	82	74.54
	Old (Above 50 years)	18	16.36
Education	Illiterate	6	05.45
	Primary level	16	14.54
	Middle Level	28	25.45
	High school level	29	26.36
	Intermediate	10	09.09
	Graduation	21	19.09
Caste	General	14	12.72
	OBC	82	74.54
	SC	14	12.72
Land holding	Marginal (Less than 1 ha)	8	07.27
	Small (1 to 2 ha)	13	11.81
	Large (More than 2 ha)	89	80.90
Occupation	Only Farming	60	54.54
	Farming and service	23	20.90
	Farming and Business	27	24.54

Table 3. Distribution of the respondent according to the use of mobile applications forgetting agricultural information (N=110)

Mobile / Cellphone	No.	%
By Call		
Kisan call center	56	50.90
Kisan help line	25	22.72
Hello kisan (DD Kisan)	22	20.00
m- Kisan	03	02.72
Call other farmer / Relative	88	80.00
Call to retailer	92	83.63
By Smartphone		
By Internet	32	29.09
Online video/ webcast	15	13.63
Online farm publication	15	13.63
Email	11	10.00
Facebook	21	19.09
Twitter	05	04.54
Online audio content	10	09.09
News letter	20	18.18
What's app	30	27.27

search information on new technologies. Farmers also formed what's app and facebook groups for sharing new information related agriculture. Moreover, the e-skills of the users also affect on the level of use of ICTs (*Kale et al., 2016a*).

Table 4. Distribution of the respondent according to types of information obtained through mobile phones (N=110)

Type of Information	No.	%
Seed and sowing	92	83.63
Fertilizer	69	62.72
Pesticide , weedicide& disease control	98	89.09
Machinery and farm labor	56	50.90
Use of input and output	43	39.09
Harvesting and storage	46	41.81
Marketing condition and prices	72	65.45
Electricity timing	62	56.36
Animal husbandry	77	70.00
Govt. scheme	44	40.00
News reports	37	33.63

From the perusal of Table 4 it can be observed that the majority of respondents (89.09%) received information about pesticide and weedicide followed by seed and sowing (83.63%), animal husbandry (70%), market condition and prices (65.45%), fertilizer (62.72%), electricity timing (56.36%) and machinery and farm labour (50.90%) through mobile phones. However less than 42 per cent respondents reported that they used mobile for getting information related to harvesting and storage, govt. schemes, use of input and output and news reports. The similar study found that about 30 per cent of the respondents told that they would prefer receiving information about disease identification and control measures, fertilizer applications each. This was followed by information about harvesting time (25%) and about post- harvest operations & marketing (22.23%). Further, about 20 per cent of the respondents reported to be ready to receive the information regarding sowing time followed by agronomic practices (16.66%) and seed treatment (16.66%), and crop variety recommended (11%) *(Ansari & Pandey, 2013)*.

However, it is important to note that identifying the value of information is difficult as indicated by *Marcel and Bart (2012)*. They further mentioned that value of information keeps changing with every circumstance. In particular, information is useful when the farmer who received the advisories can act upon it. For example, daily updates on the prices of agricultural commodities in the local markets of the surrounding district are most useful during harvesting time. In contrast, availability of agricultural inputs and input prices information are most useful at planting time.

Similarly, information about improved crop production and management practices are mainly helpful to farmers during crop cultivation. This means that, for information to be useful it must be provided in a timely manner.

CONCLUSION

Really mobile phones have provided new approach to farmers to make tentative decisions much more easily than before. Use of mobile phones lead to greater social cohesion and improved social relationships among farmers. Mobile phone is increasing among farmers but still there is gap available. Hence, there is need for enhancing different project about mobile phone technologies where farmers could get easy access to communicate. The government and other related department should also plan to reach these farmers and provide latest information about seed, weather and market on the time and provide good price of their product. The poor connectivity, economic problem, and lack of updated information were some of the problems reported by the use of m-learning.

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