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RESEARCH ARTICLE :

A study on socio-economic impact of use the mobile phone technology (ICTs) among the farmer of Rajasthan state

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SUMMARY : Now times, 21st century declared to be the age of information and communication technology. This is the time when more people everywhere are involved in acquiring new knowledge and skills. We cannot work in the society without on-line technology. The need of ICT interventions are felt need of the hour in agriculture as rural areas mostly depend their socio-economic growth with agriculture. Rural India needs a very strong and innovative intervention to take a giant leap forward "Connecting India", with focus on rural connectivity is one such intervention, which can help, ignites the rural creativity to achieve its potential by integrating them in global market.Keeping this in view, a study was conducted assess the socio - economic impact of use the mobile phone technology (ICTs) among the farmer in Merta block of Nagaur district of Rajasthan. A total of 110 respondents were selected for the study. This finding has shown that the majority of maximum number of respondents (14.54%) used *Kisan mela* on regular basis followed by agriculture officer (7.27 %), the another result showed 69 per cent farmers used input dealers on regular basis followed by progressive farmer (64.54 %), neighbours (55.45%) and the various level of mass media sources TV was used on regular basis by majority of the farmers (30%) followed by newspaper (29.09%). However, 62.72 and 48.18 per cent respondents reported that they used TV and radio on occasional basis for agricultural information.

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BACKGROUND AND OBJECTIVES

In India agriculture is dominated by small and marginal farmers whose education is weak and majority of are often unable to access information that could increase yield for their crop. The government has a huge research and development infrastructure in the form of institutions such as the Indian Council of Agricultural Research (ICAR), State Agricultural Universities and Krishi Vigyan Kendra's (KVKs) and other institutes, but today these institutions are facing many constraints in mobility of technical staffs for transfer of technological information at the village level. There has been no significant

technology innovation, which could give a fresh impetus to agricultural productivity. Insufficient extension services and poor access to information further widen the gap in the adoption of technology and lead to poor productivity levels; in fact information is critical to the social and economic activities that comprise the development process and right information at right time will play a crucial role for development of Indian agriculture. This can be served by efficient use of information and communication technologies (ICT). Here comes the role of ICT's, which are powerful and productive with new ideas, methods of the technology dissemination and further improving the knowledge and information among there society by providing new opportunities for development in all sectors. The term ICTs used to include electronic and print media such as radio, television, telephone, computer, internet, mobile phones. There is no doubt that by using communication technologies rural people have improved their agricultural productivity (Chachar *et al.*, 2014)

There is also greater emphasis on how small-holder farmers and other rural producers can be engaged more effectively in local, regional or global supply chains – an expanded agenda that has taken on environmental and social concerns, involving new forms of community mobilisation, organisation, learning and interaction (Davis, 2008). Set against this backdrop of rural transformation, the advent of the mobile phone is stimulating a revolution in rural connectivity for small - holder farmers and other small-scale rural producers in developing countries. Infrastructure networks have expanded rapidly and for many rural producers the mobile phone is enhancing communication, information exchange, and innovation in service delivery (Donner, 2009).

Many organizations extensively using modern information technology in India to facilitate better communication between researchers, extension workers and their farmer clients to transfer technologies and information more cost effectively. But, many of these initiatives were focused on delivering generic information rather than providing the farm plot or crop specific advisories pertaining to the requirements of individual farmers. Through, mobile multimedia phones many information provided about agricultural advisory system, to the rural farming communities, farmers perceived information on pest and disease control as most important and they also felt that accessing information. Although, there were perceived benefits by farmers, the quality of information, and timeliness of information and reliability of information were the three important aspects that have to be considered seriously to meet their requirements and prospects in the coming years Ganesan *et al.* (2013).

m- Learning (M-Agriculture): Definition and Advantage:

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 amonthly growth rate of 0.66 per cent.

Qiang *et al.* (2011) M-Learning (Mobile phone) based services have proliferated in recent years, providing new ways to access price and market information, and coordinate input/output resources including transport and logistics, finance and production techniques.

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

Advantage of m - agricultural :

– Crop and variety selection.
– Up-to-date information of crop practices.
– Access to credit.
– Monitor pesticide and herbicide application.
– Agro-security by reducing theft of farm products, vandalism of property and detection of bio-chemicals.
– Precision agriculture applications in data collection and reporting.

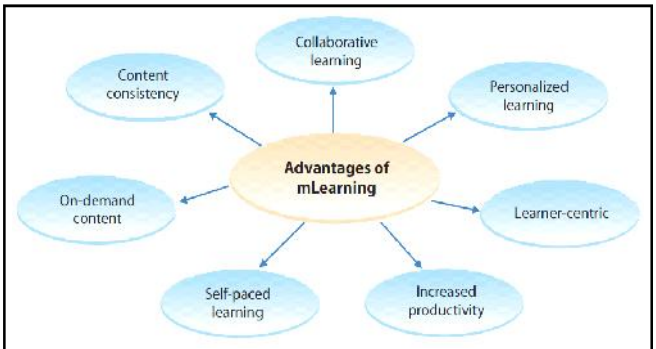

Fig. A : Advantage of M-learning in all sectors
Source : Kumari and Singh (2009), Mobile learning: an emerging learning trend, tata consultancy services, 2009, *www.tcs.com*

– Monitor crop health, rainfall, temperature and other meteorological data.

RESOURCES AND METHODS

This study was conducted 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 possessed mobile phone were selected randomly from each villages. Thus, the total sample size for the study comprised of 110 respondents. An interview schedule was preparedand 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.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

The socio-personal and communication characteristics of farmers involved in M –learning:

It is clear from 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 upto high school level followed by 25.45 per cent farmer upto 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 that74.54 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 and business, and farming and 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.

Extension agency contact :

Extension agency contact refers to the respondents

Table 1 : Distribution of respondent according to personal cosmopolite contacts **(n=110)**

Sr. No.	Source	Regular		Occasional		Never	
		F.	%	F	%	F.	%
1.	Agri. Officer	8	7.27	52	47.27	50	45.45
2.	B.D.O	2	1.8	8	7.27	100	90.80
3.	SMS	2	1.81	7	6.36	101	91.81
4.	Training programme	4	3.63	29	26.36	77	70
5.	Demonstration	1	0.90	16	14.54	93	84.54
6.	Workshops	2	1.81	5	4.54	103	93.63
7.	Seminar	3	2.72	6	5.45	101	91.81
8.	Videos	4	3.63	19	17.27	87	79.09
9.	Kisan Mela	16	14.54	48	43.63	46	41.81

Table 2 : Distribution of respondent according to personal localite contact in extension agency contacts **(n=110)**

Sr. No.	Source	Regular		Occasional		Never	
		F.	%	F.	%	F.	%
1.	Progressive farmer	71	64.54	33	30	6	5.45
2.	Neighbors	61	55.45	39	35.45	10	9.09
3.	Relative	57	51.88	37	33.63	16	14.54
4.	Friends	50	45.45	47	42.72	13	11.81
5.	Panchayat and cooperative	56	50.90	41	37.27	13	11.81
6.	Input dealers	76	69.09	27	24.54	7	6.36

Table 3: Distribution of respondents on the basis of mass media (ICTs tools) exposure (n=110)

Sr. No.	Media	Regular		Occasional		Never	
		F	%	F	%	F	%
1.	Radio	8	7.27	53	48.18	49	44.54
2.	T.V.	33	30	69	62.72	8	7.27
3.	Tape recorder	1	0.90	9	8.18	100	90.90
4.	Research journal	1	0.90	10	9.09	99	90
5.	Agricultural magazine	11	10	30	27.27	69	62.72
6.	News paper	32	29.09	37	33.63	41	37.27
7.	Education film	6	5.45	6	5.45	98	89.09

frequency of contact with the change agent such as agriculture officer, block development officer, subject matter specialist, training programme, demonstration plots, workshops, seminar, videos, Kisan Mela and other formal change agent.

Personal cosmopolite contacts :

It is evident from Table 1 that maximum number of respondents (14.54%) used *Kisan mela* on regular basis followed by agriculture officer (7.27 %). At the same time agriculture officers were occasional used by 47.27 per cent farmers which were followed by *Kisan mela* (43.63 %). It is surprising to note that BDO, SMS, workshops and seminars as sources of information were never used by more than 90 per cent farmers.

Personal localites contact :

It is evident from Table 2 that all the localite sources of information were used on regular basis by majority of the respondents. About 69 per cent farmers used input dealers on regular basis followed by progressive farmer (64.54 %) and neighbours (55.45%). This finding is in line with that of Mehta (2013) who in study found that majority of respondents (42%) were contact trader followed by other farmers (22%), input dealer (13%), farmer call centre (10%), extension agent (14%) and other (8%).

Type of ICTs used by farmers to access agricultural information :

It is clear from the Table 3 that among the various mass media (ICTs tools) sources TV was used on regular basis by majority of the farmers (30%) followed by newspaper (29.09%). However, 62.72 and 48.18 per cent respondents reported that they used TV and radio on occasional basis, respectively. About 90 per cent respondents reported that they never used tape recorder, research journal, and educational film. This finding is in line, the majority of farmers 56.00 per cent used radio followed by mobile (49.00%) and 35 per cent used television for accessing agricultural information (Saikia *et al*., 2016).

Purpose of using ICTs by the farmers :

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. scheme, use of input and output and news reports.

Conclusion :

The farmers' approach towards receiving agricultural information has been completely changed by getting ICT base-tool m-learning in their hand. This innovative method utilized ICTs in delivering information to farmer by personal calls, voice and text SMS. The role of M-learning (smartphone) in agriculture for management decision in modern farming require to be upto date and local information of weather forecasts, regional recoding of crop disease and pests, plant protection, irrigation management, harvesting and proper marketing. 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.

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