



Use of Smart Phones by Farmers as a Tool for Information Support in Agriculture

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ABSTRACT

Intensity of information needed in agriculture is at an increasing pace and access to information has become the fundamental issue to be addressed. However, smart phones have the potential to narrow down the information gaps in agriculture. Therefore, the present study was conducted to assess the information utility of smart phones. The study was carried out among paddy growing farmers of Erode district of Tamil Nadu. Data on access to smart phones, period of smart phone adoption, its use for information support in agriculture and utility against other agricultural information systems used by farmers were collected using face-to-face interview method. Results revealed that smart phones were widespread among the farmers. Smart phones ranked fifth among the ten identified components of farmers' agricultural information systems regarding the information utility with improved information score due to its high frequency of utilization.

Key Words: Access, Farmers, Information, Smartphone, Utility.

INTRODUCTION

Agriculture is the primary source of income for people of developing countries like India. Technological innovations brought about by developments in research made the country attain self sufficiency in food production. Despite its contribution to welfare of the economy, the income of farmers still remains low. Information gaps were one of the most important reasons for low levels of income among farmers. The fortunes of access to information were not fully realized by farmers due to the limited availability of experts to attend to farmer's needs. Farmers need access to information on technological innovations, weather, market, schemes, subsidies etc., to make decisions on type of crops/ varieties to be grown for the specific season to obtain more yields of better market value. Intensity of information needed in agriculture is at an increasing pace and access to

information has become the fundamental issue to be addressed (Jonathan, 2016). It is apparent through several research studies that information and communication technologies (ICT) have the potential to narrow down the information gaps and seen as an important tool for development in agriculture.

Sharma *et al* (2012) in a study conducted in district Kapurthala, emphasized to numerate the availability of such ICT tools with the farmers and their use in agriculture. It was found that 41 per cent farmers had landline phone but only 47 per cent of them used it for agriculture purposes. The mobile phone ownership among farmers was more than 98 per cent which were mostly used by them as a social communication tool, whereas, 78 per cent of farmers said that once in while they use their mobile phone for agriculture advisory liking calling agriculture departments or relatives or commission

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agents to enquire about the rate of produce. Mobile phones were found to be the most powerful means of communication among farmers for exchanging agriculture information. This was probably due to cost affordability, better network, easy availability and cheap tariff rates. More than half of the new internet users are expected to come from rural communities (Jain and Sanghi, 2016). Hence, this emphasized the need to explore the use of smart phones by farmers as a tool for information support in agriculture. Hence, a study was conducted to access the information utility of smart phones as perceived by farmers.

MATERIALS AND METHODS

This study was conducted among paddy growing farmers of Erode district of Tamil Nadu. Gobichettipalayam block was purposively selected for the study considering the maximum area under paddy cultivation. A sample of 120 paddy cultivating farmers with 40 farmers each from three villages *viz.*, Pudhukarai Pudhur, Kugalur and Savundapur who had access to smart phones were purposively selected. Data on access to smart phones, period of smart phone adoption, its use for information support in agriculture and its utility against other agricultural information systems used by farmers were collected using face-to-face interview method. Descriptive statistics such as frequency and percentages were used for the meaningful interpretation of the results.

To evaluate the information utility of information systems of farmers, the methodology employed by Demiryurek *et al* (2008) was followed. The information sources prevalent in the study area were identified based on discussion with farmers. The identified information sources include progressive farmers, agricultural scientists, extension officers from state department of agriculture, subject matter specialists from KVKs, agricultural officers of input companies and mass media such as television, radio, newspaper, magazines and smart phones which paves way for accessing farming related

information from different agricultural websites, portals, social media and supports the use of mobile applications related to agriculture. The information score for each source was calculated using the equation:

Information Score (IS) = FC*IU where FC is the frequency of contact measured in terms of periodicity of contacts with each source *viz.*, regularly, occasionally and never coded as 3, 2, 1.

IU is the information utility which is measured in terms degree of usefulness of each information source as perceived by the farmers. The degree of usefulness was measured by asking the farmers to rate each information source from five levels of usefulness coded as 0, 0.25, 0.50, 0.75 and 1. The average degree of usefulness for each information source was obtained by dividing the sum of values of each information source with the total number of respondents.

RESULTS AND DISCUSSION

Access to smart phones

Access to smart phones offers the scope for instant access to wide range of information needed by farmers to combat various challenges *viz.*, changing weather patterns, market fluctuations, etc., confronting them. Hence, identifying farmers' access to smart phones has gained paramount importance. In this study, access to smart phones was measured in two dimensions *viz.*, direct and indirect access. Farmers who owned smart phones were considered to have direct access and farmers who used to access smart phones through their family members were considered to have indirect access. It was found that a vast majority of the respondents (90.83%) were found to have direct access to smart phones by owning the device. Only a meager percent of the respondents (9.17%) accessed smart phones from their family members. It could be concluded that farmers in the study had potential access to smart

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phones. This finding was in line with Sousa *et al* (2016) who reported that third generation mobile phones widespread among farmers.

Period of Adoption of Smart phones

The period of adoption of smart phones was operationalized as the number of years of possession of smart phones by farmers (Table 2).

Table 2. Distribution of respondents based on period of adoption. (N=120)

Sr. No.	Period	Number	Percent
1.	Less than 3 yr	58	53.21
2.	4-6 yr	44	40.37
3.	More than 6 yr	07	6.42
	Total	109	100

It was found that more than half of the farmers (53.21% per cent) were using smart phones for the period of less than three years followed by two-fifths of the farmers (40.37 %) using smart phones for the period of 4-6 years and a meager per cent (6.42 %) of them using smart phones for a period of more than 6 years. The findings revealed that the percentage of farmers

owning smart phones has increased over the years indicating its penetration at exponential rates in rural areas. Smart phones with its easy to use features and applications soon took over as farmers' one of the widely used source for information acquisition. Despite its utility in agriculture, smart phones also satisfy other varied interests of farmers. This might be the reason for adoption of smart phone by farmers over the years.

Use of Smart phones for Information Support in Farming

Smart phone is now being widely used by the farmers both as a source of information and as a medium to obtain information regarding farming to make better decisions. As a media, smart phones are used by farmers to make phone calls to relatives/friends, progressive farmers, extension officials, private input dealers, Kisan call centres, etc. to gather information. As a source, use of smart phones with internet access enables farmers to get information from different websites, portals, mobile applications and social media in different

Table 3. Distribution of respondents based on the usage of Smartphone for information support. (N=120)

Sr. No.	Particular	Regularly*		Occasionally*		Never*	
		Number	Percent	Number	Percent	Number	Percent
1.	Phone call						
a	Relatives/ Friends	30	25.00	87	72.50	3	2.5
b	Progressive farmers	42	35.00	75	62.50	3	2.5
c	Extension officials	18	15.00	64	53.33	38	31.67
d	Private input dealers	27	22.50	69	57.50	24	20
e	Kisan Call Centres	1	0.83	47	39.17	72	60.00
2.	Agricultural related Websites/portals	6	5.00	62	51.67	52	43.33
3.	Mobile applications	6	5.00	44	36.67	70	58.33
4.	Social media						
a.	Whatsapp	50	41.67	62	51.67	8	6.67
b.	Facebook	30	25.00	33	27.50	57	47.50
c.	YouTube	51	42.50	42	35	27	22.50

*Multiple Responses obtained

forms viz., written, video, pictures, animations for their improved understanding and application of scientific information at field level.

Sharma *et al* (2012) highlighted that possession of a mobile phone by an individual can be considered as a status symbol or a necessity as well. They reported that In the sample villages 98.3 per cent of the farmers possessed this magic tool and out of it 78.0 per cent were using this device for getting information from dealers, relatives, scientists, extension workers, banks etc. However, only 66.7 per cent of marginal farmers were using it for agricultural purpose whereas possession was 100 per cent. In the market, various mobile models as well as different schemes have been launched by various service providers but due to incapability of handling this device for various purposes, its use is mainly limited to listening of voice messages.

It was found that more than half of the farmers used smart phones occasionally to make phone call to friends/relatives (72.50%), progressive farmers (62.50%), private input dealers (57.50%) and extension officials (53.33%) against the regular use to discuss farm related problems. The reason for occasional use was because farmers more often have direct face to face interactions with other farmers due to geographical proximity of the paddy fields. With regard to private input dealers, farmers seek their advice mainly for the recommendation of chemicals for pest and disease control for which face to face contact was mostly preferred by farmers rather discussing over phone calls. Kisan call centers were used by nearly two-fifths (39.17%) of farmers occasionally to make decisions on the choice of the variety specific to a season, to know the availability of inputs etc.

Further, the study revealed that a little more than two-fifths of the farmers used YouTube (42.50%) and Whatsapp (41.67%) followed by one fourth of them using Facebook (25.00%) regularly as a source of information. This is because more number of agricultural information in the form of text, pictures, videos etc. was getting shared among

farmers easily through social media. Farmers were using Whatsapp to record field level problems in the form of pictures, videos etc. and send to the extension agents or post it in Whatsapp groups to get appropriate solutions. Ease of use of different features of Whatsapp might be the probable reason for its regular utilization among farmers. Regarding mobile applications, more than one-third of the farmers (36.67%) were using it occasionally and 5.0 per cent using it regularly. But in contrary, about three-fifths of the farmers (58.33%) were not using any mobile applications. The reason for limited use of mobile applications among farmers was its complexity in operating the applications. To obtain the needed information through mobile applications, farmers should possess adequate skills in operating the application. Another reason was that some apps can be accessed only in online mode which requires good internet connectivity.

With regard to the use of agricultural related websites and portals, a little more than half of the respondents (51.67%) were found to be using it occasionally and only 5.0 per cent of them using it regularly. Remaining three-fifths (43.33%) of farmers had not accessed any websites/portals on agriculture. This is because farmers' were of the perception that the information available in the websites is general and not specific to their prevailing local situations.

Information Utility

The information utility was calculated to find out farmer's perception on the degree of usefulness of each information source (Table 4).

The data (Table 4) inferred that progressive farmers had the highest information utility value of 0.70 followed by agricultural officers of private input companies (0.46), extension officers from state department of agriculture (0.40), television (0.32), smart phones (0.29), agricultural scientists (0.26), newspaper (0.25), magazines (0.18), SMS from KVK (0.13) and Radio (0.10). The probable reason for progressive farmers being accorded with high information utility value was that they were the

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Table 4. Distribution of Farmers based on the Information Utility of different sources of Information. (N=120)

Sr. No.	Sources of Information	Information Utility	Information Score
1.	Progressive/ Fellow Farmers	0.70	1.77
2.	Agricultural Scientists	0.26	0.59
3.	Extension officers from State Department of Agriculture	0.4	0.73
4.	Subject matter specialists from KVK	0.13	0.28
5.	Agricultural officers of private input companies	0.46	0.91
6.	Television	0.32	0.78
7.	Radio	0.10	0.2
8.	Newspaper	0.25	0.61
9.	Magazines	0.18	0.38
10.	Smart Phones	0.29	0.74

actual users of scientific information and impact of using such information on progressive farmers could be directly witnessed by other farmers. Hence, the fellow farmers could make better decisions based on the outcomes obtained by the progressive farmers. It is because of this, farmers were uncertain about the consequences of recommendations given by the non users i.e. the other sources of information. Sharma *et al* (2012) revealed that the farmers were observed to be dependent on their large social network and took advice from the agricultural scientists, fellow farmers, relatives, commission agents, pesticide dealers and friends. Interestingly, most of the farmers showed their inability to use the agro-advisory received through short message service.

The information score revealed that progressive farmers had the highest information score of 1.77 followed by agricultural officers of private input companies (0.91), television (0.78), smart phones (0.74), extension officers from state department of agriculture (0.73), newspaper (0.61), agricultural scientists (0.59), magazines (0.38), SMS from KVK (0.28) and radio (0.2) respectively. Hence, it could be inferred that smart phones though had low information utility has obtained highest information score due to high frequency of utilization. Though the usefulness of information

acquired from agricultural scientists is perceived high among farmers, its utility is less compared to the information utility of agricultural officers of private input companies and extension officers due to very less frequency of contacts between farmers and scientists.

CONCLUSION

The study concluded that farmers had potential access to smart phones with majority of them owning it for a period of more than 3 yr. With regard to information support in farming, more than half of the farmers used social media such as Whatsapp and YouTube regularly and made phone calls to interact with relatives/ friends, progressive farmers, private input dealers and extension officers occasionally. Smart phones ranked fifth among the ten identified components of farmers' agricultural information systems regarding the information utility with improved information score due to its high frequency of utilization. Though the use of smart phones for information support in agriculture is recent compared to other identified sources, it has wider reach and utility among farmers. Agricultural scientists despite being trusted as the most credible source of information by farmers had low information score because of very less frequency of contacts between farmers and scientists. Hence, more initiatives on strengthening the farmers,

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scientist's interactions facilitated by smart phones have to be proposed to enable farmers make better decisions for gainful incomes.

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