

PERSPECTIVE OF ICT IN STRENGTHENING AGRICULTURAL EXTENSION SYSTEM: A REAL TIME SMS SERVICES THROUGH *MKISAN* PORTAL

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ABSTRACT

Agriculture is the key sector of Indian economy to provide foundation for sustainability of millions of farm families. Information sharing on new technologies of agriculture through efficient extension mechanism is imperative in order to bring changes in decision making capacity of farmers. In this new satellite era the Information and Communication Technologies (ICT), particularly mobile telephony could be an opportunity to make information available at farmers' doorstep. In this context, Kisan SMS Portal (*mKisan*) has made an endeavor to disseminate information amongst the farmers through SMS system in local languages. In Assam, Agro Meteorological Field Units (AMFU) under the project Integrated Agro-met Advisory Services (IAAS) play the key role in disseminating relevant information to farmers through this portal. The present study was conducted with sixty randomly selected farmers from Golaghat District of Assam to explore the prospective of Short Message Services (SMS) provided by AMFU, Jorhat through *mKisan*. The study revealed that the new way of agro-meteorological advisory service mechanism had a positive prospect in disseminating information amongst the farming community. However, to leverage full potential of information dissemination enabled by mobile telephony would require significant improvements in infrastructure support and capacity building amongst the human resources.

KEYWORDS: Agriculture, AMFU, IAAS, ITC, *mKisan*, SMS

INTRODUCTION

Agriculture is the mainstay of a country's economy wherein agricultural extension service is imperative for the agricultural sector to develop. Agricultural trade and promising needs are bringing changes rapidly towards the new extension system to meet new challenges. The whole new scenario demands inducting reforms to bring out changes in systems, processes, frameworks and policies. The new way of learning in terms of local context, operational process, need-based, user centric and in-time extension service system provides an innovation challenge to all the stakeholders in it (Stienen, 2007). In this context, Information and Communication Technology (ICT) plays a significant role in modernizing the agricultural extension services. Information technology can help in collecting, storing, retrieving, processing and disseminating a broad range of information needed by the farmers (Kumar, 2012).

In the past, television and radio were the main electronic broadcast technologies used to reach rural communities; however in the past two decades, computer-based applications, internet and communication tools such as social media, digital information repositories (online or offline), and mobile-based technologies have emerged extensively. Nevertheless in agriculture, despite the rapid spread and potential of ICTs to facilitate farmers' access to information, many of the initiatives face common challenges, such as issues of sustainability, affordability, ease of use, accessibility, scalability, and

availability of relevant and localized content in an appropriate language (Rao, 2013). In this context, the increasing penetration of mobile network and widespread use of mobile phones, voice mail and SMS solutions etc. could meet these challenges and be an opportunity to make useful information available at the farmers' doorstep (Sharma, 2014). In the state of Assam, the revolution of mobile communication has already begun to reach the people even in the remote regions. Since, mobile phone has connected the last village in Assam; it provides an ample opportunity for ICT based agro services. With this background the study was devoted to explore ICT penetration through mobile based services in Golaghat District of Assam. There are three major stakeholders in the study, viz., Agro Meteorological Field Unit (AMFU) under Indian Meteorological Department (IMD) working for Integrated Agro-met Advisory Service (IAAS) project, the Kisan SMS Portal (*mKisan*) of Ministry of Agriculture (MoA), and the grass root level farmers. The study was the outcome of an explorative survey on ICT penetration through mobile based services by Agro Meteorological Field Unit (AMFU) through *mKisan*. Here, an attempt has been made to identify firstly, the available sources of information and communication services in the study area. Secondly, the level of attitudes of the farmers towards the SMS services on agriculture and finally the problem and prospects of SMS service in the study area.

METHODOLOGY

The study was conducted with sixty randomly selected farmers of the villages under Kothalguri development block of Golaghat District of Assam, who were registered under Kisan SMS portal or *mKisan*. The Agro Meteorological Field Unit (AMFU), Jorhat district under the project Integrated Agro-met Advisory Services (IAAS) played the key role in disseminating relevant information to the farmers through this portal (*mKisan*). Kisan SMS portal or *mKisan* is an SMS based agro-advisory portal which was developed completely in house by Department of Agriculture and Cooperation, Government of India. It enables all State and Central government organizations in agriculture and allied sectors to disseminate location specific information/services/advisories to farmers through SMS in local language. IMD/IAAS is a registered user of *mKisan* portal where technical officers of AMFU of different zones send location specific short messages to farmer and other needy stakeholder by following a standard procedure. Here, the technical officer of AMFU, Jorhat send regular crop and weather based SMS to registered farmers of five districts under Upper Brahmaputra Valley Zone (UBVZ). There were 6853 beneficiaries under UBVZ; out of which 1409 beneficiaries were from Golaghat district where from the sample has been drawn. The study was based mainly on primary data. However, some secondary information was also collected from the office of AMFU, Jorhat. Primary data were collected with the help of pretested interview schedule. The information was collected from the respondents by personal interview method. Collected data were analyzed through appropriate tabular and suitable statistical analysis (ranking technique) to arrive at desired results of the study. To analyze problem and prospects issues of the SMS system, SWOT analysis technique was adopted.

RESULTS AND DISCUSSIONS

Sources of Information and Communication Services Available in the Study Area

It was observed that majority of farmers availed agriculture related information from the fellow or progressive farmers and sometimes the input dealers (Table 1). The second source of information was extension workers, as it was due to the close contact with the nearest Krishi Vigyan Kendra, in the study area. It was followed by mobile phone, the third source which had recently penetrated and gained importance as a source of agriculture and weather based information to the farmers. This was made possible due to the new initiative of m-services by AMFU, Jorhat through Kisan SMS Portal. Majority of peoples in the study area could read and write and were also concerned about new technologies in agriculture.

Hence, a considerable numbers of farmers were found to avail information through print media like local newspapers and other farm publications. The fifth and sixth rank was occupied by television and radio respectively. However, majority of peoples had no experience with internet connectivity. The result of this study is in conformity with the result reported by *Das et al. (2012)*.

Regarding online communication services, it was found that the respondents were not acquainted with the new age e-services. However, the m-service initiative (*mKisan*) had recently seen the light of the day in the study area. The farmers were also enthusiastic towards this new ICT initiative (Table 2). Besides, some of the sample farmers were still not getting any SMS's even after registration under *mKisan* portal. It might be due to some technical anomalies and poor network connectivity. It was also found that few farmers were having experience with Kisan Call Centre (KCC).

Table 1: Sources of Information Accessed by Farmers

Sources of Information	Response			Mean Score	Rank
	High	Average	None		
Radio	-	43(71.67)	17(28.33)	1.71	VI
Television	5 (8.33)	44(73.33)	11(18.33)	1.90	V
News paper & Farm Publication	21 (35.00)	27 (45.00)	12 (20.00)	2.15	IV
Mobile Phone	24(40.00)	22 (36.67)	14(23.33)	2.16	III
Internet	-	8 (13.33)	52 (86.67)	1.13	VII
Extension Workers	12 (20.00)	48 (80.00)	-	2.2	II
Progressive farmers , input dealers	37(61.67)	23(38.33)	-	2.61	I
Figures in the parentheses indicate percentage to total Score: high=3; average=2; none=1					

Table 2: Online Communication Services

Sources of Information	Response			Mean Score	Rank
	High	Average	None		
Kisan Call Centre	-	7 (11.67)	53 (88.33)	1.11	II
<i>mKisan</i> (Through AMFU, Jorhat)	24(40.00)	22(36.67)	14(23.33)	2.16	I
Computer and Internet Centre	-	-	60 (100)	1	III
Figures in the parentheses indicate percentage to total					

Score: high=3; average=2; none=1

Level of Attitudes of the Farmers towards the SMS Services in Agriculture

The main focus of SMS services in agriculture is to meet the information need of farmers in capsule form. Here, an attempt was made to find out different categories of agricultural information considered relevant to the need of the farmers under their socioeconomic and biophysical situation (Table: 3). In consistent with a study reported by Dhaka, 2010, here also information on weather factors like rainfall, temperature and humidity was considered most appropriate by majority (73.33 %) of respondent, while rest of the respondent farmers rated it as appropriate (26.67 %). Secondly, the farmers needed plant protection measures i.e., pest and disease management practices for various crops cultivated in the area, particularly vegetables. The information relating to the improved crop production and management practices was the third most important information needed by the farmers. Post harvest handling of agricultural commodities was perceived as fourth major concern among the respondents. It can be seen from the Table: 3 that market information such as price of agricultural commodities in the nearby local markets, finance related issues and use of different farm inputs were ranked at fifth, sixth and seventh position respectively. It was observed that majority of the respondent farmers were not aware of the importance of commercialization of agriculture as it was still at subsistence level. Hence they placed post harvest practices,

marketing, finance related issues in the simply appropriate category.

There was an increasing realization about the potentialities of ICT in agricultural technology dissemination. The farmers regarded the new SMS service as an important source of information on agriculture and allied area for all with their own perception and priorities. The result presented in the Table 4 reveal that the recent m-service had minimized time and distance barriers in getting information. Secondly, mobile phones were available with almost all the farmers, so it became an affordable source of information. Thirdly, accurate and timely information, particularly the weather based information helped the farmers to improve decision making capacity; as a result, it supported to adopt better cultivation practices and increase revenue. Since the respondent farmers were far away in reaching commercial agriculture, they were less responsive to market information.

Table 3: Appropriateness of Information Perceived by Farmers

Type of Information	Appropriateness			Mean Score	Rank
	Most Appropriate	Appropriate	Not Appropriate		
Weather based information	44 (73.33)	16 (26.67)	-	2.73	I
Production practices	36 (60.00)	24 (40.00)	-	2.60	III
Plant Protection Measures	38 (63.33)	22 (36.67)	-	2.63	II
Use of inputs	6 (10.00)	54 (90.00)	-	2.10	VII
Marketing	14(23.33)	46 (76.67)	-	2.23	V
Post harvest handling	21 (35.00)	39 (65.00)	-	2.35	IV
Banking and Finance	10 (16.67)	50 (83.33)	-	2.16	VI
Figures in the parentheses indicate percentage to total					
Score: most appropriate=3; appropriate=2; not appropriate=1					

Table 4: Perception of Farmers towards SMS Services in Agriculture

Type of Information	Response			Mean Score	Rank
	Highly Agreed	Agreed	Not Agreed		
An affordable sources	34 (56.67)	26 (43.33)	-	2.56	II
Minimize time and distance barriers	47 (78.33)	13 (21.67)	-	2.78	I
Adoption of better cultivation practices	10 (16.67)	50 (83.33)	-	2.16	IV
Get connected to market	-	9 (15.00)	51(85.00)	1.15	VI
Improve decision making capacity	12 (20.00)	48 (80.00)	-	2.20	III
Increased revenue	-	41 (68.33)	19(31.67)	1.68	V
Figures in the parentheses indicate percentage to total					
Score: highly agreed=3; agreed=2; not agreed=1					

Problems and Prospects of SMS Services

SWOT (Strength, weakness, opportunities and threat) analysis had been done to have a better picture on problem and prospect of SMS services in the village. In the present study SWOT analysis had been carried out through a 2x2 matrix worksheet as given in Table: 5.

Strength: The analysis revealed easy accessibility of SMS's based information, saving in cost and time, higher literacy of the target block, active community participation and socio-political advantage due to the presence of independent constitutional safeguard body (Thengal Kachari Autonomous Council)

Weakness: Lack of awareness on account of its recent initiation, technical anomalies due to non receipt of SMS's even after registration and poor network based connectivity are regarded as the inherent weaknesses embedded in the ICT initiative in the study area.

Opportunity: Opportunities included real time region specific agro-met advisory services under climate variability. Additionally, the emphasis of the new political regime on E (internet) and M (mobile) connectivity in the North Eastern states provide ample scope for ICT based initiatives.

Threat: The ICT based services is a one way service without any query solving provision. Lack of credibility of information and evaluation of the information provided, poses a threat from the ICT based initiative in the study area.

Table 5: SWOT Analysis

Strength	Weakness
Easy to access Cost and time effective High literacy Active community participation Socio-political benefits	Lack of awareness Technical glitch Poor connectivity
Opportunity	Threat
Real time information dissemination under climate variability Location/sector/holding specific agro- met advisory services E & m-connectivity under the new political regime	One way service Lack of Credibility Lack of evaluation/accountability

CONCLUSIONS

mKisan is a holistic ICT initiative of Ministry of Agriculture for real time dissemination of information at farmers' doorstep. The AMFU, Jorhat of Upper Brahmaputra Valley Zone (UBVZ) under the project Integrated Agro-met Advisory Services (IAAS) played the catalytic role in this particular study. The present study has revealed that majority of beneficiaries of *mKisan* service highly agreed with its intended benefits among other online communication services. Effective utilization of this m-service has potential to make the rural communities prosperous as it enables the dissemination of requisite knowledge and information in user friendly form, easy to access, cost-effective ways at the right time. In this context, credibility, accountability and knowledge intensive agricultural information are the important determinant for its acceptability. It should be conceived on a war footing under changing agricultural extension scenario. Hence, the recent penetration of SMS service in the villages of Golaghat district could be an important source of information and overall upliftment of rural masses in the days to come.

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