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Original Research Article

Level of Awareness among Farmers about Digitized Information and Communication Sources in Bhagalpur and Begusarai Districts of Bihar, India

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A B S T R A C T

Agriculture in 21st century will be an extremely diverse enterprise driven by twin concerns of raising income of farm people and long-term sustainability of their livelihood. Today, farmers are increasingly looking for frequent interaction with various information sources not only to carry out their farming and marketing task efficiently but also to ensure delivery of safe and quality agricultural products to consumers. The emerging information requirement of farmer is demand- driven and requires generic relevant information for their farm business. Farmers received information from multitude of sources, such as extension agencies, mass media, fellow farmers, input dealers etc. ICTs play a crucial role in disseminating information to farmers enabling them to decide on the cropping pattern, use of high-yielding seeds, fertilizer application, pest management, marketing, etc.(Meera *et al.*,2004). This indicates that ICT could play a pivotal role in improving access to information by the poor. ICT also helps in empowering the farmers by providing better access to natural resources, improved agricultural technologies, market and financial services.

Keywords

Information and Communication Technology (ICT), Extension agencies, Fertilizer application, etc.

Introduction

Agriculture in 21st century will be an extremely diverse enterprise driven by twin concerns of raising income of farm people and long-term sustainability of their livelihood. Today, farmers are increasingly looking for frequent interaction with various information sources not only to carry out their farming and marketing task efficiently but also to ensure delivery of safe and quality agricultural products to consumers. The emerging information requirement of farmer is demand- driven and requires generic relevant information for their farm business. Farmers received information from multitude of sources, such as extension agencies, mass media, fellow farmers, input dealers etc. Utilization of the improved agricultural technology by the farmers to a large extent depends upon the effective sources of information and channel to which they are generally exposed directly or indirectly (Wakle *et al.*, 1998 and Singh *et al.*, 2010). Extension workers are the most important source in transmitting technology to users (Sharma, 2003). The information supply from extension, research, education and other organizations to its actual users is very crucial (Demiryurek, 2010).

The high cost of delivering information through face to face interaction, crumbling extension services and the poor market

information has paved the way for use of modern information and communication technology like mobile phones in disseminating agricultural information. Also access to ICT can have a tremendous positive impact on sustainable development and poverty reduction. Also access to ICT can have a tremendous positive impact on sustainable development and poverty reduction (Torero and Barun, 2006). ICTs play a crucial role in disseminating information to farmers enabling them to decide on the cropping pattern, use of high-yielding seeds, fertilizer application, pest management, marketing, etc. (Meera *et al.*, 2004). This indicates that ICT could play a pivotal role in improving access to information by the poor. MacInnis and Jawarski (1991) proposed that the more knowledgeable the individual, easier they would find it to encode information, thereby making information acquisition easier. Implementation of complex set of policy, investment, innovation, capacity-building measures etc. is required in consultation with beneficiary and other partners, which will encourage the growth of appropriate, affordable and sustainable ICT infrastructure, tools, application and services for rural economy (World Bank, 2011).

In recent years, the spread of ICTs has raised the expectation that these technologies would deliver fast, reliable and accurate information in a user-friendly manner (Shalendra *et al*., 2011). The use of ICT is an important pillar of agricultural extension and in the current scenario of a rapidly changing world, has been recognized as an essential mechanism for delivering knowledge (information) and advice as an input for modern farming (Jones, 1997). Success of ICT application in agriculture requires addressing of various hindrances; such as lack of awareness, low literacy, infrastructure deficiencies, language and cultural restrictions, for adoption and diffusion (Moumbe and Okello,2010).It stresses the role of unified communication and integration of telecommunication, intelligent management systems and audio-visual system in ICT (Jain *et al.*, 2011).

Materials and Methods

The study was carried out in two districts of Bihar Bhagalpur and Begusarai. Data were collected from each of 120 selected farmers as respondent with help of interview schedule. Statistical techniques used in data analysis include: frequency and percentage mean and Standard deviation.

Results and Discussion

Table 1 presents information sources use pattern among farmers of both selected districts in Bihar. All the respondents of Bhagalpur district use friends, neighbours and other farmers as localite information sources. Among personal cosmopolite sources, most of the farmers (97.50%) get information from agricultural officer (97.50%) followed by other officers namely KVK's subject matter specialist (90%) and input supplier (75%) for getting information related to farming activity. As far as mass media sources concerned, all the farmers used to visit Kisan Mela (100%) followed by 87.50 per cent and 77.50 per cent from television and exhibition, respectively. Among e-agriculture sources or ICTs, also known as digitized information sources, 65.50 farmers use mobile agriculture applications for obtaining farming related information followed by ICTs hybrid project (40%). Farmers of Bhagalpur district have frequent access to agricultural officers, SMS, Kisan Mela because they are located nearby to Bihar Agricultural University (BAU), Sabour. Hence, respondent farmers of Bhagalpur district are more aware about digitized sources of information compared to Begusarai district.

Among personal localite sources, all respondent farmers in Begusarai frequently get information from progressive farmers for information followed by friends (97.50%). Half of the respondent farmers have mentioned that they also get information from input supplier followed by agricultural officers (20%). Mass media sources used by respondents are television (100%) followed by Kisan Mela (97.50%). Radio is lest preferred as less than half of the respondents do not use this mass media source. Farmers of Begusarai district are less aware about digitized sources of information because of illiteracy and lack of knowledge about these sources.

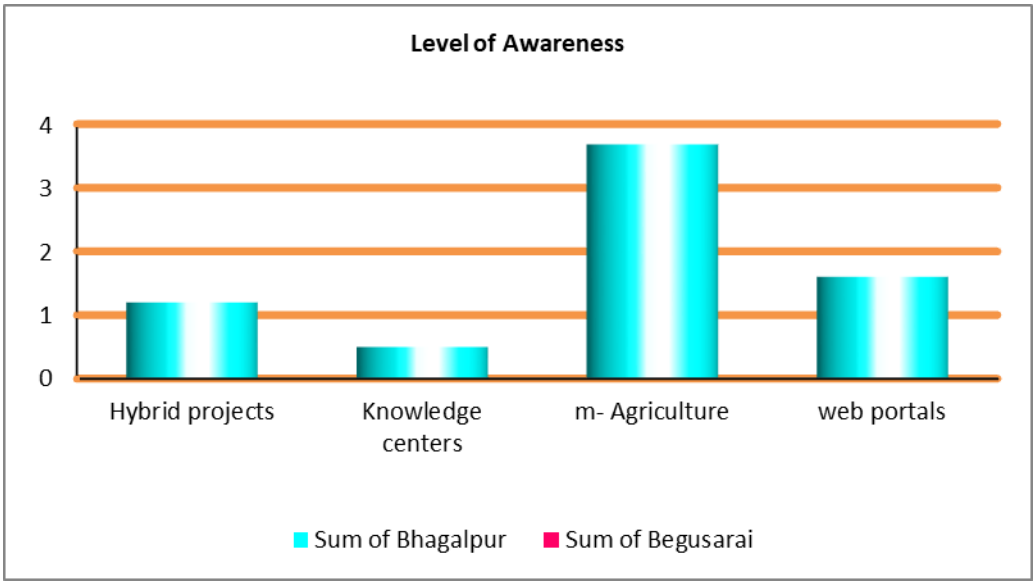
Table.1 Information sources use pattern of the farmers in Bhagalpur and Begusarai districts of Bihar

Sl. No.	Information sources	Frequency and percentage of farmers using various information sources	
		Bhagalpur district (n=40)	Begusarai district (n=40)
1.	Personal Localite Sources:		
(i)	Village leader	10(25.00)	06(15.00)
(ii)	Gram Pradhan		
(iii)	Panchayat		
(iv)	Village teacher		
(v)	Friends/Relatives/Neighbours	40(100.0)	39(97.50)
(vi)	Experienced/Progressive farmers	40(100.00)	40(100.00)
(vii)	Other	09(22.50)	28(70.00)
2.	Personal Cosmopolite Sources:		
(i)	Gram sevak	08(20.00)	01(2.50)
(ii)	Agricultural officer	39(97.50)	08(20.00)
(iii)	Input supplier	30(75.00)	20(50.00)
(iv)	Any other official	36(90.00)	06(15.00)
(v)	Other	05(12.50)	
3.	Mass Media Sources:		
(i)	Television	35(87.50)	40(100.0)
(ii)	Radio	14(35.00)	19(47.50)
(iii)	News paper	28(70.00)	32(80.00)
(iv)	Farm publication	27(67.50)	32(80.00)
(v)	Krishi mela	40(100.0)	39(97.50)
(vi)	Exhibition	31(77.50)	30(75.00)
4.	e- Agriculture		
(i)	Web portals		03(7.50)
(ii)	Knowledge centers	01(2.50)	
(iii)	Tele-centers	06(15.50)	
(iv)	Telephony	08(20.00)	
(v)	Mobile agriculture	26(65.50)	11(27.50)
(vi)	Hybrid projects (ICTs)	16(40.00)	07(17.50)

Table.2 Level of awareness of digitized communication sources in Bhagalpur and Begusarai districts of Bihar

Sl. No.	Types of information and communication source	Total mean score of level of awareness (n=40)	
		Bhagalpur district (n=40)	Begusarai district (n=40)
1.	Web portals	1.60	0.60
2.	Knowledge centers	0.50	
3.	m- Agriculture	3.68	
4.	Hybrids projects	1.20	0.85

Figure.1 Level of Awareness of Digitized Sources in Bhagalpur and Begusarai district



During present study four types of digitized information sources are considered viz. web portals, knowledge centers, mobile applications in agriculture (m-agriculture) and hybrid ICT projects.

Web portals including aAQUA, AGRISNET, DACNET, e-Krishi, ASHA, India Development Gateway (InDG) portal, Rice Knowledge Management Portal (RKMP), Agropedia, AGMARKNET, e-NAM (National Agriculture Market), ITC-e-Choupal, Indiancommodities.com, Mahindra Kisan Mitra, IFFCO Agri-Portal, Agro-watch Portal, iKissan, Crop Insurance Portal, etc.

Knowledge centers refer to Village Knowledge Centers (VKCs) of M.S. Swaminathan Research Foundation (MSSRF) and other similar centers, Village Resource Centers (VRCs) of the Indian Space Research Organization (ISRO), Community Information Centers (CICs), Common Service Centers (CSCs), Agricultural Technology Information Centre (ATIC), etc.

m-agriculture pertains to Farmers Call Centre (Kissan Call Centre), Lifelines India, IFFCO Kisan Sanchar Limited (IKSL), Fisher Friend, Reuters Market Light (RML), Mobile Advisory Services by Krishi Vigyan Kendras (KVKs) of Indian Council of Agricultural Research (ICAR), m-Kisan SMS service and interactive voice response system, Mobile apps on agriculture (Agrimarket, Crop insurance, Kisan Suvidha, Pusa Krishi, CCE Agri Mobile, Digi Dhan, Soil health card mobile app, etc.

Hybrid ICT projects refer to e-Sagu, Digital Green, e-AgriKiosk, e-Villages, Knowledge Share Centres, Rupay Card linked Kisan, Credit Card, etc.

Level of awareness of digitized information sources among farmers in Bhagalpur and Begusarai districts can be seen from Table 2. It is revealed that farmers of Bhagalpur district are aware of all four types of digitized communication sources. It is evident that farmers are highly aware of mobile applications in agriculture with mean awareness score of 3.68.

More than 65 per cent of farmers use mobile for having information in Bhagalpur district. Farmers are also aware about web portals and hybrid ICT projects with mean level of awareness scores of 1.60 and 1.20, respectively. In contrast, farmers in Begusarai district are very less aware about applications in mobile to have farm related information. They expressed their awareness on ICT projects and web portals with mean level of awareness score of 0.85 and 0.60, respectively. Farmers are completely unknown to knowledge centers and m-agriculture due to illiteracy and lack of information and communication. Farmers are using digitized sources mostly for the Kisan Credit Cards for loan purposes.

In conclusion, farmers of Bhagalpur districts use friends, neighbours and other farmers as localite information sources for fulfilling the needs related to agricultural activity. Among personal cosmopolite, most farmers (97.50%) get information from agricultural officers. Among the mass media and ICT, all the farmers use to visit Kisanmela and 65.50 and 27.50 per cent farmers use mobile for information in Bhagalpur and Begusarai district, respectively. Level of awareness of digitized sources of information among farmers in Bhagalpur district is more than that of respondents in Begusarai district. Farmers of Begusarai are completely unknown to knowledge centers and ICT projects due to illiteracy and lack of information regarding these information sources.

As far as the extent of use of information and communication sources is concerned, farmers of Bhagalpur district use more number of personal cosmopolite sources. The frequency of use is found little more in case of mass media as compared to personal localite source, e-agriculture information sources used by the respondents of Bhagalpur is more than that of respondents of Begusarai. Farmer's of Begusarai use more personal cosmopolite and personal localite sources but have least preference for e- agriculture because of lack of knowledge.

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