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Impact of Information and Communication Technologies in Farming Communities

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Abstract: ***ICT can play a role in benefiting the resource strapped farmers with up-to-date knowledge and information on agricultural technologies, best practices, markets, price trends and weather conditions. Most of the developing countries have got fruitful results of the technologies. In the millennium year, the information technologies can bring new changes in the growth of agriculture field. The farmer of younger generation shall rely on this information machine by keeping in touch with electronic media to upgrade the old generation farmers and to improve this farming with scientific technologies. Media is one of the key players in the process of catalysing the development of any nation. Radio & Television have been more extensively used in most developing countries. The use of radio as mass communication tool for agricultural development has long been recognized. Electronic media serves as a source of advice to farmers to help them improving their production and income status. Internet, mobile phones, radio and television are most important tools of communication providing knowledge and information to farmers about agriculture. However, internet is also disseminating information regarding price and marketing of goods and farmers are receiving information within minutes from all over the world.***

Keywords: Internet mobile phones television and radio for Farming Communities

1. Introduction

Information and communication technology (ICT) is an umbrella term that includes computer hardware and software, digital broadcast and telecommunications technologies as well as digital information repositories online or offline. It includes contemporary social networking aspects, read/write interfaces on the web and file sharing systems online. It represents a broad and continually evolving range of elements that further includes television (TV), radio, mobile phones and the policies and laws that govern the widespread use of these media and devices. The term is often used here in its plural sense (ICTs) to mean a range of technologies instead of a single technology [Thapar Kapoor, R., 2014].

From the perspective of Agricultural Knowledge and Information Systems (AKIS), ICTs can be seen as useful in improving linkages between research and extension systems. Agricultural extension brings information and new technologies to farming communities, allowing them to improve their production, incomes, and living standards. The experience of rural tele-centers in the developing world shows that ICT can help in enabling rural development workers to gather, store, retrieve, adapt, localize and disseminate a broad range of information needed by rural families. ICTs in extension can lead to the emergence of knowledge workers that will result in the realization of a bottom-up, demand-driven paradigm for technology generation, assessment, refinement and transfer.

However, it was indicated that due to lack of knowledge and information about these technologies farmers are not getting benefit from these technologies in their working places. Furthermore farmers directly could not communicate with buyers and their customers for selling their production in good prices and track medical expenditure on their livestock as well as expenditure on farm chemicals to receive information from other stakeholders. Information and communication technologies are proving new approaches for communicating and sharing the information. Information and communication technologies are real source of information and knowledge for people including farmers and reduced the distance among different communities of the world (Herselman, 2003). ICT represents the formation of knowledge in rural areas of the developing world which can share the knowledge and information effectively harvested for agricultural and rural development. The use of ICT in agriculture for rural development is very important. There is need of such technologies in rural areas for increase the production of agriculture especially in African countries it has provided average access to agricultural information where farmers are getting many problems in connectivity of communication technologies (Meera, Jhamtani, & Rao, 2004). The information and communication technologies have brought significant changes in agriculture development and transfer information and knowledge through various technologies among farmers (Birkhaeuser, Evenson, & Feder, 1991). Last two decades information and communication technologies (ICT) in agriculture and rural development have spread very fast in all sectors of the society and also played vital role in rural development recently ICT has given significant results in almost all areas of rural life (Fawole & Olajide, 2012). ICTs have a key role in agri-food sectors to provide a fast information and knowledge about agriculture through all over the world. Their effective distribution of ICT can increase agricultural attractiveness by production, transaction costs, raising production, efficiencies and farmers' incomes, by providing more information and value to stakeholders (Rao, 2007). Recent year's information and communication technologies have been introduced in agriculture projects which have provided fruitful results in rural and agriculture development. Such kind of technologies can provide information on weather, prices, and profitable income.

Internet and Farming Communities

Internet of Things (IoT) technology is allowing farmers to connect devices to the internet in order to improve agricultural operations. IoT technology is allowing farmers to leverage the internet to reduce waste, better pest control, streamline livestock management, and increase productivity. Internet of Things is the development of modern agriculture productivity. It has an important significance in raising the level of agricultural development, improving the overall efficiency of agriculture, promoting the upgrade of modern agricultural transformation.

In the context of India the proletarian business enterprise funded by government and united nations companies have started out participatory, bottom-up method to beautify its development tasks in remote areas and applied digital knowledge centres (vkcs) geared up with computers, internet get entry to, and communique systems for farmers along with the usage of loudspeaker systems.

Data is the most valuable tool in our farm's toolbox. Without a reliable connection to the internet, data collection and its subsequent use is severely limited, " said Meagan Kaiser, USB treasurer, soil scientist and Missouri farmer. "Data gives us the ability to identify plant nutrient requirements and target those nutrients only where they are needed, which leads to increased yields without expanding acreage. It all begins with connectivity. These centres of the internet have played a vital role in the capacity building of farmers in their development. By using the internet farmers were getting the information about their production from different markets of their near cities as well as big markets of the country. Similarly obtain the information about agriculture new techniques and methods for increase their product. According to Sein & Furuholt (2009) the internet could also investigate in discovering the role of the intermediary. Farmers use mobile phones to communicate questions by the users to the Pallitathya Kendra Rural Information Centre. (KRIC) meanwhile the operators access the internet and then give the response to farmer about the agriculture issues and try to solve their problems.

Furthermore, to provide internet knowledge farmers' trainers were appointed to provide trainings farmers. In these circumstances farmers were not feeling any hesitation to obtain information about use of internet and getting the information about pesticides as well as market (Meera et al., 2004).

Mobile and Farming communities

Mobile based applications addressing the needs of agriculture and allied sector communities are bridging the information and communication gaps that exist between farmers, researchers, market and extension personnel. Among a wide range of advantages that mobile phones offer are their affordability, wide ownership, voice and data communication, and instant and convenient delivery of services. Due to the vast smartphones. This application provides price and commodity filter with respect to states, APMC and commodities, bidding filter and suggestion. Traders can enter fresh bid and/or bid price can be changed. Farmers can access information about various mandis in various states along with commodity prices.

In the rural areas of developing countries mobile phones spreading day by day and different organizations have launched many projects for the agriculture development and increase the production by using different technologies in agriculture. The uses of mobile phones among farmers have played positive impact in their income and productivity because before travel communicate with buyers and sell their product in good price (de Janvry et al., 1991, Grameen, 2007, Fafchamps & Vargas Hill 2005). Famers have another advantage of mobile phones they not go to market but directly communicate and ask the price of their production. In this context they save their money, time and energy (Muto, et al, 2011, Lee et al, 2013). The one of the most important role of mobile phones in developing countries were showed that farmers use the mobile phones for getting the information from different markets and weather information while other communicate with agriculture experts to obtain information about the use of pesticides in their farms. Mobile phone helps farmers in getting information about commodity prices in different markets. The farmers can get up-to-date information about various markets in different regions and can accordingly arrange transportation and labour services in time. The study was conducted to see the effect of timely information availability with mobile on productivity.

Mobile projects in agriculture extension can be clustered in two broad categories:

a) **mLearning:** Transfer of general know-how on farming techniques and trends, information on plants and varieties and how to grow them, etc. This mainly takes the form of one-way push communication to subscribers to a service (e. g. general information related to particular crops, weather forecast) or enables users to send queries to a database. More interactive forms also offer possibilities for exchanging experiences among farmers.
b) **mFarming**: Individual decision-support systems and services based on localized contextual information, i. e. delivering location-specific (spatial) information based on microclimatic patterns, soil and water conditions throughout the cropping season, in order to inform decisions on agricultural measures to optimize plant growth. In essence, this is about making some key elements of _precision farming 'available to small producers. M Farming requires remote sensing instruments and GIS. It can also involve advice systems such as remote diagnosis of diseases by expert.

Radio and farming communities

Radio is considered one of the oldest information technologies, and is one of the most popular in the developing world, partly due to its accessibility and affordability. While many rural people own a radio, those who do not may access programming through family, friends, or neighbours. Traditionally, radio has been seen as a one-way communication tool, providing information, news, and entertainment to listeners. However, when integrated with other communication tools (such as mobile phones) it can serve as a two-way platform for dialogue, to

further discussions about topics that interest listeners, and to create entertaining and interactive programmes. For farmers, radio has the potential to help connect them to technical specialists, policy-makers, other farmers, suppliers, or buyers. Radio, and particularly participatory, demand-driven radio programming as a tool for extension, complements existing agricultural information systems that emphasise interaction among stakeholders (farmers, public and private knowledge brokers, market actors, researchers, policy-makers, the financial sector, etc.) where no single actor is the expert

Programmes designed on topical issues have further endeared Simli Radio to the people. The station engages experts/resource persons as guests on these programmes and they (resource persons) are able to explain and make clear issues in their areas of expertise. Major areas include family life, moral education, gender and social inclusion, domestic violence, conflicts and conflict resolution, peace building, etc. On the programme guide of the station, *TehisumaSaha (Morality Talk Show)* and *Ti-Bom-Yem (Lets' Seek Knowledge)* are programmes designed to promote social cohesion. Resource persons chosen from within the area are used to discuss these issues in the local language.

There is a very high degree of listener participation in the programmes, and the rural audience likes to hear themselves and their neighbours. Although listeners in Tolon-Kumbungu District said they have limited choice of radio services Simli Radio has become a popular radio FM station for many people in the Northern Region. The radio is highly praised. Started as a small radio programmes production unit in the GDCP, today Simli Radio has achieved the goal of becoming a community radio. In terms of ownership community members feel they are part of the ownership because their suggestions or recommendations have been heeded to by staff of the station. They also participate in the programmes by way of making announcements and advertisement.

2. Conclusion

It was showed that still there is many problems were indicated by researchers about information communication technologies in the shape of lack of infrastructure in rural areas of developing countries. The ICT components may disseminate relevant, real, customized information to the farmers at appropriate time. Hence, ICTs provide a forum to reach masses easily and to make global and local information easily accessible to the stakeholders. Information dissemination in agriculture is cost effective, time saving and speedy through ICT. Mobile telephony has emerged as the foremost choice of the majority of the urban and rural people. Mobile phones were found as the most widely accessed tool among the farmers for communication and for accessing agriculture-related information particularly for the marketing of produce [5]. Researchers also reported that mobile phones were the most used ICT tool and highly accessible by the farmers [12]. It was found in a comparative study that the livestock farmers of Uttar Pradesh, who were using ICT-based information made significantly better decisions on various livestock practices as compared to ICT non-users [6]. Further, few studies reported that the ICT based initiatives helped farmers of Madhya Pradesh, Uttar Pradesh and Tamil Nadu of India, in reducing transaction cost while acquiring information and doing transactions in input and output markets. Furthermore, there is shortage of electricity in remote areas have also decreased the agriculture production therefore it is also important to create alternative sources for increase the agriculture production in these countries such as solar energy system for agriculture development. Most of developing countries farmers education level is also low therefore government of these countries should start technical and educational programs for farmers in their countries and enhance the capacity building of farmers by using information communication technologies that farmers can also get good benefit from these technologies and increase their income and improve their standard of life.

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