Role of Information and Communication Technology in Doubling Farm Income in Indian Sub Continent

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ABSTRACT

The e-agriculture approach for farm information generation, management and dissemination has been identified as key feature in seven point's strategy plan for implementation for doubling farm income by the year 2022. Digital e-learning is helping the farming community in terms of decision making on crops, commodities, products and prices. These initiatives are increasing at faster rate thus making information, technology, solution, actions available to the farmers at the clicks on their smart phones. Technical content in the form of multimedia, videos and presentations available at low cost and accessible through various ICT platforms greatly benefit the farming community. On this background this study is based on the sharing experience of ICT use for agricultural knowledge management and dissemination to farmers. Under the project application of various ICT based tools and platforms including social media include website, mobile apps, facebook, whatsapp, youtube, videoconferencing, SMS and mobile phone based help line. The mid review of the project activities showed encouraging results from the beneficiaries farmers. The study found that digital agriculture proved to be useful for technological empowerment of the farmers. It has reduced the dissemination cost of farm information and also reduces number of players in supply chain management. ICT based application also enhanced efficiency of the extension officials and reduced duplicacy of beneficiaries of schemes.

Key words: *ICT, ICT tools, Farm information.*

INTRODUCTION

Indian sub continent agriculture (SAARC Countries) is presently facing second generation problems like fragmented land holding, decline ground water level, reducing factor productivity, soil health and organic matter followed by deterioration of natural resources. All these issues have been become a threat to food, water and health and environmental security in time ahead. The mid sixties strategy for food grains production which were includes better technological interventions, input services and public investment in agriculture. The strategy paid dividends as the country was able to address severe food shortage, thereafter achieved food self sufficiency. As the impact of green revolution shades away slowly, the farmers' condition worsened and net contribution of agriculture sector in GDP is declined to about 17 % at current level. It is reported that output brings similar increase in farmers' income but in many cases it did not grow much with increase in output. The disparity was quite large and required a policy response to raise farmers' income at faster rate. The low and highly fluctuating farm income is causing detrimental effect on the interest of farming and farm investment as it also forcing more and more cultivators leave farming and search other better option for employment. It is apparent that income earned by a farmer from agriculture is crucial to address agrarian distress and promote farmers welfare. In this context, the Prime Minister of India Shri Narendra Modi calls for doubling farmers income by the year 2022-23.This is implies that ongoing and previously achieved rate of growth in farm income has to be sharply accelerated. To achieve the objective, strong measures will be needed to harness all possible sources of growth in farmers' income within as well as outside agriculture sector.Various research reports indicate that 64 percent of farm households have cultivation as their principal source of income. A large number (22 percent) have wages /salaried employment as the principal income source. About 4.7 percent and 3.7 percent have non-farm enterprises and livestock respectively as their principal income sources. The total income is highest for households having non-

farm enterprises as their principal income source. It has been reported that in the upper and medium rural farm households, non-farm incomes are increasing, while at the lower end, cultivation remains the principal source of income. At the upper end of progressive and rich farmers, opportunities are many in addition to farm income. Emerging technologies may assist in bridging the above gap.

The major source of growth operating agriculture sectorrelated to doubling farmers' income are (1) improvement in productivity (ii) Reduction in cost of cultivation(iii)Diversification towards high value crops (IV) Explore income sources based on agri activities (V)Better price realization of farm products.Thus, the objective of doubling farmers' income could be accomplished through development initiatives for technology generation and dissemination supported by policies and reforms in agriculture sector.Appropriate selection of ICT tools as per need and location of the rural area to communicate and educate the farm families will make the difference in addressing challenges of present day agriculture.It is widely accepted that access to information and Communication technology (ICT) can play a crucial role in the development of rural and remote areas and the people in such places. The programme envisages using ICT to facilitate the process of empowerment of rural women through delivery of information and skill enhancement.

The ICT and Agriculture

The role of ICT to enhance food security and support rural livelihoods is increasingly recognized and was officially endorsed at the World Summit on the Information Society (WSIS) 2003-2005. This includes use of computers, internet, GIS, mobile phones along with mass communication platforms such as Radio and television.Increasing the efficiency, productivity and sustainability of small scale farms is an area where ICT can make a significant contribution. Farming involves risk and uncertainties, with farmers facing many threats from poor soils, drought, flooding and infestation of disease and insects. Key improvements stem from information about pest and disease control, especially early warning system, precise inputs, new ways to optimize production and regulation for quality control.Awareness of up to date market information on prices for commodities,inputs and consumer trends can improve farmers' livelihoods substantially and have a dramatic impact on their negotiating position. Such information is instrumental in making decisions about future crops and commodities and about the best time and place to sell and buy goods. ICT application in marketing intelligence and information availability has improved the scenario of agricultural marketing pave the way for farmers empowerment. Further, communities and farmers organizations can be helped through the use of ICT to strengthen their own capacities and better representation when negotiating input and output prices and other relevant resource utilization. ICT enable farming community to interact with other stakeholders involve in agricultural sector for betterment in their farm condition.

ICT- Why it is important to south Asian Nations?

1. 70 percent population is directly or indirectly engaged in agriculture and related activities.
2. Dominantly Agrarian economy having significant contribution in national economy.
3. About one-fourth of population lives below poverty line.
4. More than 80 percent farmers belong to small and marginal category having less than 2 ha. land holding, thus needs to cover wider farming community for technology dissemination and implementation of social sector schemes.
5. Reducing role of public sector extension due to inherent problems and priority of target oriented works.

Challenges of ICT application in agriculture

1. Lack face to face relationship with farmers& Extension workers
2. Lack of infrastructure and trained field staff
3. Need to make public aware about benefits of use of ICT in agriculture.
4. Technical competency of farmers in use of ICT

Way forward

Developing ICT platform for farmers

Upgrading ICT skill of extension workers

Promoting young farmer based ICT groups in rural areas

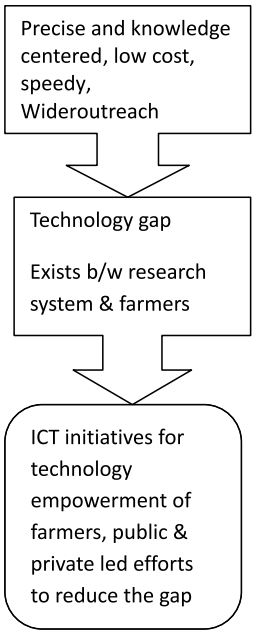

Fig.1. ICT Perspectives for doubling farm income

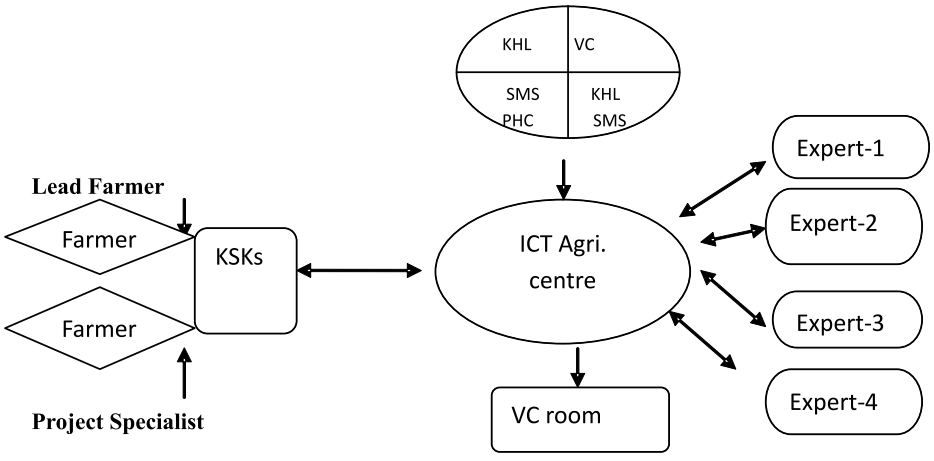

Fig.2. Information flow under ICT-AGRI.

Experience of adoption ICT for agri. Knowledge management and dissemination

Following features and technologies under umbrella of ICT are helping policy makers, scientists, Agricultural officials and Farmers in developing agriculture sector in desired direction.ICT can be applied to various phases of agriculture –crop selection, sowing, preventing crops from diseases, harvesting, packaging, transporting, marketing, selling, etc. Below mentioned tools and technology are used in agriculture for enhancing better farm productivity.

ICT Agri- Krishak Sewa Kendras (KSK): Under ICT Project, to deliver technical information, Six KSK- three in Sriganganagar and three in Hanumangarh district have been set up. The aim is to provide information to farmers by establishing Krishak Sewa Kendrain the selected villages. These KSKs have been managed by project staff and assisted by facilitator of the selected villages.

Website: To disseminate technical information related agriculture to farmers, the web portal (www.ictagrisgnr.org**.in)** has beendesigned and web hosting space has been developed under ICT project. Technical information of major crops of major the zone I b as per package of practices, horticultural crops, plant protection measures, water management, organic farming and schemes of agriculture department have been uploaded so that same can be visited by its preferential users.

Facebook: Facebook is the world's most popular free social networking website as it makes easy to connect with friends, family and colleagues and share pictures, upload photos and videos. It allows users to create a profile, add friends, send messages and join common interest groups.To use facebook in agriculture, afacebook page https://www.facebook.com/ICTAgri2016 has been developed under ICT project. In this page timely posts uploaded for farmers to disseminate new technologies related to technical information related with agriculture. Facebook pages of various Krishak Sewa Kendra's are being created to delivery information in the form of posts related to Crop Production, Protection, weather and other farmer's feedback. Technical post has been uploaded regularly by the project staff in the KSK wise facebook page. The content of the post has been developed from package of practices of zone 1 b of Rajasthan and discussion with the scientist working with this station. Farmers visit these pages regularly and provide their feedback. Need based information is also uploaded in the facebook pages of the KSK. Use of this facebook page by the selected farmers has been found very useful as the follower farmers obtain the information quickly. The utility of this platform for farm information dissemination could be judge by likes and feedback received from the users.

Whatsapp: Whatsapp is useful in agriculture to deliver farm information quickly to the farmers further if farmers diagnose any problem in their field they can get solution from the expert by sending the picture/ images. WhatsApp groups under the project have been formed of six Krishak Sewa Kendras and regular technical post being uploaded by the project staff regularly and also based on farmer's feedback. This has been used as a two way interactional platform by scientists and farmers to receive and send information speedily with low cost. The technical information received from the station are reliable and farmers follow the guidance. This platform also used for speedy solution of field problems sends by farmers.

Mobile apps:Use of Mobile apps has been become as popular platform for information exchange and problem solution. Three mobile apps has been designed and developed and uploaded in google play store for downloading free of cost. *KRISHI SANCHAR* (कृषसिंचार), Cotton Ganganagar (कॉटनगंगानगर), Kinnow Ganganagar (कन्निोगंगानगर)

YouTube: YouTube has been playing an important role in agriculture. It helps to upload and share videos related to new agricultural technologies innovations.Various technologies based video developed under the project have been uploaded in channel (ARS) for viewer farmers and students.

Videoconferencing : Video conferencing is the use of the Internet to achieve real-time video and voice communications. The most notable features of this model lie in a visual and face to face interaction, multiple services. With the help of video conferencing farmers can ask questions and show the pest samples to experts through video camera to help experts offer accurate diagnosis and effective solutions. Under the project a video conferencing facility has been developed through which face to face interaction of farmers and scientists of the station carried out. This facility is useful in disseminating farm information to farmers as well as provides speedy solution of field problems.

Twitter: A Twitter account (*twitter.com/ICTAgrirkvy)* has been opened under project to disseminate important technical information and project activities to KSKs farmers.

Kisan Help Line (KHL): Farmer's information needs and queries were addressed by the project staff through Kisan Help Line.Farmers of Sriganganagar region can contact Kisan Help Line (KHL) by dialling mobile number **9828840302** and asked their queries related to farming with the project staff.

Capacity development of farmers in ICT application: Four ICT Campaigns were organized in KSK villages to deliver technical information about field crops and use of ICT tools in agriculture. About 500 farmers and 150 farm women of KSK villages were participated in these campaigns.A Zonal Workshop on "ICT application in agriculture" was organized on 17 March, 2017 at ARS, Sriganganagar which was attended by Scientists,agricultural officials from line departments and farmers of KSKs.

The experience learned so far

1. Direct delivery of technical information to KSK farmers.
2. Farmers' dependency on Agriculture officials have been reduced in project villages.
3. Speedy, timely and need based information exchanges between agril. experts and KSK farmers.
4. Enhanced capacity of farmers in use of ICT tools.
5. The gap in technology sharing has been narrow down.
6. ICT use has save time money in technology delivery in agriculture.
7. Farmers of the project area shown higher motivation to adopt the agri based skill based enterprises.

CONCLUSION

The goal of doubling farm income in the country by the year 2022 have to be attained by making all out efforts suggested by the experts based on the Prime Ministers' seven point strategy. Application of ICT farm sector is one of them to make the difference. The wider use of ICT right from research to extension and then in marketing of farm produce surely show the path to achieve the desired goal of doubling farm income. Experiencesgained from the initiatives of ICT application in farm sector found encouraging which needs to further strengthen. Experience of the project ICT Agri proved positive and significant contribution in enhancing capacity of farmers as well astheir negotiatingpower with all stakeholders of agriculture sector.ICT initiative in the project areashown positive responses on improved technology availability, networking of farmers and participation in development programme of the area. With the ICT approach doubling farm income by the year 2022 could be accomplished by making the profession of agriculture as demand driven, farmer and market centered.

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