

21. Impact of ICT in Agriculture

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Introduction

Developing countries are always facing food shortages as the population growth rate is too high when compared to food production rates . Africa is an example of a region that has been facing a long-term food crisis due to the reasons above. Currently the annual African population growth rate stands at 3.1% which is higher than the current food growth rate. In the past decade, only a dozen countries have managed to achieve a food growth rate of 2.5% (Benson). Among some of the causes of food shortages are increasing food demands while the world is facing a decrease in natural resources. These include water shortages, declining soil fertility, effects of climate change and a rapid decrease of fertile agricultural lands due to urbanization.

ICT is used to accelerate the food growth rate by using technologies to perform tasks like predict weather conditions, learn about the latest methods to improve farming productivity and gauge the levels of supply/demand based on economic statistics. To maintain quality and supply, new approaches technological innovations are required to cope with these challenges and to enhance the livelihoods of the rural population. Three important roles which ICT can play are in enhancing agricultural production, improving market access, and capacity building and empowerment.

Agriculture sector is considered to be the most predominant sector of Indian economy. "From last few decades' research, extension and farmers efforts have all contributed significantly in enhancing food production from 50 million tonnes in 1950-51 to a land mark achievement of an estimated 265.04 million tonnes in 2014-15" (India 2016). The average annual growth rates of GDP in agriculture and allied sectors during the eleventh plan period (2007-12) were 3.3 percent . So, there is a quick need of vibrant, innovative and dynamic approach to be adopted for agricultural development in order to serve farmers better and achieve target rate. Further, land and water resources are almost reaching their limits; hence, achieving food security heavily relies on "Knowledge Resource". Therefore, ICT dissemination of adequate and accurate information is very essential to sustain agriculture,

Impact of ICT Application in Agriculture

Improving Information Availability and Delivery of Services for sustainable agricultural growth and livelihood are the main aims of providing ICT services to the farming community. The well accessed information by the ICT results in increasing productivity thereby increasing sustainability of agriculture. The importance of ICTs application is summarized on the following accounts:

- Improved information access and delivery of services to the farming community.
- Improved productivity and profitability of farmers through better advisory systems.
- Efficient and Increased utilization of information by stakeholders for their decision making.
- Faster and efficient redressed of farmers' grievances.
- Better monitoring of government schemes, which directly impact the farmers.
- Improved transparency and accountability.
- Direct feedback from farming community to the decision makers in the state.
- Efficient management (Development, Conservation, allocation and utilization) of resources

Advantages of ICT:

The advantages of ICT can be summarized as follows:

- Real economic value is added either because of saving resulting from the use of ICT or an increase in revenue or profitability.
- The language and medium used to communicate with the farmers were important contributing factors in the farmer's response to the programme.
- Good conceptualization and execution is achieved by including multiple agencies in win-win partnership.
- Trust is built with stockiest, support center operators and even the government by using local champions as facilitators. This is an essential element for success in any system.
- Planning is after augmented by bundling many services together with basic or original facilities to make them truly comprehensive.
- A additional faith in the system is created when a solution is developed locally.
- Other community members find it particular useful if other farmers are directly involve in training and can demonstrate a solution.

- In instance where farmers will be able to identify personally with a technology solution they would be more inclined to adopt it and continue to use it.

Importance of ICT in Agriculture

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1. Use of ICT in Enhancing Agricultural Production

Farmers (especially small ones) often face threats from many factors like poor soils, drought, erosion and pests. Key areas where ICT can help improve this is by providing up-to-date information about pest and disease control, early warning systems, new varieties, new ways to optimize production and regulations for quality control.

2. Improving Market Access

Providing up-to-date information on the market prices of commodities, inputs and consumer trends. This can improve a farmer's negotiating position and their livelihood, while enabling farmers to make better decisions about future crops and commodities, and also the best time and place to sell and buy goods.

3. Capacity-Building and Empowerment

ICT technologies can be used to strengthen communities and farmer organizations strengthen their own capacities and better represent their constituencies when negotiating in

and output prices, land claims, resource rights and infrastructure projects. Rural communities are able to interact with others via the use of ICT which reduces social isolation that they would otherwise be facing. Besides that, ICT technologies are able to make processes like law-making and land-title approvals more transparent.

4. ICT Services:

The Following are the Common Services Provided through ICT

1. ICT helps to improve Agricultural Resources
2. Provides information on Inputs Supply services
3. Services on Monitoring Agricultural Production
4. Service on Agricultural Produce Management
5. Agricultural Marketing and Sales Management
6. Service on Knowledge Management
7. Service of Risk Management
8. Services on Agro-Advisory and Agricultural Extension
9. Farmers Help Desk
10. Information about Scheme Monitoring and
11. Enterprise Resource Management

5. Information needs of Farmers

The main focus of ICT in agriculture is meeting the farmers' needs for information. The following are some vital needs of farmers that seem to be imperative for the growth and development of agriculture.

6. Market Information

Market information including price updates of agricultural commodities of surrounding districts on a daily basis. For farmers, the price updates of markets outside their villages have a higher priority so that they can compare the prices and choose to sell at the appropriate place.

7. Information on latest techniques and technologies

Continuous advancement in technology brings up gradation to agricultural machinery and techniques too. Up to date information regarding latest technologies in agriculture and animal husbandry is of immense importance for growth.

8. Information about subsidies and rural development programs

Provision of detailed information on Government initiatives for rural development for those the programs are addressed. The areas that suffer from droughts, floods or other natural disasters frequently receive grants and subsidies from the Government. Information related to these programs is particularly important to small and marginal farmers.

9. Weather forecasting

Weather forecasting related update information such as temperature, rainfall, humidity, winds forecasts etc.

10. Latest (best) packages of practices

Information on a best practice of cultivation is important need of the farmers. Information relating drought resistant varieties of certain crops can be important for farmers to withstand longstanding droughts in some areas.

11. Post-harvest technology Information

On post-harvest technology and storage is as vital as pre-harvest. Farmers are receiving awareness on the value addition of food processing.

12. General agricultural news

General agricultural news and information regarding to several agricultural events in villages and districts.

13. Information on insurance / claim processing

Detailed information on crop insurance schemes, the type of damage covered and compensation offered premiums to be paid, etc.

It means this study focus on how ICT is emphasized in agriculture sector and awareness and impact to the farmers. Agricultural economics by emplacing on the primary sector growth and development. Services and facilities those are available for farmers to become efficient and smart to enhance their agriculture production particularly. Information and Communication Technology is of utmost importance which determines the effectiveness and utilization of services and facilities to improve both farmer and nation at macro and micro level. In particularly the agricultural production of the nations and farmers cultivation method and knowledge depend on innovation technology as well as information technology. Thereby, Information and Communication Technology is very important variable in determining agricultural production and farmers' efficiency in farming activities. So present study focuses on how ICT is emphasized in agriculture sector and awareness and impact to the farmers.



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