

Role of Information Technology in Agriculture : A Review

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ABSTRACT

Information Technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business, education or other enterprise. This paper reviewed the India's IT Industry and in addition studied the Impact of IT on the Indian Agriculture. To improve the quality of agricultural products and production using information technology that requires efficiency and information in all sectors of agriculture. Information technology support new methods and ideas for precision and healthy agriculture used computers in farm, climate or weather forecasting, use of method and materials and kind of crops. In this paper I tried to find how information technology is useful for making choices to setting goals, improve planning and produce better agriculture products and study the key elements and basic issues of information technology in agriculture.

Keywords: Agriculture Sector, Information technology, Farmers, ITAA, ICT

I. INTRODUCTION

Information Technology (IT), as defined by the Information Technology Association of America (ITAA), is "the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware." IT deals with the use of electronic computers and computer software to convert, store, protect process, transmit, and securely retrieve information. Recently it has become popular to broaden the term to explicitly include the field of electronic communication so that people tend to use the abbreviation ICT (Information and Communications Technology). Basically IT is a valuable set of tools because it benefits you immediately and directly.

In addition Information Technology (IT) play important role in Agriculture. The potential of information technology (IT) can be assessed broadly under two heads: (a) as a tool for direct

contribution to agricultural productivity and (b) as an indirect tool for empowering farmers to take informed and quality decisions which will have positive impact on the way agriculture and allied activities are conducted.

Precision farming, popular in developed countries, extensively uses IT to make direct contribution to agricultural productivity. The techniques of remote sensing using satellite technologies, geographical information systems, and agronomy and soil sciences are used to increase the agricultural output. This approach is capital intensive and useful where large tracts of land are involved. Consequently it is more suitable for farming taken up on corporate lines. The indirect benefits of IT in empowering Indian farmer are significant and remain to be exploited. The Indian farmer urgently requires timely and reliable sources of information inputs for taking decisions. At present, the farmer depends on trickling down of decision inputs from conventional sources which are slow and unreliable. The

changing environment faced by Indian farmers makes information not merely useful, but necessary to remain competitive.

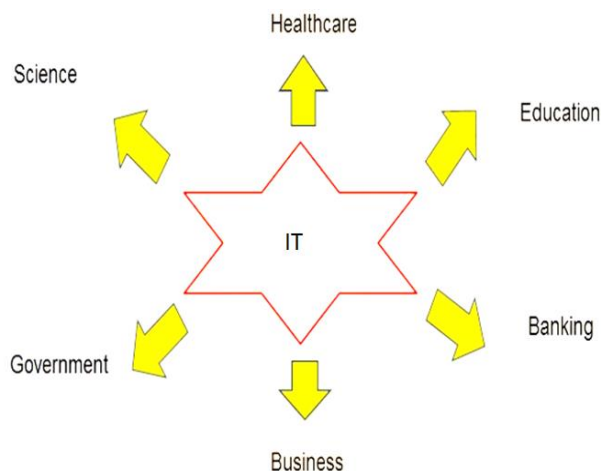


Figure 1: Introduction to IT

As shown in above figure IT play major role in all sectors and IT industry in India has played a key role in putting India on the global map.

II. METHODS AND MATERIAL

A. Role of IT in Agriculture

In the context of agriculture, the potential of information technology (IT) can be assessed broadly under two heads: (a) as a tool for direct contribution to agricultural productivity and (b) as an indirect tool for empowering farmers to take informed and quality decisions which will have positive impact on the way agriculture and allied activities are conducted.

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B. The Effects of IT on Agriculture

IT has made its way into the agricultural sector, and with positive results. To name a few, here are some of its effects:

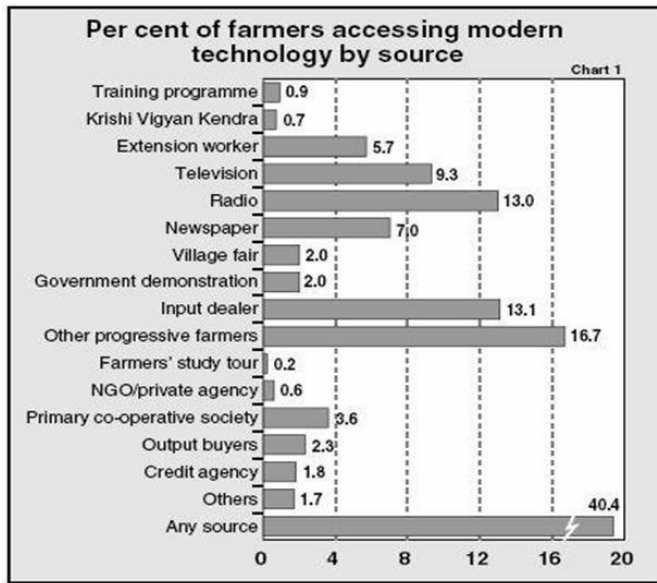
- Improved decision making
- Better planning
- Community involvement
- Agricultural breakthroughs
- Agriculture for everyone

C. Information Communication Technology (ICT) and Agriculture

Farming and Information Technology seems to be the most distantly placed knowledge sets in the world. Farming being the most primitive and most basic of the jobs and IT related being the most advanced and most modern. However we know the importance of farming as it is essential for life maintenance on the surface of mother earth and it is important for the developments in IT to aid for the betterment of farming to produce better. The types of ICT-enabled services that are useful to improving the capacity and livelihoods of poor smallholders are growing quickly. One of the best examples of these services is the use of mobile phones as a platform for exchanging information through short messaging services (SMS).

D. E-Agriculture

E-Agriculture is a new area of knowledge emerging out of convergence of IT and farming techniques. It enhances the agricultural value chain through the application of Internet and related technologies. Basically IT helps farmers to have better access to information which increases the productivity. It also enables him to get better prices through information of change in price in different markets.



Soil Management, Water Management, Seed Management, Fertilizer Management, Pest Management, Harvest Management and Post-Harvest Management are the important components of e-Agriculture where technology aids farmers with better information and alternatives. It uses a host of technologies like Remote Sensing, Computer Simulation, and Assessment of speed and direction of Wind, Soil quality assays, Crop Yield predictions and Marketing using IT.

In India, there have been several initiatives by State and Central Governments to meet the various challenges facing the agriculture sector in the country. The E-Agriculture is part of Mission Mode Project, which has been included in NeGP (under National E-governance Plan) in an effort to consolidate the various learnings from the past, integrate all the diverse and disparate efforts currently underway, and upscale them to cover the entire country.

III. CONCLUSION

Innovation in Information technology is expanding rapidly and touches almost all areas of human activity. Induction of IT as a strategic tool for agricultural development plays major role in development. From this review paper researchers get the knowledge about the role of information technology in agriculture. Many information communication technology help and support

farmers and other users for increase productivity and cost efficient. Information Technology has a great potential to overcome agriculture related problems. It can be a phenomenal achievement in Indian agriculture if it would be developed and structured according to the need and capability of farmers.

IV. REFERENCES

- [1] Shaik. N. Meera, Anita Jhamtani, and D.U.M. Rao,2004 "Information and Communication Technology in Agricultural Development: A Comparative Analysis of Three Projects from India" Agricultural research & extension network ,network paper no.135 January 2004 isbn 0850037050
- [2] Claire. J. Glendenning;Pier Paolo Ficarelli,2012 "The Relevance of Content in ICT initiatives in Indian Agriculture " Eastern and Southern Africa regional office, ifpri discussion paper 01180, April 2012
- [3] Amit Mathur, Megha Goyal "Role of Information Technology in Indian Agriculture", International Journal of Applied Engineering Research. ISSN 0973-4562, Volume 9, Number 10 (2014) pp. 1193-1198
- [4] P. Krishna Reddy and R. Ankaiah, A framework of information technologybased agriculture information dissemination system to improve cropproductivity, General articles, current science, vol. 88, no. 12, 25 june 2005
- [5] Blattman, C., Jensen, R., Roman, R. (2003): Assessing the Need and Potential of Community Networking for Development in Rural India, Information Society, Vol. 19, Issue 5, pp. 349-364.
- [6] Brewster, C., Wolfert, S., Sundmaeker, H. (2012): Identifying the ICT Challengesof the Agri-Food Sector to Define the Architectural Requirements for a Future Internet Core Platform, Proceedings of eChallenges e-2012 Conference, Paul Cunningham and Miriam Cunningham (Eds) IIMC International Information Management Corporation, pp. 1-8.
- [7] Cecchini, S., Scott, C. (2003): Can Information and Communications Technology Applications Contribute to Poverty Reduction? Lessons from Rural India,Information Technology for Development, Vol. 10, Issue 2, pp. 73-84.
- [8] <http://www.insightsonindia.com>