Proceedings of
National Conference on Innovative Trends in Computer Science Engineering (ITCSE-2015)
held at BRCMCET, Bahal on 4th April 2015

Applications of Information Technology in Agriculture Sector

Dr. Sunil Phougat
Assistant Professor
Govt. College, Jassia (Rohtak)
sunilphougat@gmail.com

I.INTRODUCTION

The agriculture scenario all over the world is undergoing a rapid change particularly after WTO Agreements came to existence. In order to take full advantage of the changing global agricultural scenario interconnecting of policies related to the pricing, marketing and trading of agricultural commodities are also reviewed. Simultaneously there is also need to review and revitalise the mechanism for transfer of technology under changing environment.

It is readily accepted that increased information flow has a positive effect on the agricultural sector and individual firms. However, collecting and disseminating information is often difficult and costly. Information technology (IT) offer the ability to increase the amount of information provided to all participants in the agricultural sector and to decrease the cost of disseminating the information. An understanding of the factors associated with IT adoption and use in agriculture will enable the development of strategies to promote IT adoption and increase the effectiveness and efficiency of information use in agriculture.

It is fact that access to information holds the key for successful development. Improved communications and information access is directly related to socio-economic development of any nation. Agriculture is one of the prospective areas in which IT can effectively be applied particularly for the social and economic development of the Indian agrarian community. However, rural population in our country still have difficulties in accessing crucial information in the forms they can understand in order to make timely decisions for better farming. Information technology is generating possibilities to solve such problems of different categories of end users. For this purpose electronic communications infrastructure needs to be established in the country for remote rural areas. The challenge is not only to improve the accessibility of communications technology to the rural population but also to improve the relevance of information to local development.

The present paper depicts the changing scenario of information dissemination exploiting the information technology to the farmers for their agricultural development.

II IT FOR AGRICULTURAL PRODUCTION AND MARKETING

IT is playing an important and vital role in agricultural production and marketing. IT allows farmers to save time on order and delivery and getting feedback. In the existing competition, there is a need to rapidly attract new customers as well as retain existing customers. In order to take the real status of agricultural production and marketing, there is an urgent need to develop the following items:

1. Farmers' crop database must be managed. The database includes the kinds of crops, the size of cultivated area, time
2. of harvest and yield. Farmers or the extension personnel transmit those data via the Internet to database server. Further, information provides the farmer with an important instrument for decision making and taking action.
3. Crops information service system should be created. This system analyzes the crop data to create some statistical tables. Farmers can access these statistical data by browsing the homepage and make their production plan. Changes within the structure of agriculture will probably have an impact on the selection and types of acquisition of software and other integrated systems made by the farmers.
4. Production techniques and information inquiry system should be created. This system integrates the production techniques and information, which are developed by experimental agricultural institutes and agricultural improvement stations. Farmers can find out relevant production information through this inquiry service system.
5. Production equipment's inquiry service system should be created. This system gathers information from the companies of seeds and crop production equipment to build the production equipment's inquiry service system. At the same time, allow relevant companies to access this system and enter their own data. Therefore, farmers can order the needed items through this system.

Information is critical to the social and economic activities that comprise the development process. Development economy has witnessed for revolutions in agricultural (i.e. Green, white, yellow and blue revolution), bio-technological, industrial and information technology. Good communication system and information system reinforce commitments to sustainable productivity. The Government of India is giving more thrust on agriculture, food and information technology sectors towards achievement of economic reforms to achieve high growth rate in production in the years to come.

The National Agriculture Policy announced addresses the challenges arising out of economic liberalisation and globalisation. It seeks to actualise the vast untapped growth potential of Indian agriculture, strengthen rural infrastructure to support faster agricultural development, promote value addition and secure a fair standard of living for farmers and farm workers.

The National Agriculture Policy lays emphasis on the use of information technology for achieving a more rapid development of agriculture in India. In pursuance thereof, the

Department of Agriculture & Cooperation (DAC) has formulated information technology (IT) Vision 2020. This vision inter-alia envisages that:

a) Information relating to agriculture sector would be available to the ultimate users – the farmers - for optimizing their productivity and income;
b) Extension and advisory services making use of information technology would be available to the farmers on round the clock basis;
c) The tools for information technology will provide networking of agriculture sector not only in the country but also globally and the Union and State Government Departments will have reservoirs of data base; and
d) The long term vision on 'Information Technology in Agriculture Sector' is to bring farmers, researchers, scientists and administrators together by establishing 'Agriculture on-line' through exchange of ideas/information.

In future, information technology will reduce the cost and time of information system. IT will bring new information services for agricultural development that will enable the farmers to have much greater control over the information channels.

III AGRICULTURAL IMPLICATIONS OF IT

Information technology provides reply a number of questions to the farmers. For example, what are the benefits of more irrigation? Is it cost-effective to apply additional chemicals? When is the best time to sell crops or buy inputs? With improved record-keeping, more detailed cost analysis and more sophisticated marketing strategies, farmers are making better decisions and earning higher profits.

The Internet is increasing communication and business opportunities within the agricultural community, which previously operated in the relative isolation of rural areas. Farmers, agricultural researchers, cooperatives, suppliers and buyers use the Internet to exchange ideas and information, as well as to conduct business with each other. Machinery, seed chemicals and other types of agricultural products can be purchased and sold online. People can search for jobs and employees.

It is to be noted that, the farmer is in no position to use IT directly. The literacy levels, language barrier as most of the application software are predominantly in English, cost of computers, poor communication infrastructure make it impossible for individual farmers, particularly small farmers to directly adopt IT. This calls for institutional effort to harness to create the necessary IT based services to farmers.

But in India, one prominent problem is that most of the farmers own small holdings, this seems to be difficult. In this situation, it may be made possible by adopting the corporate farming system, which is the need of the hour with advent of new agricultural policy. By taking up corporate farming, a group of farmers can put a computer and any educated young man from that group can undergo training of how to browse the internet. He can provide the farmers current commodity, analysis reports on world markets and trade for different commodities. Food market overviews provide valuable information about some of the most important export market.

IT can help to provide the information on the likely price distribution of key commodities over the coming years. Such information helps farmers and traders make decisions on when and in what ways to market their grain. Whether, to sell at harvest or store on-farm in anticipation of higher later in the season. When combined with enterprise budget data, the information can also be used in deciding which crops to produce in the coming season.

In order to encourage farmers to obtain best possible price, information on various agricultural output markets is also being provided. The objective of this activity is to provide status of price at different markets to facilitate farmer to move his produce to the market where he can expect better price. The entire exercise will not be useful unless necessary arrangements are made to ensure that the farmers utilise this facility.

The contribution of information technology in bringing down costs, increasing efficiency & improving productivity and thereby contributing to the bottom line needs no special emphasis. In the fertilizer marketing context, IT can play a major role in efficient sales operations, checking the marketing costs, safeguarding market share and providing efficient customer services. A well conceived IT set up can endow decision makers at all levels with better reflexes to effectively respond to market conditions.

IT helps producers monitor and respond to weather variability on a day-to-day basis. Solar-powered weather stations in the field can be hooked up to a farmer's computer to relay information about current air and soil temperature, precipitation, relative humidity, leaf wetness, soil moisture, day length, wind speed and solar radiation. Producers use the Internet to monitor prices quickly and as often as they like. Farmers from around the world can exchange ideas, post questions and get answers about specific topics.

Thus, it is said that the importance of information technology in the field of agriculture is emerging. The challenges of cost intensive, highly technical agricultural technologies are knocking the door to the farmers which is ignited by the globalisation. There is significant shift from agriculture supply driven to demand driven paradigm in new emerging and changing economics policy. It is viewed that future agricultural growth would be information driven. New information must reach to the ultimate user at the fastest speed to harness its potential benefits. Information like seed, water, nutrients and plants protection biological is one of the key inputs for successful farming. Knowledge intensive and precision farming techniques will be the guiding lines for sustainable agriculture in the future.

IV CONCLUSIONS

It can be rightly stated that though information technology in the agriculture is in growing stage in the Indian context. It has just started to spread it shoots, but with its immense potential to standardize and regulate the agricultural processes and solve the problems, it is sure that IT will be one of the most important areas in the near future for agricultural development.

It is hoped that information technology will bring a highly developed agriculture by its worthwhile contributions to the society by narrowing down the enormous gap between the researchers and farmers. It is suggested that the farmers are to be made aware of the utility of the Internet and other related information regarding information technology.

REFERENCE

[1] Bose A. N. (2003), "Rural Development Alternatives and Information Technology", *Indian Journal of Regional Science*, Vol. 35, No. 1, p. 1.
[2] Chowdary, T. H. (2003), "Information Technology: Wedded to Economic and Social Development", *Economic & Political Weekly*, Vol. 38, No. 12&13, p. 1315.
[3] Das Bibhunandini, "ICTs Adoption for Accessing Agricultural Information: Evidence from Indian Agriculture", *Agricultural Economic Research Review*, Vol.27, No.2, 2014, p. 199.
[4] Malik, Netrapal; Bhardwaj, Neelam; Kumar, B. (2001) "Village Information Centre: A Strategy of using Information Technology for Rural Development", *IASSI Quarterly*, Vol. 19, No. 3, p. 103.
[5] Parwez Sazzad, "Underdeveloped Supply Chain Dynamics of Indian Agriculture: Reference to Information Technology and Knowledge Management", *Asia-Pacific Journal of Management Research and Innovation*, Vol.10, No.1, 2014, p. 57.
[6] Rajan, M. A. S. (2003), "Information Technology for the Villages and the Digital Divide", *Indian Journal of Public Administration*, Vol. 49, No. 1, p. 1.
[7] Rakshit, Amitava; Badoria, P. B. S. (2001), "Information Technology and Agriculture", *Yojana*, Vol. 45, No. 6, p. 17.
[8] Ramachandraiah, C. (2003), "Information Technology and Social Development", *Economic & Political Weekly*, Vol. 38, No. 12&13, p. 1192.
[9] Rao, J. Rajeswar (2002), "Information Technology and Agriculture 'On Line': The Approach and the Schemes", *Agricultural Situation in India*, Vol. 59, No. 6, p. 337.
[10] Singh, B. P., Tiwari, Rupasi (2003), "Farmers Development through Information Technology", *Yojana*, Vol. 47, No. 5, p. 44.
[11] Singh, Seema; Kumar, Anil (2003) "Information Technology: An Effective Tool for Managing Sustainable Agriculture", *Agricultural Situation in India*, Vol. 59, No. 11, p. 717.