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Role of Information Technology in Improvement of Current Scenario in Agriculture and Rural Development

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ABSTRACT

Agriculture is still the back bone of Indian economy. More than 70 % of the population lives in depends on agriculture sector. Agricultural sector plays a very important role for the development of the country. Information Technology (IT) has become a vital component of successful business organizations. At present day, IT wings have embraced various departments such as Railway, Transport, Health Care Services, Educational Institutions, Postal Services, Banks, Co-operative Department, Supermarkets, Agricultural Sector and Rural Development etc. IT is connected to the global world and the dynamic is changing our life style and social consciousness. So there is a great need to collaborate IT with Agricultural sector and rural development. Agriculture has also been greatly influenced by IT. IT quickly and agricultural sector is becoming more and more visible. the widespread use of IT to make a direct contribution to agricultural productivity. In the current scenario, the role of IT assumes great importance and only with proper integration of IT with agriculture and rural sector. IT based agriculture will certainly enhance both quality and quantity of the farm produce in general. Now-a- days, IT is playing a vital role in agriculture sector, Farmers; get many benefits such as improvement in decision making, agriculture breakthrough, suitable planning, predication of weather and better selling opportunity. Today various internet based inventions have been designed to uplift the rural areas such as e-agriculture, e-education, e-health services, e-marketing, e-banking, e-finance, e-insurance, e-government and e-panchayat. IT is various components such as input devices, output devices, processors, storage devices, software operating systems, networking devices, transmission media and other accessories. In above study researchers get the knowledge about the role of IT in agriculture and rural development. The concept of IT in India is still in initial stage, but gradually the scenario will change. It should be promoted at large scale to improve the adoptability new technology by farmers. IT 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. Rapid changes in the field of IT in agriculture and rural, it is necessary to develop and disseminate making through electronic services.

Keywords: IT, IT in Agriculture, e-Powering Solutions, Decision Support System, IT usage in Agriculture and IT in Rural Development.

1. INTRODUCTION

Agriculture is still the back bone of Indian economy. More than 70 % of the population lives in depends on agriculture sector. Agricultural sector plays a very important role for the development of the country. Agriculture has also been greatly influenced by Information Technology (IT) in the present era, but the share of IT in agriculture is only 1.7 percent. So there is a great need to collaborate IT with Agricultural sector. IT involves electronic

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processing, storage and communication of information, where anything that can be represented in digital form is included in the term information. Macmillan dictionary of IT defines information technology as "the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics based combination of computing and telecommunications".

Information and communication have always mattered in agriculture. People crops, raise livestock, and catch the fish has evolved since then, they have sought information from one another. Manufacturers rarely have the same issues arise in season after season, even if it's easy to find to get the answers to these questions. For centuries, farmers in a village in the "same" crops can be planted, but over time, changes in weather patterns and soil conditions and pests and diseases epidemics come and go. Farmers cope with updated information and can also benefit from these changes. Agriculture is highly localized nature of the information must be specially adapted to the different conditions means that, not only because such knowledge, however, can be challenging.

2. Information Technology (IT)

IT has become a vital component of successful business organizations. There are no big organizations at present day without using IT. Today, small enterprises and petty shops also apply IT on a scale according to their need. IT is playing strategic role in organizations in terms of creating new methods of business as well as opportunities for new businesses. Such as E-commerce, E-Banking, E-Actions and E-services etc., IT solutions can help us take problems in core areas of governance and sectors. At present day, IT wings have embraced various departments such as Railway, Transport, Health Care Services, Educational Institutions, Postal Services, Banks, Co-operative Department, Supermarkets, Agricultural Sector and Rural Development etc.

IT can help to find solutions to management problems like saving time, money, energy, increasing number of members minimizing paper work, members waiting time in queues and good work of efficiency etc., IT is a basic resource in today's society. Without IT people cannot live in the society. Today most people are sending and receiving the messages through e-mail and internet and it reduces the opportunities of face–to–face communication. Any type of information (or) message can fly round the globe at a fraction of a second through technology tools. IT can handle most advanced computing systems and computing devices. All citizens can go to the window, pay the electricity bill, water bill, telephone bill, house tax bill, medical bill, take a driving licence, get the driving licence renewed, apply for a passport, access land records and get needed information through technology way.

3. ROLE OF IT IN AGRICULTURE

IT to improve decision making in agriculture for long has been viewed as having great potential. IT is connected to the global world and the dynamic is changing our life style and social consciousness. In all phases of agriculture, industry, IT management and business is essential for success. Agriculture has also been greatly influenced by IT. IT quickly and agricultural sector is becoming more and more visible. IT information we communicate to people how we compute information and how we use the information refers to. People must have a computer and IT. Part of a person, the process of assembling, and the agricultural industry must have the ability to manipulate information to make informed decisions.

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In the agriculture context, decisions which will have a positive impact on related activities are conducted. Precision farming, popular in developed countries the widespread use of IT to make a direct contribution to agricultural productivity. Satellite technology, geographic information systems, remote sensing, using the techniques of agronomy and soil science is to increase agricultural production. Including large tracts of land where this approach is capital intensive and useful. As a result, it is more suitable for the cultivation taken on corporate lines.
Significant indirect benefits of IT in the power of the Indian farmer, and remains to be exploited. Indian farmers urgently take the necessary decisions in a timely and reliable source of information inputs. Currently, farmers are slow and un reliable, trickling down from the traditional sources of inputs depends on the decision. Faced by Indian farmers to remain competitive in this changing environment is not only useful, but not required, making information.

IT AND AGRICULTURE IN THE FUTURE

IT to meet the needs of the Indian farmer, as outlined in the previous sections, it is possible to develop appropriate systems. User-friendly systems, especially in local languages with the material, farmers and other people interested in working at the grassroots can produce. These services are available in all parts of the country to make the power of the Internet can be used to create or dedicated networks.

Indian agriculture to meet the full spectrum of application packages and databases is a huge task to create a task. The long-term agricultural policies are covered to provide a complete list of all the areas. The designs changes and provide service to each of the areas specified in the list can be taken as a guide for the development of appropriate systems. Catering for a place in our country, specializing in various aspects of Indian agriculture has the advantage of having a large number of organizations. These organizations require applications & databases and services can play a crucial role in the design. The task of achieving rapid results modularization, and will facilitate better control.

As it is, many organizations have already developed systems results in their area of specialization, it may be useful to get these programs in India has outsourced software companies. To facilitate the rapid deployment of applications and will give a boost to India's software industry. In order to avoid duplication of efforts, the users, the standard interface for monitoring progress in evolving a comprehensive design and will have an advisory role to play, which could be useful in promoting a coordinating agency.

4. NEED OF IT IN AGRICULTURAL SECTOR

Everybody knows that agriculture is the mainstay of Indian economy. Indian agriculture has surpassed many obstacles and successfully moved from the status of being a self-deficient country to a self-sufficient one in food grains as well as in several other sectors of agriculture. But there are threats of this achievement being soon gaped down by the monstrous growth of population. The natural resources are depleting day by day and it is going to be a big challenge to feed the population. To ensure food security and maintain sustainable agriculture so that our country is hunger free in coming years, we need to strengthen farmers by timely and expert suggestions on recent technologies applicable in agricultural.

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The needs of agriculture are:

- ✓ To reduce knowledge gaps and increase knowledge sharing for increasing productivity and boosting growth in rural areas.
- ✓ Empowering farmers with relevant and timely information about different crops variety.
- ✓ To reduce farming risks.

Rural areas are predominantly under developed with poor infrastructure, electricity and roads. Rural people are very few as producers of information, and left with less access than urban people to the information and networking resources. Naturally they have fewer possibilities of orienting technology to address their specific needs. In the current scenario, the role of IT assumes great importance and only with proper integration of IT with agriculture and rural sector, the problems can be solved and country can move towards a sustainable production. Recognizing the vast scope of information exchange, many corporate houses have launched their IT-enabled services in the rural areas and have been successful beyond doubt. While introducing IT in agriculture and rural development, what needs to be taken care of its adoption of cost effective IT-based systems. The task is difficult and the path jerky, but once achieved in totality, this will go a long way towards improving the living standards of India's rural masses. IT based agriculture will certainly enhance both quality and quantity of the farm produce in general.

NEED OF IT FOR FARMERS

Farmers need of information on generated technology from the research system to apply them for agriculture production. This technology may include harvesting time, optimal planting, right method of diseases control, storage and processing methods, soil control methods, storage and processing methods and many more. Farmers also take decision about what and where to sell their farming products. Information not only help farmers to make beneficial decision in short period, it is also help to decide what will be produce.

PROBLEM IN USING IT IN AGRICULTURAL SECTOR

IT is getting to reach India at a large scale. Poor educational status, functional literacy on use of computers, poor infrastructural facilities like lack of power, public utilities are hurdles towards gaining access to farm information. The second aspect is most of the information available on the websites and internet is on English with a web content of 64 percent which 5 percent of the Indian population knows. The third problem is lack of credit towards buying IT devices wherein it cost a period of 40 months annual income in rural areas to buy a computer, a basic input of information revolution. The last aspect is absence of community group efforts in rural areas where people are not organized and divided on religion, caste and other social basis is a hindrance gaining access to IT.

5. BENEFITS OF IT IN AGRICULTURE SECTOR

Now-a- days, IT is playing a vital role in agriculture sector. Farmers, Researchers and users get many benefits from this. Some benefits are following

1. IMPROVE IN DECISION MAKING

IT is very useful for farmers, researchers and other person to take any decision regarding future. From having necessary information any farmers can make decision concerning their agricultural

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activities as what should be growing and where should be selling. From the exchange of knowledge from various areas and various territory farmers be more conscious before decision making.

2. AGRICULTURE BREAKTHROUGH

Scientists are developing new and improve grains or techniques to help winter crops become strong against the cold. Framers of all worlds may benefits from the same breakthrough simply by being connected from the agriculture world. Sharing of this information helps everyone to progress much easier through resources made available by IT.

3. SUITABLE PLANNING

IT has provided farming software which can keep better track of agriculture and predict yields. By using of modern farming technology and methodology, farmers can better control on their crops.

4. PREDICTION OF WEATHER

IT is also very help to make prediction about weather. Through satellites and other technology farmers get the knowledge about future weather condition, it will be starvation, dry, hailstorm, rainfall and other natural conditions.

5. BETTER SELLING OPPORTUNITY

IT also provide the knowledge about what and where is suitable market for better opportunity of selling product on fair value.

APPLICATION OF IT IN AGRICULTURE

Information is power. More the person is informed, more he is empowered. Information is a flowing asset which is continuously generated, disseminated and gets utilized. A flow of information needs an unhindered information communication system. But is a paradox for rural India that it is one of the least communicated populations of the world. Recent advances in space science and ICT has ushered in a great opportunity for this neglected mass of India. Internet provides huge, advanced information on just a click of the computer mouse. The rural masses are largely disconnected with the outer world. Internet is the only way to make them global and also an effective medium to introduce the world to those rural masses and their socio-cultural aspects. Various internet based inventions have been designed to uplift the rural areas. Some of them are:-

E-AGRICULTURE

E-Agriculture means IT in agriculture, IT means internet which not only provides technology for farming methods but also provides the best source to get farm inputs and the best destination to sell their produce at the best price. Internet based interventions is also suitable for extension agents and field workers in providing updated information to the villagers. Several technologies have been developed for taking into consideration the agro-ecological situation of the region and entered in we world from where users can utilized it by surfing various rural portals. The government has established several Community Information Centers (CICs) and is trying to

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convert PCOs into cyber Kiosks form where the rural community can get internet facilities. ITCs *e-chaupal* also provides internet facility in the rural areas. The warna Wired Village Project of Maharashtra, the information village project in pondicherry, the NDDB have established IT-based machine for milk co-operatives.

E-EDUCATION

The rural population is largely illiterate and uneducated. Many educational experts are convinced that the only way quality education can be delivered to masses, cost-effectively, is through IT. Developing a program to train villagers core group including women and enthusiastic youth, will ensure that IT reaches the common person even in remotest parts of the country.

E-HEALTH SERVICES

Rural population is always struggling on the health front. IT tools are available to improve communication, consultation and two ways refer all linkages from primary health care to tertiary health care level. Telemedicine is a marriage of IT and medicine which in the near future is going to be benefit the rural masses at large. Telemedicine can help in remote diagnostic services and extension of super specialty hospital treatment for people in the rural areas.

E-Marketing

For rural areas, proper disposal of farm produce at better price is always a perpetual problem. Internet not only provides the prevailing price of the farm produce but the place of disposal also. Internet has strengthened the marketing information and marketing intelligence services. By sending e-mails to the buyer, one can sell and negotiate the price of produce without going to the buyer's door and paying much to the middlemen.

E-BANKING

To provide the banking facility and to develop banking habit among the rural population, e-banking is essential. It facilitates e-finance and e-insurance to the farmers quickly and without much paper work. ATM facilities are becoming very popular among various e-banking services. Queries related to loan and savings can easily be obtained through internet having e-banking facilities.

E-FINANCE

Rural population are a resource poor mass. They need credit for running their business. Breaking the monopoly of private creditors and timely disbursement of credit without much paper work is possible through e-finance.

E-INSURANCE

Rural population is having almost negligible insurance cover. If the head or working manpower unfortunately dies or is subjected to any accident, such family meets the misery of poverty. Government of India has not only started a subsidized scheme to insure the rural population but

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also their crops, so their livelihood must do not get much affected from unforeseen calamities. e-insurance is designed to cover it all at faster speed without much paper work.

E-GOVERNMENT

ICT is enable route of governance. Through e-governance, government can connect to the rural masses with their administrator, so they can ask their problem status of solution. Various World Bank and centrally sponsored e-governance projects are in operation, e.g. Meghdoot in Madhya Pradesh and Bhoomi in Karnataka. NICNET network operation over 700 VSATS are being used to provide nationwide data communication link between district, and state capitals for administrative planning and other applications.

E-Panchayat

For the first time in the country, electronic knowledge based Panchayat is introduced in Andhra Pradesh by National Information Centre (NIC) of Department of Information Technology (DIT). As a pilot basis in Ramachandrapuram Gram Panchayat in Medak District of A.P., here all the functions of Panchayath are computerized and web enabled. Internet based service for birth and death registrations, house tax assessment and collection, trade license, old age pension, work monitoring, financial accounting, MIS for Panchayath are all being executed in computerized e-panchayath system. Additional services such as market information and agricultural extension service are also being provided to the citizens of the village from e-panchayath.

6. IT AND ITS' COMPONENTS

Agricultural development and for the welfare of rural India as a strategic tool to have in place the necessary IT infrastructure, IT induction is required. Rapid changes in the prices of the various components of the downward trend in IT and IT penetration in rural India, targeted at a large scale make it possible. IT Listed below are some of the various components of the broader context of the factors to be noted:

1. INPUT DEVICES

Radical improvements are seen in the context of the Earth Such as keyboards, mouse devices, scanners, as human beings communicate with computers. In the early days of digital cameras to capture possible, and to be of good quality graphics and a large collection of video clips. The small size and are becoming increasingly affordable, the digital camera, low weight, to educate farmers to open up the possibilities of computer-based demonstration clips. The digital camera also recommend solutions to quickly remove the US from an expert who can facilitate the location at which the plant stress-related images, movie clips can be used to upload.

2. OUTPUT DEVICES

Monitors screens, printers and plotters, data projectors supports high resolution and high quality output. Farmers in the use of IT-based services, the quality of the output devices have the potential to generate renewed interest. The lightweight, portable data projectors easily to a wide audience, agricultural extension service can be carried out by employees. Similarly,

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speakers but also for farmers to incorporate voice-based training can be connected to the computer.

3. PROCESSORS

Processors increased processing speed of computers. Currently, Intel processors based on the significant processing of data on the client side makes it possible for the PC is available in the range.

4. STORAGE DEVICES

More hard disk drives and computers have become common in the PC category. This facilitates access as quickly as possible to store information which is significant at the local level. Similarly, high-capacity floppy disk drives, CD's are connected to networks as soon as possible, information on the locations to transfer large volumes of forms. The storage devices are also used for much-needed data. As a precaution, many companies are working away from the place of places to store their backups.

5. SOFTWARE OPERATING SYSTEMS

Systems are available which act as an interface between the user and the machine. Graphical user interface (GUI) has become a prerequisite for end users accepted. Microsoft 'Windows' in India is becoming a favourite. Which can support complex user requirements, application soft wares are available. Office automation packages, Groupware applications, complex DB solutions for store data and information, communication products, solutions based on remote sensing and geographic information systems for the shelf solutions are also available.

6. NETWORKING DEVICES

The ability of a modem, used to convert data from digital to analog and vice versa, which is employed for the popular use of telephone lines, has increased. So that they are not exposed to the outside environment integrated internal modem is available in the computer. Such routers, and other networking devices, such as the ability to make it as easy as possible for large networks with data transmission, which makes increased.

7. TRANSMISSION MEDIA

The data transfer takes place has undergone a radical transformation, by which the media. Although the main issues of reliability and low bandwidth telephone lines yet still popular in India is the source. High-capacity cables, optical fibre, radio, wireless local loops, satellite broadcasting and based on a combination of these different solutions are already in use in many parts of the country.

8. OTHER ACCESSORIES

Uninterrupted Power Supply (UPS) devices Longevity ensure IT equipment is crucial to provide backup methods. Need to exploit the potential of solar power in rural areas to provide a possible solution to the shortage of power pack.

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7. CONCLUSION

In above study researchers get the knowledge about the role of IT in agriculture and rural development. Many ICT help and support farmers and other users for increase productivity and cost efficient. Indian Government is also focusing on the policies and tools for the betterment of the agricultural sector, and farmers. IT is a key to make better decision making for farmers. The concept of IT in India is still in initial stage, but gradually the scenario will change. It should be promoted at large scale to improve the adoptability new technology by farmers. The nation is striving to find ways and means to keep its increasing population adequately fed. It is facing the problem of low productivity and also facing challenges posed by liberalization. IT 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. IT is expanding rapidly and touches almost all areas of human activity. Farms that farmers can participate in the creation of web portals for direct sale that are so necessary, and system for data manipulation and store related any activity of farming. It is providing a better quality of life in rural decision making capabilities can be improved by the quality of information inputs. IT to meet these challenges and to remove the fast growing digital divide rural India can play a major role in facilitating the process of transformation. Rapid changes in the field of IT in rural, it is necessary to develop and disseminate making through electronic services. IT penetration in rural to lead a national strategy needs to be drawn.

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