



Information Technology Towards Agricultural Development: New Initiatives And Strategies

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ABSTRACT

After the initiation of liberalization reforms of 1990's, rise of new economy stocks or sunshine sector in the Indian economy great changes had taken place throughout the nation. The entry of corporates in areas of public sector dominance, competition between private players, access to newer technologies and communication devices empowered by new legislations had seen the rise of "Information revolution" in India. Information has become a resource and the quick transfer of information at greater speeds with precision in meeting the targeted audience are initiating great changes in all walks of Indian life. India is becoming an information hub of the world and its usage in all core sectors is bringing about good dividends in the form of improved production and productivity gains, value adding with development of human resource in all sectors. Today India has surplus food grain and cereal stocks lying ideal in Food Corporation of India godowns by this increased production and productivity process. However at present the agriculture extension set up, regarded as one of the largest in the world, face new dimensional challenges from different strata of population in dissemination of agricultural technologies. With farmer population of 110 million spread over 600 districts in 6000 blocks of nations reaching them with diversified farm packages suited to their needs is an uphill task. No longer traditional delivery mechanisms are effective in reaching farmers cost-effective, and there need to be use of innovative communication devices in designing, developing suitable farm modules in reaching the farmers. This process needs newer initiatives, regulatory mechanisms, participation of diverse stakeholders in the change agency process. Information Technology need to be seen not only as a technology processes but also as a reform to raise the standard of living of Indian population. All strata of the Indian population particularly the rural population, farmers need to be included in this process as future fears may witness divide in terms of "people with information" and "people without information". With information becoming a resource for growth, development and sustainable prosperity the future years must have India witnessing electronic connectivity in rural areas. Farmers need to be educated, trained in handling information and information devices to explore the possibilities of trade in international markets in marketing their produce reaching the prescribed standards of respective countries. Policy makers, administrators should develop a frame work of action taking into account private corporate, public institutions, all stake holders in this process achieve consensus for purposive growth and development in making India a developed nation within 2020.

Introduction

After the initiation of liberalization reforms of 1990's, rise of new economy stocks or sunshine sector in the Indian economy great changes had taken place throughout the nation. The entry of corporates in areas of public sector dominance, competition between private players, access to newer technologies and communication devices empowered by new legislations had seen the rise of "Information revolution" in India. Information has become a resource and the quick transfer of information at greater speeds with precision in meeting the targeted audience are initiating great changes in all walks of Indian life. India is becoming an information hub of the world and its usage in all core sectors is bringing about good dividends in the form of improved production and productivity gains, value adding with development of human resource in all sectors. This phenomenon had seen the rise in contribution of service sector in Indian economy from 31.8% in 1950s to 56.1% in 2002-03 as in the case of developed economies around the globe. This process has also witnessed migration of high skilled workers in this respective sector to other nations in search of jobs and high remuneration pay packages. Earlier this was regarded as "brain drain" by the traditional economists but the rise in foreign exchange as a result of this process from Rs.6345 crores in 1994-95 to 46,427 crores in 2002-03 within a shorter span of time had made the newer generation of economist regarding this as "Brain gain".

This aids is reinventing the economic theories of older ages which refer goods as tradable and not service. In the domestic front also great resource mobilization has taken place in information technology enables services sector [ITES] from

Rs.6345 crores in 1994-95 to Rs.46,427 crores in 2003-04. All these developments has its impact in production, marketing and research. Agriculture sector employing a vast human resource is also a prey to this revolution. This had made M.S. Swaminathan, the father of Indian green revolution remark this a "Rural Indian is in urgent need of knowledge empowerment and the challenge before us now is to enlist technology as an ally for the movement of economic, social and gender equity". So for sustainable development of farm population improving the information and communication technology access [ICT] to farms hold the key for human resource development scenario in the country [Senthil kumar,2003].

Present Status of Technology Transfer in Agricultural Sector

The history of transferring farm technologies in agricultural sector shows that it is a great success and a harbinger of green revolution of earlier 1960s. This task has early 1950's from 51 million tones to over 200 million tones in 2000, while the Indian population nearly tripled from 350 million to one billion during the same period. The success of Indian democracy and agricultural Policy planning owe a lot to this magnum opus task finding only few replications around the globe. The process of India depending upon cereal exports from other countries for its domestic grain needs had been replaced by achievement of self sufficient in food production is not a mere achievement, under varied democratic governments of diverse political ideologies.

Today India has surplus food grain and cereal stocks lying ideal in Food Corporation of India godowns by this increased

production and productivity process. However at present the agriculture extension set up, regarded as one of the largest in the world, face new dimensional challenges from different strata of population in dissemination of agricultural technologies. With farmer population of 110 million spread over 600 districts in 6000 blocks of nations reaching them with diversified farm packages suited to their needs is an uphill task. No longer traditional delivery mechanisms are effective in reaching farmers cost-effective, and there need to be use of innovative communication devices in designing, developing suitable farm modules in reaching the farmers. This process needs newer initiatives, regulatory mechanisms, participation of diverse stakeholders in the change agency process.

Changing Needs of Farming Population

The farm priorities of farmers and the nation has undergone a radical shift from increased production and productivity replacing marketability of agricultural produce being viewed as a tool in aiding growth, development, sustainable progress and prosperity of farming community. Farmers need newer technologies with improved production efficiency, less input cost, market intelligence information, national and international agricultural price trends in aiding (or) taking up cultivation aspects in their fields either on individuals (or) group basis. The use of new farm management techniques like contract farming, precision farming and related issues is also gaining momentum in technology transfer as India needs to cater the needs of domestic markets and international markets in changing WTO scenario of near future.

Information Technology in Agriculture

Computers had started penetrating rural areas especially in villages with access to electricity throughout the nation. This process is being initiated by central and respective state governments, Private Corporates, Non-Governmental Organisations, Educational and Research Institutes like State Agricultural Universities, KVK'S and so on. The different forms of computer application are detailed

below,

(1) Expert Systems:

Expert Systems are computer programmes that emulate the logic and problem solving efficiencies of a human expert. It is of high use to the farming community in the present multi disciplinary approach. At present in agricultural extension, the expert system developed offers information about different agro-climatic zones, their farming conditions, technology packages for the field level extension functionaries to communicate farmers about newer agricultural technologies and offer solution to agricultural problems. Some of the expert systems developed in India are GRAPES expert system [Pest Management System for grapes], POMME expert system (To manage diseases and insect in apples), COUNSELLOR expert system [To Manage insects and diseases on wheat]. In Anadaman and Nicobar Islands an expert system on "Agricultural farming in A&N Islands" by V.Venkatasubramanian and A.K.Bandyopathy deals with all aspects of agriculture, plantation crops, livestock and poultry production, fisheries and farming system research and extension. It is boon to islands extension system of the nation and is available in CD rooms in a user friendly module.

Electronic Mail [E-Mail]

Electronic Mail [E-Mail] is a computerized information management system to send and receive messages. The message may be text, graphic or pictorial representation. Farmers in Tamil Nadu particularly in southern districts contact the Agricultural College in Research Institute, Madurai over E-Mail to address their farm problems. Even photons are sent through mail and agricultural experts offer solution to their problem. Specialized E-Mail packages are developed using user friendly packages and Graphic user interfaces (GUIs).

Electronic Journals

An electronic journal is an electronic form of a journal. It is an electronic network that could provide on line access to sci-

entific papers by everyone concerned like authors, editors, publishers, referees and so on. The electronic journals are also published in regional languages and farmers can gain access to it paying up nominal fee (or) utilize free of cost facility to gain access to new farm information.

Geographical Information System

Geographical Information System [GIS] is computer assisted method and procedure for the capture, storage and analysis of data having localized information on geographical form. GIS has been used in developed countries with strongest practical application. Data are inputted in the system from different sources by overlaying of maps and retrieved on the basis of user needs. GIS dimension in modern extension therefore helps to overcome difficulties in planning need based specific extension programmes.

Databases

Databases are collection of records from books, journals, monographs, reports and mostly secondary farm literature. This are located in State Agricultural Universities, Research centers and in few Non-Governmental Organizations like M.S.Swaminathan research foundation, Chennai. Farmers can access this databases for getting huge volumes of information. There are extremely useful to researchers, research scholars, administrator and policy makers in designing, diverging and reaching conclusions.

Interactive Computer Video Technology (ICVT)

It is one of the most popular multi media technology that has been widely used in rural India. It links the computer to auto-video replay in such a way as to provide the trainee with individualized truly interactive instruction (Chandra Kandan, 2000). ICVT contributes to solving Agricultural problems with practical importance there by upgrading the quality of extension services in developing nations.

Interactive Video Disc (IVD)

Interactive video disc is a multi media technology using video disc player which has access to video images stored on a two channel audio disc. This is specially valuable in the Indian context as it becomes a bilingual package. Other media of information such as text, graphics, animation and digitalized audio supplements the audio on video discs.

Agriculture Websites

Websites are hoisted in Internet domain with specialized agricultural information suited to the needs of farmers. Farmers can access this websites and gain newer information and use the available services. Many organizations and corporate have Question and answer (Q&A) sessions for the farmers to ask questions on farm problems and get needed solution. For instance, ITC Company has started e-chaupal throughout India for rural villages to gain electronic connectivity in utilizing the services and product of the company by the farming community. Through this concept farmers can gain information on the biggest agricultural distribution system and sell their agricultural products directly to consumers, private industries there by reducing middleman, commission agents in agricultural trade, (Aiyar, 2004). E-commerce with international trade organisations is also being explored by farmer organizations in Punjab and Haryana a part of this initiative within the purview of the phytosanitary standards setup by the respective trading blocks.

Commodity Trading in Agriculture

The history of commodity trading in India started back in 1875, when the futures market kicked off. Later in 1960's Government of India banned commodities trading. But in 2003 the government reversed restrictions on future trading in commodities opening up new investment ventures. The forward market commission (FMC) the apex regulator allows trading in commodities through the four national exchanges across the country. Multi commodity exchange (MCX); National Commodities and Derivatives Market (NCDEX); National Commodities and Metal exchange (NCME) and National Board of Trade (NBOT). India commodity future market including agri-

cultural products is worth Rs.36,000 crores. NCDEX started operations on January 2004 with 10 commodities and 200 members and generates Rs.100 crore daily. The commodity market is driven by economic fundamentals of demand or supply and to monsoon of a particular commodity. Future years may see farmers with a touch of mouse trading their agricultural produce at commodity market with domestic and international operators.

Rural Problems in using Information Technology

Information technology is get to reach India a large scale. Poor educational status, functional literacy on use of computers, poor infra structural 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% which 5% of the Indian population know. The third problems is lack of credit towards buying information technology 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 (or) group efforts in rural areas where people are not organised and divided on religion, caste and other social basis is a hindrance gaining access to information technology.

Strategies for Effective Electronic Connectivity

- Rural people need to be encouraged to form groups (or) registered bodies wherein they can gain access to schemes being offered by financial institutions, Apex bodies like APEDA for starting up community computer centers or kiosks.
- The Rural development programme called PURA- Provision for Urban Amenities in Rural Areas need to identify rural clusters with growth and offer electronic connectivity wherein kisans can gain access to market. (Abdul kalam,2004)

- The web content should be made on national language (Hindi) and also in regional languages for the farmers to benefit.
- All development departments, public utilities, transportation services should have information technology as a platform in offering their services like payment of bills, cheques etc. this will make rural population use this services from respective villages reducing their transport to nearby urban centers.
- Long term credit loans and subsidies can be given to self help group, youth clubs in starting cyber cafes in rural areas by Ministry of youth, Rural development Tribal affairs and state governments to bring about increased electronic connectivity in rural areas.

Conclusion

Information Technology need to be seen not only as a technology processes but also as a reform to raise the standard of living of Indian population. All strata of the Indian population particularly the rural population, farmers need to be included in this process as future fears may witness divide in terms of "people with information" and "people without information". With information becoming a resource for growth, development and sustainable prosperity the future years must have India witnessing electronic connectivity in rural areas. Farmers need to be educated, trained in handling information and information devices to explore the possibilities of trade in international markets in marketing their produce reaching the prescribed standards of respective countries. Policy makers, administrators should develop a frame work of action taking into account private corporate, public institutions, all stake holders in this process achieve consensus for purposive growth and development in making India a developed nation within 2020.

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