

# Role of Information Technology in Rural Development

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## Abstract

*The government of India has been giving high priority to rural development with the objective to achieve rural –urban integration in growth processes. The focus of development is to include disadvantaged sections of society i.e., 'equality in growth' and 'equality of opportunity'. This paper presents a review of the various study made by different investigators, researchers, and agencies regarding implications of ICT tools on rural societies of India, significance and role of ICT in rural development; rural community development and after knowing the observations made by various researcher, investigator and experts concluded that ICT play a major role in environmentally sustainable rural development and rural community development. ICTs have remarkable contribution towards improvement of economic and social development of societies in rural India. In developing country like India, to create information rich societies, to empower poor people, to reduce digital divide, sustainable development of rural community's dissemination of ICT in grassroots level of rural villages is necessary.*

*Keywords: Rural Development; Communication & Technology; Rural Health; Rural education; Skill Training.*

*Classification-JEL : O33, R11, M15*

## 1. INTRODUCTION

Strengthening, Modernisation and development of rural India is a crucial question, today. If rural economy can not be upgraded as required, the upgradation of whole country has no meaning. Prime Minister Shri Narandra Modi has called a social mission with a vision of poverty less India till 2030. But, to save nearly 8.35 crore families from the demon of poverty is a difficult task to handle. Prime Minister has initiated to take necessary help of information technology in this task.

The rapid development of agricultural

and rural areas can be sustained with the reach of information in remote villages and towns of the country through information technology. Without the sustainable development of remote rural areas, the socio-economic development of the country is impossible. In today's world, information technology is being used in a easy manner in every area of human life. This technology is playing a chief role in the development and scope of education, health, infrastructure, trade, industry, commerce and marketing services etc. In this way, information technology revolution has transformed the

vision, understanding and status of human life.

The commerce and trade activities are the one where information technology has contributed a lot. Information technology has helped to diversify the localised trade and commerce beyond the boundaries in the shape of e-commerce. Financial literacy and Financial inclusion are another big hurdles of developmental pursuits of Indian economy. Information technology, hereto, has played a catalytic role in bringing more population under the banner of financial literacy as well as financial inclusion. In the areas of education, information technology, again played a marvelous role as it made the access easy and simply. MOOCs, e-pathshala and other platforms are providing easy patterns to educate remote and geographically weak area masses, too.

This way, by the implementation of information technology in such crucial areas where the development was stagnant, the condition of Indian Villages has improved over the years. Not alone, the inclusive development is initiated and achieved but also the progress and failure report has also started to reach government in due course of time. Therefore, a lot of wrong assumptions about rural life has started to improvise. New generation of employment, easy education, speedy infrastructural development, change in market, agro-innovations, decrease in corruption, prosperous rural life and other such changes have come due to information technology. These change not only upgraded the life urban but also the life rural areas.

Rural Areas in India need development more significantly rather than urban areas. Because, any plan or policy without the upgradation of rural areas is absolutely null and void. Government schemes such as Deendayal Upadhyaya Gram Jyoti Yojana (for rural electrification), Pradhan Mantri Gram Sadak Yojana, Rurban Mission are focused on rural development. Effective implementation of these

schemes would depend on the efficiency of our administrative machinery at ground level, but one more factor that can make or mar the government efforts is availability of right technology for rural needs.

So, the present scenario forced the authors to conduct a research on "Role of Information Technology in the rural development of Western Uttar Pradesh."

## 2. PROBLEM OF RURAL DEVELOPMENT

In the very start of five year plans in India, the only meaning of rural development was full exploitation of land based natural resources i.e., agriculture, forestry and animals. It was thought upon that the growth and development of these three are the only means of adequate rural development. And, the rural people also adopted this thought as a perfect development plan for rural India.

But in the coming years, it was realized that the engine of growth could only be speed up if overall development would be executed beyond the boundaries of rural and urban. People need socio-economic-industrial upliftment also in the rural areas. They need education, health, social equality and employment so that they can raise the standards of their living even in rural areas.

## 3. OBJECTIVES OF THE STUDY

Thus, this paper focuses on the role of information technology in rural development in India. Its main aim is to explore the application of information technology in rural development. Based upon above discussion, the objectives of this paper are listed as below:-

- i) To study the role of information technology in agricultural development.
- ii) To study the role of information technology in animal and dairy development
- iii) To study the role of information technology in rural people welfare.
- iv) To study the role of information technology in rural educational development

- v) To study the role of information technology in rural health-issues development

#### 4. METHODOLOGY

The present paper is based on secondary data as an empirical study. The secondary data is collected from websites, various national and international journals, articles, publications, conference papers, reports.

#### 5. REVIEW OF LITERATURE

Information technology industry is one of the most important subjects of the new India. It has created a last longing impact on the development and other aspects of growth. A brief and latest review of available literature is executed here to know, to define and to explain different aspects of present research subject i.e., role of information technology in rural development. It's main purpose is to fill the gap in research by following and quoting the methods, objectives and limitations of available empirical research studies. Therefore, keeping in mind the main subject of this research work, the related literature is reviewed as under-

Atul D et.al. (2016) conveyed that Information and communication Technology (ICT) is the combination of three magic revolutionary words, 'Information', 'Communication' and 'Technology'. 'Information' is disseminating and promoted using 'Communication' and transmitted through 'Technology'. The term 'Information and Communication Technologies' (ICT) can be used to embrace a multitude of standalone media, including telephone, television, video, tele text, voice information systems and fax, as well as those requiring the use of a personal computer fitted with a modem. The latter can include direct dial-up services such as electronic banking, file exchange and closed information services.

Dwarka Nath, H.D. (2013) says that One of the major problems facing our country today is the continued migration of people from rural

to urban areas which is essentially a reflection of the lack of opportunities in the villages. Unemployment and poverty continues to plague the Indian economy despite almost half a country of planned development. The magnitude as well as the percentage of unemployment and under unemployment has been on the rise. However, the achievement in the field of employment generation is far below the target. Development of infrastructural and marketing arrangements for the growth of non-agricultural activities in rural areas is the need of the hour. Greater flexibility in special employment programmes and their integration with sectoral development to ensure their contribution to growth and sustainable employment would help in generation employment opportunities in rural India. The expert is of the opinion that an expanded programme of development and utilization of waste land for crop cultivation and forestry, would help in generating regular employment to the rural masses. The problem of unemployment in rural India can be eradicated only by increasing productivity of dry land agriculture. In this context, we need a constitution of greater emphasis on research and development.

Patel, Amrit (2014) is of the view that with the process of liberalization, privatization and globalization, India's economy has been witnessing metamorphic transformation. As it is evident now that share of agriculture had phenomenally declined to 13.7 per cent with 1.8 per cent agricultural growth rate in 2012-13. Despite slower growth rate of agriculture due to a plethora of factors/ reasons India's agriculture has made significant performance viz. [i] India ranks the first in the world in the production of milk, pulses, jute and jute-like fibres and second in rice, wheat, sugarcane, groundnut, vegetables, fruit and cotton production. [ii] Fruits, vegetables, meat and fibre accounted for 38 per cent of the total produce by weight in

2000 and 45 per cent by 2010. However, while the quality of the products and the productivity of field crops, fruits, vegetables, milk, eggs, meat, fish per unit of area and resources are very low their wastages are substantially high which the nation cannot afford. Agriculture today is far more integrated with the macro economy and no longer 'rural only' in orientation. Accordingly, in the context of the changing rural employment scenario from farm to non-farm sector, the Government's policy initiatives may now have to prioritize development of secondary and tertiary sectors of rural economy, though not at the cost of farm sector which has and will even have its unique place and role in country's economy in the years to come. Government in a public-private-partnership mode will need to evolve policy and develop programs that can progressively move rural population from farm to non-farm sector. Following are the broad-based areas under farm and non-farm sector which have unfathomable potential to generate rural employment.

Singh, K.M. & Singh, Pushpa (2018) write in their paper that the National Alliance for Mission 2007 and the Common Service Centre Scheme to establish telecenters country-wide in India are clear examples of the government's dedication to enhance rural access. Ensuring sustainability is a major challenge. Cost-sharing arrangements between local stakeholders, such as health centers, farmers' organizations, schools and local government bodies are taking place. Also, payments for local services can generate revenues to sustain tele-centers. Price information projects in India report that farmers are willing to pay for price information from the gains made through access to it. Rural information center, also provide a learning environment for farmer groups on the use of Digital technology but also on jointly solving problems in their livelihoods.

Wadhwa, Manjula (2018) discusses that with an average rural literacy rate of 71 per cent

most rural Indians are not likely to sacrifice an entire day's wage to travel to a bank branch which is open between 10:00 AM to 5:00 PM. Intermediaries like NGO's Self-help Group, Micro Finance Institutions, semi-formal delivery channels like Banking correspondents and Business Facilitators are being used by banks to improve access to credit and savings. However, these channels in their current form, offer limited services and suffer from many a lacunae. A part from this, many banks view the rural market as a regulatory requirement rather than an economic opportunity. Since rural households have irregular income and expenditure patterns, the banks have high Non-performing loans in rural areas. The issue is compounded by the dependence of the rural economy on vagaries of monsoons. The loan waivers driven by political agenda, further aggravate the bankers' woes.

Balwant Singh Mehta, (2013) conducted a study by using field Survey method to explore the socioeconomic impact of mobile phone usage in rural areas of the two Indian States such as Punjab and Bihar and the survey revealed that, mobile phones have reduced the cost of accessing information and helped users to make communication with their relatives and migrant family members and to gather timely information related with agricultural and nonagricultural purposes and also Mobile users get benefit by obtaining timely information on a variety of subjects, including on employment opportunities and higher education for their children, funds transfer, etc. The author also noted that in Punjab state, peoples were early adopted new technologies and hence there is high usage of mobile value-added services (MVAS) and innovative uses like transfer of funds and agricultural related information. Finally the author made conclusion, With the spread of mobile use, it is very likely that it could be an arena of innovative activity, reducing costs and thus increasing incomes at the 'bottom of

the pyramid'.

Jayade, K.G et al. (2014) published an article entitled as "Study of Information Communication Technology in Agriculture in Vidarbha Region of Maharashtra State of India." and concluded that ICT has improved the economic condition of the farmers in Vidarbha Region of Maharashtra state; ICT is advanced tools to disseminate the modern agricultural knowledge to the farmers and it plays an important role for the development of economy by enhancing the effectiveness of agricultural market, productivity and competitiveness in Vidarbha region of Maharashtra state. ICT and Mobile technology not only improved the package of practices but also improved the agriculture through knowledge dissemination by e-agriculture but also reduced the gap among agricultural scientists, extension worker and farmers.

The present review of literature shows that none of the research paper is able to reflect a comprehensive picture of the subject of this paper. There are papers, reports and books but a less is written about future possibilities and challenges of information technology in the development of rural India. The main challenge is the reach of information technology to the person living below poverty line.

#### 6. ANALYSIS AND DISCUSSION OF ICT APPLICATIONS FOR RURAL DEVELOPMENT

The above discussion takes towards a discussion that arouses a dire need for information technology based rural development of India. Information technology is proving to be a successful method to reduce the gaps in inclusive development of rural masses as well as urban population. Poverty is a product of improper employment opportunities. Information technology on a side increasing the teaching and learning index among rural masses and on the other side, it is opening up new

employment opportunities. The amalgam of both education improvement and employment opportunities is providing multiply platforms to eradicate poverty in a phased manner.

These small and strong efforts are contributing to a well-managed rural development system through information technology. The following points better evaluate the role of information technology in rural development-

a) Information technology in agricultural development : One of the challenges for farmers in rural India is their lack of access to market information. This creates an imbalance in bargaining power with buyers. Other than market information, a farmer needs to know about weather on a day to day basis, about new technologies and various government schemes for farmer welfare. Up till now in India among various media, radio, television, literature and newspapers are certainly most utilized by the extension workers to transfer agricultural technology to the huge illiterate and literate segments of the rural populace. Through Information technology exact information can be cater to the farmer quickly. The information-technology applications are-

- (i) SRIJAN (self-Reliant Initiatives through Joint Action) in Madhya Pradesh, India. It is an Agricultural smart application. It aims at monitoring Soya beans production. This app resulted in increased productivity, profitability and efficiency.
- (ii) Jayalaxmi Agrotech : This application updates farmers crop specific information by means of Audio/Visual tools. It works without internet with information in regional languages.
- (iii) M-Kissan: It is an Agricultural application that provides related information in regional languages as per the user choice. Farmers crop specific information like pest control, crop pattern, soil type, weather

information, nearest market places, current market prices and so on are available through this application.

- (iv) M-ARD : Information were being provided in regional languages as per the user choice. This application provide farmers crop specific information like, weather information, nearest market places, agricultural market prices, government services and extension services.
  - (v) M-AGRI (IKSL, IFFCO, GSMA), M-Krishi : It is an agricultural smart application. It also provides information in regional languages to the farmers like pest control, crop pattern, soil type, weather information, nearest market places, current market prices and so on.
- b) Information technology in animal and dairy development : 'White Revolution' is a policy for rural India. This emphasise upon the Animal and dairy development. There are four major programmes that ensures information technology based initiatives as given under-
- (i) Pashudhan Sanjeevani: It is a programme that works on telephone calls and through internet. It gives an opportunity to receive various ailment, husbandry and dietary treatments at the doorstep of the farmer or at the point where animals are living.
  - (ii) Nakul Swasthya Patra : It is a 'health card' that can help the dairy farmer to keep a record of his livestock, as well as ready information on the age and dates on which he should get his animals vaccinated and inseminated. The card would keep track of the veterinarian who has given the medicine, vaccination, artificial insemination and genetic background of the bull or semen used.
  - (iii) e-Pashudhan Haat : it wants to create an online platform to buy and sell cattle. It is a known fact that farmers depend on informal channels such as friends and

relatives to buy and sell their cattle. Therefore, a need for a virtual livestock market was long felt. 'Health Card' of an animal integrated with ePashudhan Haat, can help farmers in buying the desired cattle. This can be associated with Pashu Posahn app also. Also, farmers would be able to keep the past record of their cattle e.g. health, fertility, production, etc.

- (iv) National Genomics Centre: Many concepts of genetics and breeding could be encouraged to develop dairy sector. Another area for IT application in dairying can be automatic milking systems which are computer controlled standalone systems that milk the dairy cattle without human labour involved.
- c) Information technology in rural people welfare : Every year, government spends billions on the welfare of the poor. As around two-third of the total population and large number of the poor reside in rural areas, most of these welfare schemes are targeted at the rural populations. Use of information technology can improve the efficacy of these schemes, plug leakages and eradicate corruption. Some examples are described as follows:-
- (i) Pradhan Mantri Fasal Bima Yojana: A farmer will have to send the photo of his damaged crop to authorities on net. Then the government will also access damage through satellite imagery of the field. After that insurance claim will be directly transferred to farmers' account. Thus, delays and corruption in payment of claims would not be there. This scheme has the potential to change the way farmers' look at crop insurance.
  - (ii) Pradhan Mantri Krishi Sinchai Yojana: IT can be used here also for Smart Agriculture by measuring soil moisture through and then automatically supplying water through drip irrigation.

- (iii) Public Distribution System : Corruption can be restricted by connecting the ration shop through internet and using biometric authentication system of beneficiary.
- (iv) Direct Benefit Transfers: The government is trying to give subsidy directly in the bank account of the beneficiary. This has effectively stopped black marketing of subsidized LPG cylinders.
- d) Information technology in rural educational development : India has achieved universal enrollment for education at primary level. But one worrying fact is that learning outcomes of enrolled children are very abysmal. Attention through information technology tools in education can improve the learning among the kids. The use of projector and computer can make children understand complex concepts easily. The Government is promoting the use of information technology as:
  - (i) The establishment of smart schools, which shall be technology demonstrators.
  - (ii) Provision for engagement of an exclusive teacher for information technology, training all teachers in use of information technology.
  - (iii) Development of e-Content: National Award for teachers using information technology in schools in the teaching learning process.
  - (iv) e-Basta : It is conceived under Digital India Initiative to make school books accessible in digital form as e-Books to be read and used on tablets and laptops.
- e) Information technology in rural health-issues development : Healthcare is the right of every individual but lack of quality infrastructure, dearth of qualified medical functionaries, and non- access to basic medicines makes it difficult for the poor to access Medicare. There are few Primary Health Centres in villages and many of them do not have doctors as no one wants to be posted in

remote rural areas. This can be solved effectively through Telemedicine in which a doctor sitting in a city can interact with the patient in the remote village and prescribe medication. This is not only cheap but also convenient and less time consuming. Also apps like 'MeraDoctor' are launched by private sector which offers WhatsApp-like chat sessions between patients and licensed doctors to answer questions. Government has also adopted ICT in health by issuing biometric smartcards to the beneficiaries under Rastriya Swasthya Bima Suraksha Yojana.

## 7. CONCLUSION

Information technology has immense potential. If it is made available to all, it can bridge gap between BPL and APL masses. Following are some points that are concluded-

- (i) Information technology can sustain rural development.
- (ii) Information technology does not differentiate in socio-economic development to all.
- (iii) The benefits that remain hidden and could not be disseminated on a large scale to the cast citizen of the country, are easy to approach through information technology.

The main stress is only to develop such mechanism that may generate self-reliant, economic, user friendly and large impact information technology system.

Now, India is rich enough in information technology. It has sufficient members of learning and training centers, supportive technology providers and manufactures. The information technology dissemination, awareness and literacy are the main challenges. The government has to take constructive steps with social servants so that a strong base can be raised quickly.

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