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# ROLE OF ICT IN RURAL DEVELOPMENT OF INDIA

**Dr. Sangita Agrawal[1]**

[1]Assistant Professor, Dept. of Business Economics, Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India

## 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. it includes 'equality in growth' and 'equality of opportunity'to all.*

*The present strategy of rural development is to provide better infrastructure, for agriculture development, public health services, business and financial services in rural areas. In this context, information technology holds the potential to offer a new approach to rural based development. Today IT has emerged as a strategic source for achieving macro goals of the economic development process.*

*This paper focuses on the role of ICT in solving the problems of rural economy in India. Its main aim is to analyze and examine the impact of this technology on rural infrastructural growth and development. The paper also discusses the various positive and negative trends of this technology to carry various rural development operations.*

**KEYWORDS:** *Information Technology, Rural, Agriculture, Health, Business Services.*

## INTRODUCTION

India consists of more than 500 villages. It is known as a rural economy as 60 percent of its population resides in the villages. For the development of the country, rural reconstruction and development has been a major thrust of economic planning. 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. it includes 'equality in growth' and 'equality of opportunity' to all.

The present strategy of rural development is to provide better infrastructure, for agriculture development, public health services, business and financial services in rural areas. In this context, information technology holds the potential to offer a new approach to rural based development. Today IT has emerged as a strategic source for achieving macro goals of the economic development process. It is the most effective tool to be used in the processes of development that can facilitate environment conducive to lead a better life of a rural people.

This paper focuses on the role of ICT in solving the problems of rural economy in India. Its main aim is to analyze and examine the impact of this technology on rural infrastructural growth and development. The paper also discusses the various positive and negative trends of this technology to carry various rural development operations.

The paper discusses the role of information technology in terms of four factors. They are

(a) Agriculture
(b) Rural Health
(c) Business Services
(d) Rural Development.

The study is based on secondary data. This is collected from various government statistical reports and websites. Statistical tools are analyzed meaningfully to arrive at logical conclusions.

## REVIEW OF LITERATURE

Singh N (2014), 'Information Technology and its role in India economic development', paper discusses the various aspects of supply and demand of rural ICT based services on several ongoing projects of rural India. He pointed out several benefits of ICT and challenges of these projects (TARAhaat, ITC e-choupals, Aksh, Drishtee N-Lounge (WLL technology) associated with technical implementations and adaptations in terms of software, hardware and maintenance. He suggested that there is a broad range of services that can be provided to a cross section of rural households, even at relatively low levels of income.

Chitla Arath (2012) 'Impact of Information and Communication Technology on Rural India', paper discusses how ICT can be used to promote developmental programs. She suggested that an integrated framework for ICT interventions in rural areas is required for community needs, knowledge and inputs along with inputs of other stakeholders to eradicate poverty.

Chandrasekhar and Ghosh (2011) 'Information and Communication Technologies and Health in Low Income Countries: The Potential and the Constraints' paper outlines the potential offered by technological progress in the ICT industries for the health sector in developing countries. He suggested that there are three ways which can bring about improvements in health in developing countries. First, ICT as an instrument for continuing education enable health workers to be informed and trained in advances of knowledge. Second they can improve the health and disaster management services to poor and remote locations and third it can increase transparency and efficiency of governance.

Reddy (2011), 'Banks on rural India way to economic development' discusses the skewed distribution of bank branches. He suggested the need for e-banking services for the development of rural economy.

Bhatnagar Subash (2010):- 'ICT use in Rural India- Opportunities and Challenges', discusses the role of ICT for development and empowerment of the rural poor. He opined that ICT can be used for democratic decision making, effective governance and lifelong learning. He suggested globally demonstrated ICT opportunities in education, health, economic opportunities, e-government and in advocacy and empowerment Innovation and creativity in organization leadership, strong project management, business models are the various keys to success of ICT application.

## INFORMATION TECHNOLOGY AND RURAL CONNECTIVITY

Information technology means the way we use information, the way we compute information and the way we communicate information. It is vital to a nation, to connect the rural areas in this world of digitization. GOI has allocated in 2014 Rs. 500 cr. for its Digital India program campaign that aims to set up broadband services in rural India.

As per the report of Boston Counselling Group (2014), nearly 50 percent of the active Internet users (AIU) in rural areas, access internet, using mobile phones, community service centre (CSC) and cyber café. 38 percent of the AIU use mobile phone as the main access point. The report pointed out that total number of user in rural areas who used mobile devices as internet, increased from 0.4 percent to 4.4 percent in the year 2012 to 2014.

**Table-1 Internet Access in Rural Areas**

| Internet Access | Micro level(main points in percent) | Macro level(all points in percent) |
|---|---|---|
| Cyber Café | 26 | 49 |
| Mobile Phone | 38 | 48 |
| Home | 27 | 36 |
| Friends House | 2 | 19 |
| Other Public Installed Computer | 2 | 7 |
| Post Office | 3 | 3 |

*Source: - IAMAHMRG Mobile Internet India Report 2014*

Internet connectivity in rural areas was considered as a very complex and a difficult procedure due to the vast geographical diversity of the country. Initially, the scenario of internet and broadband penetration was very bleak. One of the major obstacles is the lack of reliable internet channels and the non-availability of data enabled devices. In rural areas, internet was perceived to be uncomfortable medium, unnecessary and irrelevant. The scenario has changed over the years and now many companies offer multiple-channel internet facility for social and economic operation purpose. Some of them are listed below.

**Table-2 Status of Internet Connectivity in Rural India**

| | |
|---|---|
| BSNL | Most preferred internet services provider and hence covers large areas as compared to the other services currently in India. |
| AIRJALDI.NET | It's a commercial network. It has solar powered wireless relays that are mounted on small poles to create a connection network. |
| SATELLITE INTERNET | Termed as VSAT(Very Small Aperture Terminal) It includes wireless connectivity |
| PROJECT LOON | It's a Google project. Its uses high altitude balloons floating in the stratosphere at approx. 20 km above sea level and creates Arial wireless network. |
| FACEBOOKS INTERNET ORG | Project by Facebook that aims to provide internet to those who do not have any access to it. |
| MOBILE WHITE SPACE | Termed as super Wi-Fi. It is allocated through radio frequencies |
| MICROSOFT PROJECT | This project provides free internet services through Doordarshan spectrum bands. |

*Sources:-www.nextbigwhat.com*

ICT is now an integral part of rural economy for various development strategies. It is widely used in agriculture, service, education and health sector.

## INFORMATION TECHNOLOGY AND AGRICULTURE

India is mainly an agricultural country. Though, the share of agriculture to the total GDP declined significantly, still it represents the largest sector in terms of employment and employs nearly 60 percent of workforce

Today also, in India, agriculture is considered as a way of life than as a mechanism of business. Due to its subsistence nature, farming is still not taken as a mode of remunerative or commercial farming as a whole. Lack of proper understanding about the soil, seeds, use of fertilizer, and water management leads to low productivity. However, the problem of low productivity is very complex and it attributed to many causes. Table-3 outlines the contribution made by ICT for various agriculture problems faced by farmers.

**Table-3 Role of ICT in Indian Agriculture**

| Problem of Agriculture | How Information Technology supports Agriculture |
|---|---|
| Monsoon dependent | The Indian metrological department is now using Dynamical modeling. This modeling forecasts the atmosphere at any given day or an hour through exploration technique which uses vast amount of computing power to stimulate the information accurately. |
| Supply channel bottleneck-<br>For instances, seeds and fertilizer | AGRIDS :- Agriculture information dissemination system provides information on soil data, seeds, plant properties , uses of fertilizer etc. |
| Lack of market understanding | AGMARKET- a centric portal for agricultural marketing information system. It provides easy access to commodity wise, variety wise, daily prices, other marketing related arrivals information. It is spread all over the country. |
| Storage facilities | Environmental monitoring system via internet is now used for the storage of crops in the field.<br>Secondly, monitoring the variation of temperature and other pest information is done with the help of IT in storage godown. |
| Awareness about Govt. agriculture policy-price | Kisan call centres provide knowledge and information as per the requirements of the farming community |
| Proper crop management | Deploying modern agricultural farming practices to boost productivity. Agriculture extension services (AES) program used for crop management techniques |

There are several ICT models of the central, state government and the NGO's in Indian agriculture which has made a significant difference to agricultural operations. For instances, E-seva Computer aided online registration department, BhoomiLand record computerization e- choupal, etc. Similarly some agricultural portals are agriwatch.com, krishiworld.net, acquachoupal.com etc. This led to growth in agriculture in general and rural development in particular.

## INFORMATION TECHNOLOGY AND RURAL HEALTH

In India, health expenditure is nearly 4.6 percent of GDP. Government spends 1.3 percent and private sector contributes 3.3 percent. Table-4 show that total government expenditure as a percent of total expenditure is very low in India (27.8) as compared to neighboring countries Bangladesh (35.3) and Pakistan (36.85). Although expenditure on health care has increased over the years, this sector still suffers from underfunded and poor governance. Recently Government initiated a health program under the digital India project to improve health care facilities. It covers online medical consultation, online medical records, and medicine supply and pan-India exchange for patient information.

**Table-4 Expenditure on Health in proportion of GDP**

| | |
|---|---|
| Total expenditure on health as percent of GDP | 4.6% |
| Govt. expenditure as a percent of the total health expenditure | 27.8% |
| Private expenditure as a percent of the total health expenditure | 72.2% |
| Per capita expenditure on health | $62.12 |

*Sources- National Health Accounts*

In India health care expenditure are incurred at three tier, i.e. by the central, the state and the local level. As per constitution, health expenditure comes under the purview of state government but the Central government provides grants to the state government to carry out direct expenditure on various health schemes. The state budgetary allocation to health sector is around 5 percent of total expenditure. Analysts argued that most of the public health programmes in India lack accountability and efficiency in their operation.

Besides expenditure another issue which is related with the role of ICT in development of health infrastructure is optimum utilization of health facilities. Table-5 shows the positive and negative impact of information technology in providing various health programs. One such flagship project on rural health is National Rural Health Mission (NRHM) of Government of India.

**Table-5 Positive and Negative impact of Information Technology in Rural Areas**

| Positive impacts of ICT Growth | Negative impacts of ICT growth |
|---|---|
| It can maintain electronic health records | Huge initial investment and transaction costs |
| Increase in health care data management | Power supply |
| It has the potential to increase health care | Lack of training and awareness |
| Potential to improve quality in health care | Under funding |
| Use of ICT on health sector leads to achieve overall developmental goals | Limited investment priorities in providing access to new technology in health sector |

The National rural health mission was started by the government to increase the spending in health sector from 1 percent to 3 percent of GDP. The main aim of this program is to improve the access of health services especially to the poor women and children in rural areas. The report on NHRM pointed out that there were many discrepancies in implementing the program. The major issues are that it was not properly planned, what to do and how to start , ignorance about the public core issues of health, operation without proper infrastructure, exclusion of the large number of rural poor and basic difficulties encountered in smooth functioning of this program which led to minor success.

Despite this, information technology has made a vital impact on rural health, as it improved the delivery of health services and reached to poor people at low cost and even in remote locations.

## INFORMATION TECHNOLOGY AND BUSINESS SERVICES

In India, there have been significant developments of e-financial services.The rigorous use of ICT in banking sector initiated after financial sector reforms in 1990's which allowed the banks for computerization. E-financial services offer a complementary channel for doing business rather than substitute to traditional forms of channel. The adoption of e-financial services, for instances e-banking reduces a significant amount of overhead expenses and it is very user friendly also.

ICT has introduced new business paradigm in rural areas of India. It has provided a hope for a better future to all the sections of the rural society and to the government to implement various schemes like Jan Dhan Yojana, BPL etc. Firstly, the biggest challenge for the banks in rural areas is to provide financial services to the vast rural population at minimum cost. Secondly, to provide these services in rural areas is not only very difficult but complex also, as distances, limited roads, poverty and literacy comes as obstacle in between. Today, most of these banks are currently incurring losses in their rural operations. Table-6 shows the issues related with rural business services and the benefit of the ICT in rural areas.

**Table-6 Issues of Rural Business Services**

| Issues of Rural Business Services | Benefits of ICT |
|---|---|
| Non- institutional credit still exists | Crowding out effects can be eliminated through the use of ICT |
| Operational issues: Infrastructure, road connectivity, distance, branch skewed distribution | ICT has the potential to support both local and remote rural needs through its multiple channel operations |
| Structural issues :Difficult to evaluate cash flow of villagers due to asymmetric information, lack of database, absence of credit history of people with small means | It can built interactive financial infrastructure which emphasizes more on legal, social, regulatory and supervisory framework that lead to smooth functioning and long term relationship of rural financial markets |
| Demand: Variable and dispersed demand | Credit, savings, transfer and payments facilities, and Insurance of crops etc. services can be provided through mobile telephony, ATM etc. |
| Supply: Weak institutional capacity because of high transaction costs | Commercial banks, cooperatives, micro finance institution, state institutions can consider those innovative practices that can reduce high operating costs associated with rural clients and expand their financial services. |
| Overlapping and lack of integration of financial services | ICT applications can be used to improve transparency and accountability. |

## INFORMATION TECHNOLOGY AND RURAL DEVELOPMENT

ICT promotes more holistic development of rural economy which is marked by plethora of language, customs, beliefs and culture. Information technology nowadays has emerged as a key driver that accelerates economic growth and development. Policy makers believed that digitization can help in the sustained development of rural economy as it impact on production, operation and expansion of market and thus reshape the rural economy.

Information technology leads to:-

- ⇨ Emergence of new market
- ⇨ Job creation
- ⇨ Innovation and investment

As per digital report of Govt. of India, 2014, the share of internet economy is approximately 5 percent of the GDP.

**Table 7- Sectorial Contribution to Economic Growth**

| Sector | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|---|---|---|---|---|---|
| GDP | 6.69 | 4.47 | 4.86 | 4.6 | 7.5 |
| Agriculture and allied activities gr. Rate | 5.02 | 1.42 | 4.64 | 4.8 | 3.8 |
| Industry gr. Rate | 7.81 | 0.96 | 0.65 | 1.5 | 3.5 |
| Services gr. rate | 6.57 | 6.96 | 6.86 | 6.3 | 8.1 |
| ICT share in GDP (in percent) | 6.4 | 7.5 | 8 | 5.2 | 4 |
| Internet user in rural areas ( in million) | 0.12 | 4 | 25 | 32 | 109 |
| Teledensity in rural areas | 26.43 | 33.79 | 39.22 | .9.07 | 41.02 |

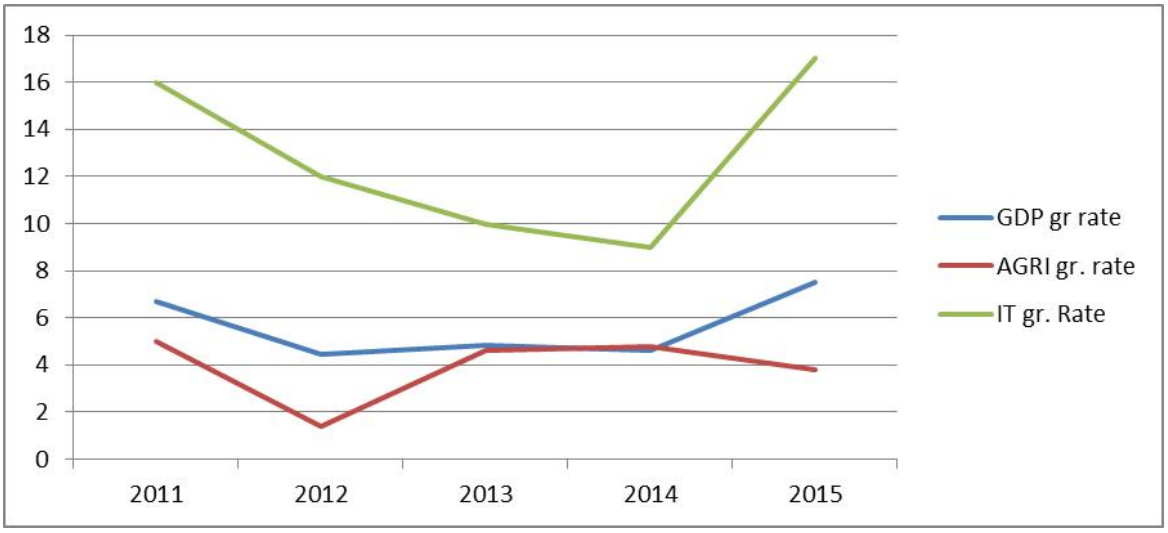
*Source: National Informatics Centre, data.gov.in*

It is evident from the table-7 that the growth is not uniform across the sectors. India's growth is primarily driven by the service sector and its growth rate has been increasing while the growth rate of agriculture and industry shows a declining trend between the years 2011 -2015. This evinces that ICT sector has contributed less to agriculture and industry as compared to service sector in terms of its uses and impact.

Secondly, Internet and mobile users in India have increased two fold due to its development of its extensive network in rural areas. The number of internet users has increased from 0.12 million to 109 million during the period of 2011 to 2016. The share of teledensity in rural areas has also increased from 26.43 to 41.02 million during the same period. Despite this growth of agriculture decline in the respective period.

Thirdly, the table also evinced that the share of information technology in GDP has decreased from 6.4 percent to 4 percent in the period of 2011 to 2016. It was 5 percent of GDP in 2015. It can be concluded that ICT sectorial dominance within the economy in general and service sector in particular is diminishing in a period 2011 -2016. This is a sign of concern for policy makers as many researchers believed that there is positive correlation between GDP growth and the growth rate of ICT industry

**Graph 1: ICT GDP Growth Rate Compared To Agriculture Growth Rate**




The above Graph depicts that there is correlation between growth rate of GDP and information technology growth rate. Both of them share the same pattern. This suggest that growth rate of GDP depends on information technology sector. For instances, when grow rate of ICT has declined there is a decline in the GDP growth rate i.e. in the year 2011 to 2013. Similarly, in the year 2014 and 2015 when the growth rate of ICT has increased, the growth rate of GDP has also increased. On the other hand, a conflicting trend is seen between the growth rate of agriculture and growth of ICT. In the year 2012 when the growth rate of ICT has declined, the growth rate of agriculture has increased. Similarly, as in the year 2014 and 2015 when the growth rate of ICT has increased, the growth rate of agriculture more or less remain the same or declined. This evinced the IT has contributed less to agriculture as compared to other two sectors of the economy.

## CONCLUSION AND SUGGESTIONS

Information technology has impacted the rural economy indirectly. Analyses have showed that effective applications and channels have been used to benefit the rural economy. However, it is essential that the government should take more initiative to increase the use of this technology in its development programmes and educate people in order to use ICT effectively and efficiently. In order to have a stronger relationship between ICT and Rural economy in future:-

- Substantial development of IT application could be done with a broader strategy at village level as large population of Indian Territory lives in rural areas.
- ICT can be used in such a way that it can give more opportunities for employment creation in rural areas. This can improve the quality of life of rural people.
- ICT applications can also be used to bring transparency and accountability in various economical and social programs of government.
- There is a need to assess the needs of the rural people with regard to information technology i.e. linkage between demand and purpose of these services and product.

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