

Role of ICT for Rural Development in Haryana

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Abstract: *Information and Communication Technology (ICT) has gained popularity in last few years in developing economies particularly in India. ICT accounts to the convergence of audio, video and data services supported by various service providers. Converged networks have merged the services of telephone, television and computer networks requiring different infrastructure and channels into a single communication network. The paper aims to demonstrate the usage and adoption of ICT in numerous areas of rural development supporting initiatives of Ministry of Rural Development and e-governance schemes. The study also brings forward the achievements and failures in the adoption of ICT in rural areas of Haryana. The methodology adopted was a qualitative analysis including primary data (questionnaire and interviews of general population in rural areas and officials working on rural development projects) and secondary data (information regarding available amenities in rural areas).*

Keywords: Information and Communication Technology, ICT, Converged Networks, India, e-governance, Rural Development, Haryana

1. Introduction

One of the major concerns of every developing nation has always been rural development and India is no exception. As per World bank dataset [1], 68% of total population of India lives in rural area. As a consequence, Government of India has taken lot of initiatives for the upliftment of poor sections of the society and for raising the social and economic standards of people living in rural and sub-urban areas. In order to provide better opportunities to the rural population for education, employment, economic development, technical infrastructure, health services, food supply, electricity, water & sanitation, financial services and governance; increased awareness and participation of people in the rural development programmes, skill development institutes/workshops, better agricultural land reforms, ICT infrastructure deployment, decentralization of planning, and better access to credit are needed.

As per 2011 census of India, Haryana is 18th largest state by population out of 29 states in India. Also, it is considered as one of the wealthiest states of India having fifth highest per capita income in the country- ₹119158 (US\$1,800) in the year 2012 and ₹132089 (US\$2,000) in the year 2013–14 [2] together with the leading number of rural millionaires in India. Haryana is also considered as one of the most economically developed regions in South Asia [3]. Thus, the state of Haryana is considered a viable option to analyze the trends of ICT penetration and its usage for rural development. It also reflects upon the barriers faced so far for the successful implementation of ICT in rural areas and finally, leveraging benefits out of it.

Out of the total population of Haryana state, around 65.12% live in the villages and around 34.88% live in the urban areas. In rural areas, sex ratio is 882 females per 1000 males and literacy rate is 51.96% for females and 81.55% for male population with an average literacy rate of 71.42% (as per census2011).

Haryana Population Divide

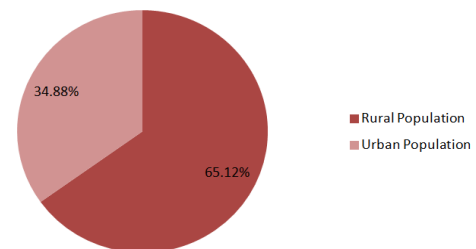


Figure 1: Rural Urban population divide in Haryana [4]

The focus of the paper is threefold: on the one side it attempts to highlight the rural development schemes and key initiatives taken by government of India and its rural development agencies. Secondly, it presents the role of ICT and its applications as empowering tools to support rural development. Thirdly, it analyses the extent to which ICT has been adopted and utilized in the rural regions of Haryana and also highlights the difficulties encountered so far for leveraging maximum potential of ICT.

The paper is structured as follows: section 2 elaborates on the hierarchy of rural development agencies and their collaboration that will evolve a new rural development model. It also briefs about the rural development schemes envisioned and implemented so far by Govt. of India. Section 3 explores the range and potential of rural applications of ICT including education, agriculture, e-governance, self-employment etc. Finally, section 4 presents the discussion of results as constructed from the views of users of different age groups, govt. officials, bank representatives and project officers. Section 5 concludes the paper demonstrating the success rate of ICT implementation for rural development in Haryana, India.

2. Rural development agencies and rural development schemes in India

This section provides a clear understanding of role of various apex bodies for rural development at national, state and

district level. It also provides information on national level programmes, schemes and other initiatives taken by the government for bridging the gap between urban and rural population by raising the socio-economic standards of rural people.

2.1 Role of rural development agencies

Different apex bodies and agencies work at national, state and district levels- each having its own role and obligation to work for the betterment of rural areas. Such Agencies may undertake various projects or implement government schemes for rural areas either independently or in coordination with other agencies. The listing of various rural development agencies [5] in India (for Haryana state) is as shown in figure 2.

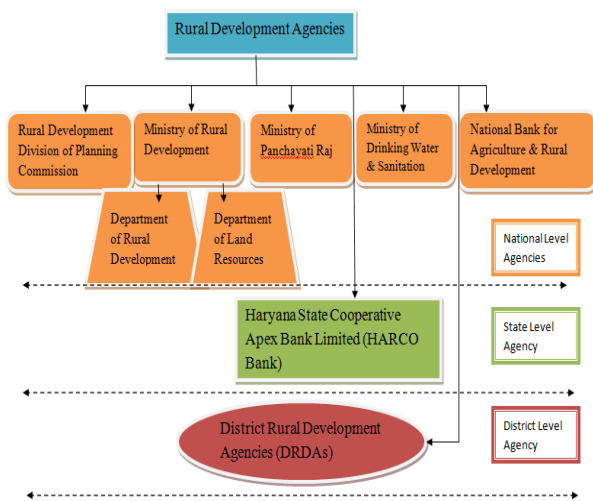


Figure 2: Hierarchy of Rural Development Agencies

The responsibilities of the above mentioned agencies are listed below:

(i) *Rural Development Division of Planning Commission:* The function of Rural Development Division is to provide policy guidance in formulation of annual as well as five year plans for rural development programmes and also establish cooperation with Ministry of Rural Development, National Institute of Rural Development and other agencies.

(ii) *Ministry of Rural Development:* The role of Ministry of Rural Development [6] in India is the formulation of policies, regulations and acts pertaining to the progress of the rural sector including occupation- agriculture, handicrafts and other micro-industries and rural economy. There are two departments under the Ministry of Rural Development:

- *Department of Rural Development:* The Department aids the provision of training and research facilities, human resource development, and provides functional assistance to the DRDAs and supervises the execution of projects and schemes including housing facility and wages to the rural population.
- *Department of Land Resources:* The main objective of the department is to implement Prime Minister Krishi Sinchayee Yojna (Watershed Development Programme), Digital Land Records Modernization Programme [7], technology development and training.

(iii) *Ministry of Panchayati Raj:* The responsibility of Ministry of Panchayati Raj is to develop state level guidelines for formulation and implementation of Gram Panchayat Development Plans and to facilitate the accountability of Panchayat Raj Institutions (PRIs) through e-panchayats [8] and to ensure social justice and accessibility of other services to rural areas.

(iv) *Ministry of Drinking Water & Sanitation:* The main goal of establishing Ministry of Drinking Water & Sanitation is to ensure that every household, government schools and public places have access to safe drinking water and sanitation facilities and support PRIs to safeguard their own drinking water resources and sanitation facilities.

(v) *National Bank of Agriculture & Rural Development (NABARD):* NABARD is an apex body which was established in 1982 replacing Agricultural Credit Department (ACD) and Rural Planning and Credit Cell (RPCC) and Agricultural Refinance and Development Corporation (ARDC). The primary focus of NABARD is to serve as re-financing organization for the credit given by various financing agencies for promoting rural sector activities.

(vi) *Haryana State Cooperative Apex Bank Limited (HARCO Bank):* HARCOBANK is the apex organisation for rural development in the state of Haryana and its purpose is to financially assist farmers, artisans, unskilled labourers and rural entrepreneurs by providing loan schemes, Kisan Credit Card and short-term finance.

(vii) *District Rural Development Agencies (DRDAs):* The fundamental role of DRDAs is to implement the schemes and projects of Ministry of Rural Development at district level in various states. They are also responsible for handling and transferring rural development funds under sponsored schemes.

2.2 Objectives of rural development schemes

This section provides an overview of various schemes started by Government of India for rural development [5] [6]:

- 1) *Pradhan Mantri Gram Sadak Yojana (PMGSY)* – PMGSY is a centrally sponsored and full funded scheme for establishing proper road connectivity in remote and rural areas of the country including hill stations, plain areas, desert regions as well as tribal places.
- 2) *Swarnajayanti Gram Swarozgar Yojana- SGSY* is one of the pivotal schemes of central government, promoting self-employment for the rural poor families by assisting the groups of poor people (organized as Self Help Groups) with bank credits and government subsidies. The Scheme is being implemented by the District Rural Development Agencies (DRDAs) with the active participation of other government and non-government organizations like Panchayati Raj Institutions (PRIs), banks and NGOs.
- 3) *Indira Awas Yojana (Rural Housing Scheme)-The IAY* is being implemented since 1996. The aim of the scheme is to provide financial assistance for building or upgrading housing units for families lying Below Poverty Line (BPL) A maximum assistance to be given for construction

of housing units is Rs 35,000 per unit in plain areas and Rs 38,500 per unit for difficult terrains (hills). However, for upgradation of any housing unit, a maximum of Rs 15000 is granted.

- 4) *Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)*- The prime objective of the scheme is to provide assured work for 100 days to landless labourers, subsidiary farmers and poorer sections of society seeking employment. The secondary objective of the scheme is to promote land productivity and hence generate employment from the agricultural work.
- 5) *National Social Assistance Programme (NSAP)*- Under the aegis of the scheme, central government supplements the Social Protection Schemes provided by State governments. The scheme provides social assistance benefits to poor families in case of maternity, old age and death of primary The National Social Assistance Programme (NSAP) was launched with the aim to provide social assistance benefit to poor households in the case of old age, death of primary wage earner.
- 6) *Integrated Watershed Management Programme (IWMP)*- IWMP scheme has been launched by integrating three existing area development programmes namely- Integrated Wasteland Development Programme, Drought Prone Area Programme and Desert Development Programme. This consolidated programme aims to promote optimal use of resources and produce sustainable outcomes.
- 7) *National Land Records Modernization Programme (NLRMP)*- NLRMP has been renamed as Digital Land Records Modernization Programme (DLRMP) by the Department of Land Resources. The aim is to create and maintain digital (computerized) database of records of land resources & validation of titles to provide citizen services online and implementing regulatory, developmental and disaster management activities using GIS (Geographic Information System) mapping and GPS (Global Positioning System) information.
- 8) *National Rural Livelihoods Mission (NRLM)*- Deen Dayal Antyodaya Yojana (NRLM) "Aajeevika" [9] was launched by the Ministry of Rural in June 2011. Partially aided scheme by the World Bank, "Aajeevika" aims to establish a well-organized and valuable institutional policy enabling poorer sections of rural India to enhance family income through sustainable livelihood enhancements and easy access to financial services.
- 9) *Schemes for training of rural development functionaries*- Ministry of Rural Development instantiated schemes to provide financial assistance and support for establishment & strengthening of State Institutes of Rural Development (SIRDs) as well as Extension Training Centers. In addition to it, there is a scheme to provide financial support for organizing Training Courses, workshops or seminars (OTC) on subjects relevant to rural developments [9].
- 10) *Provision of Urban Amenities in Rural Areas (PURA)*- The scheme [9] was launched with the aim to provide urban amenities in rural areas including physical, electronic and knowledge connectivity to create better job opportunities and elevate economic stature of rural places.
- 11) *National Rural Mission (NRuM)*- The National Rural Mission (NRuM) [9] primarily aims to create "cluster of

rural villages" nurturing the spirit of rural community life without compromising on essential urban amenities and facilities.

- 12) *Deen Dayal Upadhyaya- Grameen Kaushalya Yojna (DDU-GKY)*- The scheme has its roots in the "Aajeevika" programme [9] and it aims to contribute towards skill development of rural youth and capacity building for aspirants of better wage and occupation opportunities. The Scheme is implemented with the joint efforts of State Governments, Technical Support Agencies like the National Institute of Rural Development (NIRD), Panchayati Raj Institutions (PRIs), and Project Implementing Agencies (PIAs). Other other providing certified trainings, a portal has been created to match the needs of e-learners and to cater to larger population.

3. Applications of ICT in Rural Development Areas

Information and Communication Technology has completely revolutionized the way information was perceived, generated, stored, retrieved, processed and transmitted earlier for a number of day-to-day work and tasks at individual level, community level, organization level, business level and administration level. Indeed, it has proven to be a boon for people in urban areas where ICT infrastructure like internet, mobile phones, laptops, PDAs, kiosks and services like digital media, e-commerce websites, e-governance portals, social networking, media and online knowledge resources (e-learning) has created a promising development in areas of information dissemination, social interaction, administrative work, economic and business practices, civic responsibilities, education, health, leisure, media and entertainment.

On the similar grounds, ICT can contribute to the significant and sustainable growth of rural areas in different sectors by introducing new processes, services, applications and deployment of ICT infrastructure: Various applications of ICT in rural development sectors are as listed below:

ICT for agriculture sector

Agriculture is the main source of income and livelihood for most of the rural population in India, including Haryana. Increased land productivity increases employment opportunities for marginal farmers and labourers. At the same time, it leads to economic development of the area. However, agriculture sector involves uncertainties because of soil erosion, underground water table depletion, untimely rainfall and other climatic reasons. ICT can help farmers in numerous ways-

- Real-time communication (using mobile phones)- posing questions and doubts to agriculturists regarding irrigation, seed quality, climate, pest control and crop care. Farming involves risks and uncertainties, with farmers facing many threats from poor soils, drought, erosion and pests [10]. ICTs can deliver useful information to farmers about agriculture like crop care and animal husbandry, fertilizer, pest control, seed sourcing and market prices. Example: IFFCO Kisan Sanchar Limited [11] (Joint Venture between

Airtel and Indian Farmer's Fertilizers Cooperative Limited (IFFCO).

- E-seminars (presentations or recorded videos) can be accessed on topics related to agricultural interests (using Internet).
- E-commerce platforms can connect farmers to direct consumers and traders and will get them better market prices for crops.
- Satellite technologies like Remote Sensing & Geographic Information System (GIS) can be used to find spatial and temporal variability of soil quality [12] and for yield predictability and weather forecasting.

ICT for education sector

Education is considered the foundation of future generation. Better education opportunities will increase literacy rate in the rural areas and create better employment opportunities [10] and technical knowledge amongst youth and other members of their family. Usage of ICT in rural education sector can prove a boon in following ways-

- Using computers and internet, online lectures, tutorials and presentations can be utilized as distance teaching and learning means.
- Using domestic tablets (Aakash), students can participate in various online quizzes and competitions and win scholarships.
- MOOCs (Massive Online Open Courses) have been started by reputed educational institutions around the world where rural students can also register, gain expertise in technical areas and obtain certifications without paying heavy fees.
- Lack of teachers and staff in remote schools can be compensated with recorded lectures of teaching faculties from other schools.
- Old age generation can be taught in their native places with the help of computer and other ICT aids.

ICT for health services:

Medical aid and health care service is one of the fundamental amenities of any social setup. ICT can help in the betterment of available health facilities in rural areas-

- Remote consultation, diagnosis and treatment of patients using mobile phones and/or internet [10].
- On-call or online guidance to medical personnel and staff of rural places for critical problems and specialized training.
- E-seminars and presentations can be organized by Panchayat Raj Institutions (PRIs) for rural community on health issues, nutrition, symptoms of diseases and preventive measures.

ICT for business sector:

Rural people can leverage ICT for establishing, supporting and enhancing their small to medium businesses or industries-

- Use of Internet facility can enable micro or small enterprise holders (poultry, dairy, manufacturing, textile etc.) to exchange product information and bill receipts from vendors/suppliers, access regulatory policy guidelines and transfer funds online.

- Use ICT to take advantage of government subsidies and other schemes available for micro and small scale industries.
- Community and FM radio stations can be used to advertise their products and services to rural as well as urban communities and expand their market beyond their areas of operation [13].
- Collaboration to large industries and business firms can be established through ICT for better reachability of their products.

ICT for employability:

ICT plays a pivotal role in providing support for employment opportunities to rural people –

- Job vacancy notifications for government and non-government organizations through online portals for rural youth.
- Freelancing job opportunities enabling rural people to work online for different category of users posting their work requirements.
- ICT tools and geographic expansion of businesses have enabled teleworking capabilities where rural people can work for an organization from their homes or while roaming in different places (via telephone or VPN connectivity).

ICT for social awareness and social networking:

ICT has greatly contributed in minimizing geographical barriers and has brought rural, urban, tribal and isolated communities more closely to each other. By the means of social interactions through online platforms, rural areas can be benefited tremendously-

- Community co-operation and unity for social causes through social media and social networking.
- Faster dissemination of information and increased awareness on various issues of concern at the domestic level.
- Better platform for rural people and communities to present real picture and their situations through social interactions.

ICT for credit and banking facilities:

Various schemes supported by Ministry of Rural Development provide financial assistance, loans, bank credits and subsidies to people in rural areas. ICT has made these services easier than before.

- Mobile banking and Internet Banking has made transactions and money credit easier and convenient for users and beneficiaries.
- Bank representatives carrying tablets [14] can reach rural households taking pictures and scanning documents relevant for opening bank accounts.
- Information about loan approval, loan amount, payment installments and duration can be communicated through SMS or phone call.
- Pension and other credit information can be delivered on user's mobile phone.

ICT for capacity building:

Capacity building [10] is another area where ICT can be leveraged by rural people-

- ICT helps in constructing laws, land reforms and land titles more accessible
- Use of ICT can strengthen the capacities of rural farmers and artisans while negotiating input and output prices, resource rights, infrastructure projects and land claims [10].
- ICT reduces social isolation [10] of rural communities by promoting interaction with other stakeholders.

ICT for rural administration:

Like e-governance initiative SWAN (State Wide Area Networks) to facilitate electronic access of the state and district administration services to the citizens in villages [15], there are lot of ways how government and administrative bodies can leverage ICT in rural areas for effective functioning-

- Quick and easy dissemination of regulatory information, public notification and upcoming government schemes for rural people.
- Transparency and visibility of administrative efforts to rural public with availability of digital information on online portals.
- Better channelized mechanism of feedback, query and complaints from rural mass through online portals.
- Submission of income taxes, electricity bills and service taxes online through a nodal office with support staff in rural areas.
- Disaster management drills and activities using GIS, GPS based location information and ICT tools.

ICT for training and skill development:

In order to support DDU-GKY scheme of Govt. of India, lot of skill development workshops, trainings, certifications and courses have been started by different state agencies. ICT can

help to decentralize the initiatives and extend the reachability to more and more rural population-

- Availability of training material and documentation on online portals.
- Broadcasting the recordings of skill development workshops on DD channels.
- Easy registration for skill development programmes and trainings through website.

4. Penetration of ICT in rural villages of Haryana: The findings

Haryana has out-performed all states of the country in implementing Aadhaar enabled birth registration in all the districts [16] and e-services in Haryana have reached to 105, which includes application of electricity bill collection, ration card member registration, result of HBSE, admit cards for board examinations, online admission form for government colleges, long route booking of buses, admission forms for Kurukshetra University and HUDA plots status inquiry [16].

However, to obtain a clear picture about the ICT leverage in the rural regions of Haryana, primary data was collected from villages falling in the discriminating categories namely-modern village, remote village (from urban connectivity), adopted village (by HIRD) and backward village. The methodology used for conducting survey and obtaining feedback comprised of interactions held with random group of people including children, adults and older ones (males and females both) in the villages, members of Panchayat, school teachers, bank representatives and other officials working on different rural projects. The findings are as shown in table below:

Table 1: Data populated from the Questionnaires in Survey

Parameters	Mobile phones in households	Know-how about computer & Internet	Knowledge of rural development schemes	Willingness to adapt to ICT and its benefits	Any e-services used so far	ICT exposure in schools
User Groups						
Modern Village	90%	75%	50%	99%	40%	60%
Adopted Village	60%	55%	68%	85%	20%	40%
Remote Village	65%	50%	45%	80%	20%	45%
Backward Village	30%	20%	35%	45%	10%	30%

Based on the findings and interactions with the people in rural areas, following observations are constructed-

- Maximum population in rural areas have adopted mobile phone systems and thus can utilize its benefits and applications as discussed in previous section, provided they are aware of the concerned facilities.
- Lack of infrastructure, domain-specific knowledge, lack of time and funds are barriers for rural people who are still willing to adapt to ICT and leverage its benefits.

- Labourers and weaker sections of society are more aware about benefits that accrue from rural development schemes than sound agriculturists.
- Usage of e-services is limited to administrative offices, banking institutions, schools and one or two houses in the rural community. People are reluctant to understand these e-services, however they are willing to utilize them with the assistance of others on their part.
- Power-cuts and infrastructure-deficient schools cannot deliver ICT and computer education to students at par.

- Younger population in villages is found to be more enthusiasts about adoption of ICT for rural development and creating rural villages as urbanized as cities.

5. Conclusion

The use of ICT tools helps in strengthening different sectors of growth in rural areas including agriculture, education, self-employment, skill development, medical facilities and entrepreneurial ventures. State like Haryana has shown tremendous growth in past years for adapting to newer means of development and better socio-economic standards. ICT will continue to be a subject of increasing interest in the coming years for rural population in Haryana. However, more exposure and involvement of the rural people in rural development schemes and initiatives is still desired.

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