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Role of ICT in rural development in India: A study on Panchayati raj institutions in Prakasam district of Andhra Pradesh

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Abstract
The present study examines the Role of ICT in Rural Development In India - A Study on Panchayati Raj Institutions In Prakasam District Of Andhra Pradesh. The present study is based on both Primary and Secondary Data. The study is basically descriptive in nature. It has used both extensive secondary data and in-depth primary field data while exploring the objectives. The Primary Data is collected with the help of Interview Schedule through a well-structured questionnaire. Prakasam District of Andhra Pradesh is selected for the study. There were 56 Mandal in Prakasam District, out of 56, 3 Mandals are selected for the study based on the performance. Multi-state random sampling technique was employed to select the mandals and panchayats. From each mandal 05 panchayats and 10 respondents from each pachayat are selected for the study. Purposive sampling technique is used to select the respondents at the panchayat level. The total number of panchayats selected for the study was 15.Total Number of Sample Respondents for the Study was 150. Interactions with officials of PRIs on implementation of e-panchayats are held in the study area. Besides, interviews with elected representative of PRIs on effective service delivery of e- panchayats in the study area. Wherever possible focus group discussion was conducted among different categories of people to understand the Policies of ICT, especially performance of Digital Panchayats in the study area. The implications of this findings and the importance of this study are also discussed.

Keywords: Role of ICTs, Panchayati Raj Institutions, Prakasam District, Andhra Pradesh

Introduction
Information and communication activities are a fundamental element of any rural development activity. Rural areas are often characterized as information-poor and information provision has always been a central component of rural development initiatives. One of the major components and driving force of rural development is communication. Conventionally, communication includes electronic media, human communication & now information technology (IT). All forms of communications have dominated the development scene in which its persuasive role has been most dominant within the democratic political frame work of the country.

Information and Communication Technologies (ICTs) play a key role in development & Economic growth of Rural India. Political, Cultural, Socio-economic Developmental & Behavioral decisions today rests on the ability to access, gather, analyze and utilize Information and Knowledge. ICT is the conduits that transmit information and knowledge to individual to widen their choices for Economic and social empowerment.

Information and Communication Technologies (ICTs) have transformed lives across India. According to the census of 2011, 68.84% of the population of India is rural whereas 31.16% is urban. These figures clearly indicate that India still breathes in villages. But even after more than sixty seven years of independence, illiteracy, poverty and backwardness in all terms still plagues rural India. Information and Communication technologies have become imperative to the progress of rural India. They have become an integral part in the information-flow for catalyzing the development efforts in rural India. ICTs offer several strategies to achieve sustainable rural development. ICTs have been instrumental in empowering the rural India with technologies which help us to reach our goals of sustainable development. (Shubham Chatterjee, AsokeNath, 2008:251) [9].

Realizing the importance of ICTs in rural development in India, several government projects

have been implemented to achieve universal access to ICTs. These projects mainly focus on bridging the digital divide between the urban and rural areas of India. The urgency to bridge this divide mainly comes from the fact that in India, the rural areas mostly lag behind the urban areas, when it comes to education, health and infrastructure. This leads to inequality of services and opportunities for the rural population which stops them from contributing to the development of the country. This kind of rural isolation can negatively impact growth and in turn affect the sustainable development of the country. ICTs can help to overcome the various constraints in infrastructure. Through the use of ICTs, people in rural areas can connect easily with the local, regional and national economy. They can make use of the banking facilities and also access the various job opportunities which would otherwise be beyond their reach. ICTs can help to create awareness among the rural public regarding new technologies in agriculture which would help them to contribute to the GDP of the country. The various ICTs can help to spread education among the rural masses and help them to connect easily with their urban peers. Thus bridging the digital divide not only helps in bridging the infrastructural gap but also to bring the rural population to the forefront.

The development-landscape has been transformed by the explosion of ICT, especially the mobile phone technology. This technology has improved the life of the rural population by integrating the once isolated people into the economies and politics.

The rural poor typically lack access to information vital to their lives and livelihoods. Building upon the concept of knowledge gaps and information problems, they are two types of information used by the rural poor to priorities their livelihood activities and investment decisions more effectively.

Studies on e-governance and rural development

Rural e-Governance can provide timely information to the citizens and have the potential to spawn innovative means of wealth generation in rural context (Singh, 2004). ICT can improve living standards in remote and rural areas by providing important commercial, social and educational benefits (Share, 1993; Madden, G. Savage, S & Simpson, M., 1997). Electronic service centres have a pivotal role to play, especially in reaching out to the marginalized sections living in remote areas (Singh, 2000). An earlier research confirms that transaction costs have substantially reduced by adopting automated supply chain management models for selling agriculture produce (Annamalai and Rao, 2003). Other studies show that e-government projects are successful in rural India as it acts as an intermediary between government and recipients, while pursuing commercially sustainable objectives (Kaushik and Singh, 2004).

However, given the high incidence of poverty in rural India, e-Governance implementation to cover 135 million rural poor is an increasingly complex process. Jhunjhunwala, Ashok, Anuradha Ramachandran and Sangamitra Ramachander (2006) states that success stories of e-Governance in rural India are isolated cases, and says that "sum total of the Indian experience in terms of two important parameters *viz*. villages connected and lives transformed are yet too minimal". Although there are more than fifty grassroots' projects currently using modern ICT for development in India, Keniston (2002) despairingly notes that since no systematic study or evaluation has been conducted on ICT based projects so "opportunities to learn the diverse creative Indian experience so far remain almost entirely wasted". Investigation undertaken by Cecchini (2004) of an e-Governance initiative *Gyandoot*, shows that though it is supposedly popular, its usage is still low and that it is not effective for the poorest of poor in the rural regions. With reference to villages of south- India, Kanungo (2004) points out issues like "how do we build effective Information Systems that are premised on emancipation in a rural setting (of southern villages of India)…" Existing e-Governance models are more technology centric, which have been aped from west and thus do not completely assure rural development in context of developing countries like India (Bhatnagar and Schware, 2000 and Charru Malhotra, V. M. Chariar, L.K. Das, and P. V. Ilavarasan, 2008:218).

Such observations for ICT interventions in the rural context are generally true for other developing countries too. Emerging studies show that many of the claims that are being made about the potential of ICT for development are not supported, and point to the possible counter-productive effects of the use of ICT (Gomez *et al*., 1999). Ray (2005) summarises that some of the good governance initiatives for poverty alleviation have not translated into social good due to slack institutional mechanisms. Wolfram (2004) suggests that to resolve the rampant "institutional disequilibria" there is a need to supply globally competitive products emerging from traditional knowledge of the region. Annamalai and Rao (2003) bring out that there are several gaps associated with deployment of the information village projects where the larger goals of empowerment, dignity and "preservation of traditional technologies" are not considered. In view of such limitations, it is important to propose some alternative approaches to rural e-Governance projects (Charru Malhotra, V. M. Chariar, L.K. Das, and P. V. Ilavarasan, 2008:218).

Significance of the study

The Information and Communication Technologies (ICT) are being increasingly used by the governments to deliver its services at the locations convenient to the citizens. The rural ICT applications attempt to offer the services of central agencies (like district administration, cooperative union, and state and central government departments) to the citizens at their village door steps. These applications utilize the ICT in offering improved and affordable connectivity and processing solutions. Several Government-Citizen (G-C) e-Government pilot projects have attempted to adopt these technologies to improve the reach, enhance the base, minimize the processing costs, increase transparency, and reduce the cycle times. A large number of rural E-Government applications, developed as pilot projects, were aimed at offering easy access to citizen services and improved processing of government-to-citizen transactions.

e-Governance is a use of information and communication technologies with the aim of improving information and service delivery (of government sector), encouraging citizen's participation in the decision making process and making government more accountable, transparent and effective. Information technologies enhance the transformation of work culture by serving a variety of ends; and better delivery of government services to citizens. It is a powerful tool in the hands of the society that could be used

make to make life easier and better for all in several dimensions of human activities. Governments have been quick to pick up its applications for providing information and services to the people. Since the information and communication technology (ICT) was introduced at grassroots level governance, commonly known as e-panchayats which were first adopted in Andhra Pradesh and later by other north Indian states like Rajasthan, Maharashtra and Bihar. e-Panchayatis a product conceptualized, designed and developed by National Informatics Centre, Hyderabad, as a part of its E-governance initiatives. It is an e- Governance initiative for the rural sector providing comprehensive software solution attempting automation of Gram Panchayat functions.

The Panchayat Raj System is playing an important role in rural development. E-panchayat is the lowest tier for rural development. Use of Information Communication Technology (ICT) in e-governance/e-panchayat is providing fast services to the citizens. These tools make delivery of government services to citizens in transparent and efficiency in effective way. The results of previous studies on E-panchayat show that urban citizens are taking a lot of benefits from these services in comparison to rural population. The rural population is not getting advantages from modern ICT services. There are many reasons for this gap. It has been seen that this difference in utility of ICT services is because of local language problems, lack of awareness of public services and sometimes availability of proper infrastructure. It has been suggested by several scholars that these problems can be overcome by greater participation of the people in awareness related public functions at panchayat level through dedicated ICT services that makes them aware about the proper use of available resources. They should be trained in such a way that knowledge about the government services is shared amongst them. Since rural communities are the closest to bottom level problems. Efforts must be made to provide information in local language of the community. It can benefit all participants belonging rural community may it be e-learning too. Services of accessibility empower the rural citizens and their participation can provide innovative solutions to the problems of rural areas and urban-rural gap can be reduced. The aim of the present study is to study the role of e-panchayats India and to assesses the impact of e-panchayats in effective delivery of public services in Prakasam District of Andhra Pradesh.

e-Panchayat system is web-based and entiered; and functions like an Application Service Provider enabling Panchayat level digital services for all stakeholders. The stakeholders are citizens, elected representatives, Gram Panchayat officials, the governments and the knowledge workers. But it should not be merely perceived as an ICT enabled system of governance that provides public services on demand. It promotes virtues of good governance and deepens democratic values in society. It creates an environment in which people feel empowered, establishes a system that ensures people can easily avail their fundamental rights to information, and broadens the scope of local government.

Profile of the study area

Prakasam Districtis an administrative district in the state of Andhra Pradesh, in India. The district headquarters is located at Ongole city. Prakasam district occupies an area of 17,626 square kilometers (6,805 sq mi), comparatively equivalent to Indonesia's Seram Island. The only Municipal Corporation in Prakasam is Ongole. Some of the main towns in Prakasam district are Singarayakonda, Addanki, Inkollu, Markapur, Yerragondapalem, Podili, Darsi, Donakonda, Chirala, Kandukur, Pamuru, Parchur, Giddaluru, Dornala, Cumbum, Kanigiri, Chimakurthy and Martur. Markapur is India's main slate manufacturing town where the historic temple of Lord Chennakesava is situated. Chimakurthi is world renowned for its granite reserves. Dornala is also known as DiguvaSrisailam, since it is very near the historic pilgrimage center of Srisailam.

Cumbum Lake also known as Gundalakamma Lake built on Gundalakamma rivulet upon Nallamala hills is one of the oldest manmade lakes of Asia. The anicut was built by the Gajapati kings of Orissa in 15th. Century AD when the area was under their control. It was subsequently renovated by the Vijayanagar princess Varadharajamma. The lake in its present form is about 7 km long and on average, about 3.5 km wide as per the imperial gazette of India at the turn of 20th century the height of the dam was 57 feet (17 m) and the drainage area was 430 square miles (1,100 km2). The direct irrigation land was about 10,300 acres (42 km) in all. Cumbum lake is accessible both by the rail Guntur-Nandyal railway line and by road 108 km from Ongole.

According to the 2011 census Prakasam District has a population of 3,392,764, roughly equal to the nation of Panama or the US state of Connecticut. This gives it a ranking of 98th in India (out of a total of 640). The district has a population density of 192 inhabitants per square kilometer (500 /sq mi). Its population growth rate over the decade 2001-2011 was 10.9%.Prakasam has a sex ratio of 981 females for every 1000 males, and a literacy rate of 63.53%.Telugu is the language spoken here. Cumbum mandal showed a very good growth indicator in the Census 2011. According to census of India, Cumbum mandal has been recognized as the second highest in literacy in Prakasam district literacy having 73.55% literates after Ongole Mandal. Also Cumbum mandal is the third highest in sex ratio in Prakasam district having 1031 female population per 1000 males.

The District is divided into 3 Revenue Divisions i.e., Kandukur, Markapur and Ongole. These are sub-divided into 56 mandals, which consists of 1081 villages and 13 towns. These 13 towns (or urban settlements) in the district include, 1 municipal corporation, 3 municipalities and 4 Nagar panchayats. Ongole is the only municipal corporation, Chirala, Kandukur, Markapur are the 3 municipalities and Addanki, Kanigiri, Chimakurthi, Giddalur are the nagarpanchayats. The 5 census towns in the district are Cumbum, Chirala (CT), Podili, Vetapalem, Pamur and Singarayakonda.

Objectives of the study

1. To study the Role of ICT in Delivering Public Services through Panchayati Raj Institutions in Andhra Pradesh and to assess how far the objectives of Digital Panchayts are achieved in the Prakasam District.
2. To identify the policy gaps and offer suggestions for effective delivery of public services through e-panchayats in Andhra Pradesh.

Research Methodology

The present study is based on both Primary and Secondary

Data. The study is basically descriptive in nature. It has used both extensive secondary data and in-depth primary field data while exploring the objectives.

The Primary Data is collected with the help of Interview Schedule through a well-structured questionnaire. Prakasam District of Andhra Pradesh is selected for the study. There were 56 Mandal in Prakasam District, of them 3 Mandals are selected for the study based on the performance i.e., 3 mandals are selected from best performing. multistate random sampling technique was employed to select the mandals and panchayats.

From each mandal 05 panchayats and 10 respondents from each pachayat are selected for the study. Purposive sampling technique is used to select the respondents at the panchayat level. The total number of panchayats selected for the study was 15.Total Number of Sample Respondents for the Study was 150. Interactions with officials of PRIs on implementation of e-panchayats are held in the study area. Besides, interviews with elected representative of PRIs on effective service delivery of e- panchayats in the study area. Wherever possible focus group discussion was conducted among different categories of people to understand the Policies of ICT, especially performance of Digital Panchayats in the study area.

The secondary data has been extensively used for extricating the evolution and status of E-governance initiatives in Indian States. The secondary data specific to the sample Panchayats were collected from the Souvenirs, Articles, Reports, and Draft plan Documents of various time periods and Citizen Charter published by the concerned Panchayats.

Table 1: Selection of the Sample Respondents:

Classification of Mandals	Selected Mandals	Selected Panchayats	Selected Respondents
Well-Performing Mandals	Addandki	1. GoplalaPuram 2. Sigaraykonda Palem 4. Thippayyapalem 5. Govada 6. Bommanampadu.	5 x 10=50
	2. Chirla	1. Chirala Nagar, 2. Ramakrishnapuram, 3. Thotavaripalem, 4. Epurupalem, 5. Burlavaripalem and 6. Devangapuri	5 x 10=50
	3. Martur	1. Bollapalli, 2. Darsi, 3. Nagarajupalli, 4. Martur, 5. Valaparla	5x10=50

Challenges

In India, there are numerous difficulties to e-government implementation. These difficulties are outlined below:

1. Local language: In India, English has a low level of acceptance. The applications for e-governance are written in English. As a result, e-Government programmes do not succeed. As a result, e-governance applications must be designed in the people's local language in order for them to be able to use and benefit from them.

2. Low level of IT Literacy: A large portion of the Indian population is illiterate, and those who are literate lack knowledge of information technology (IT). The majority of Indians are unaware of how to use information technology. So, first and foremost, Indian citizens must be educated on how to use information technology.

3. User friendliness of government websites: Users of e-Government applications are frequently non-experts who may be unable to operate the applications properly. Such users require assistance in determining the best course of action for their transactions. As a result, government websites must be user-friendly so that a growing number of people can access them.

4. Difficult Procedure of Services: The concept of e-Government promises enhanced government efficiency and effectiveness, but these objectives will only be realised if the service is available to all residents. As a result, any service should be available to everybody at any time and from any location. Even though the number of Internet users is increasing, a large proportion of the Indian population is still unable to participate in e-Government activities for a variety of reasons, such as limited access to information and communication technologies and equipment. As a result, as part of its universal access initiatives, the government must provide internet access through public terminals.

5. Lack of awareness in people: The majority of Indians are unaware of the advantages of e-Government services. Even the government pays little effort to educating the public about e-Government activities. The implementation of e-Government projects is complicated by a lack of awareness.

Summary

In the recent two decades, ICT (Information and Communication Technology) has received attention in developing countries, particularly India. Various e-government programmes and applications have been developed for the development of rural areas as a result of the expanding importance of ICT. In several sectors of Panchayat Raj Institutions' management, such as accounts, agriculture development, finances, land records, procurement, and so on, ICT plays a significant role. In India, affordable ICTs are critical not just for the ability to transact electronically or to improve the delivery of

government and business services to isolated rural and disadvantaged communities, but also for the core goal of empowering people through literacy, education, knowledge, employable skills, poverty reduction, and wealth creation.

Because the use of information technology is rapidly increasing, the Indian government is putting out a lot of effort to deliver e-Government services to its citizens. Despite the fact that the Indian government spends a lot of money on e-Government programmes, they are not successful in all sections of the country. People's lack of awareness, their native language, and the privacy of their personal data are all major obstacles that have contributed to India's failure to embrace e-Government. Government must take steps to raise public awareness about e-Government activities so that people can fully benefit from them and e-Government projects can be completed successfully. People's participation might be crucial in the implementation of e-Government in India.

Computer penetration in state government offices is still behind estimates. The offices either do not have enough computers and peripherals, or do not have the necessary expertise to use them for information retrieval and updates. Government employees are reluctant to use computers, even for their own reasons or inquiries, due to a lack of awareness or fear. This may have an impact on people's reliance and trust on computerised systems for such inquiries, aside from transactions.

It is clear that there are various concerns that require careful consideration in order to ensure proper implementation, acceptance, and long-term sustainability of any such programmes. The 'infrastructure-skills-commitment' triangle is usually at the centre of the issues. It has been discovered that most initiatives lack the synergic composition of these. If infrastructure is discovered, skills or commitment are either lacking or absent, or vice versa.

It is also essential that the central government establishes and implements data security and privacy policies in order to speed up the adoption of e-governance. The country's basic infrastructure for the rapid deployment of e-governance apps must be expanded to all of the country's most critical rural locations. Infrastructure should be reviewed on a regular basis to ensure that upgrades are carried out on schedule. Mobile technology can be utilised to minimise communication channel breakdowns, provide greater coverage, and save maintenance costs. At the same time, a commitment-driven approach can lead to a self-sustaining e-Government system.

As internet penetration expands, people' IT awareness must improve. At the same time, initiatives must be done to guarantee that government services are made available to residents in regional languages, allowing for better accessibility and engagement. Furthermore, uniform standards must be adopted across the country to ensure the successful implementation of e-Government. This will assure interoperability and portability between departments and states.

Rural e-Government has the ability to give citizens with timely information and to generate new ways of generating revenue in rural areas. ICT can help isolated and rural communities improve their living standards by delivering substantial commercial, social, and educational benefits. Electronic service centres serve a critical role, particularly in reaching out to underprivileged populations in rural areas.

An earlier researcher's reported that using automated supply chain management methods for selling agricultural commodities lowered transaction costs significantly. Other studies demonstrate that e-government programmes in rural India are successful because they operate as a channel between the government and recipients while pursuing commercially relevant goals.

The National e-Government Plan aimed to make government services more available to citizens through centralized service delivery channels. The ministry of panchayat raj has now introduced e-Panchayat, a component of Mission Mode Projects (MMP). By enhancing governance at the third tier of government for rural local bodies such as village panchayats, block panchayats, and district panchayats, the project aims to empower people in villages.

Conclusion

From the last decade, the e-governance has transformed completely from computerisation to e-services in the country. This revolution has raised the more expectations in the mind of people living in rural areas. To empower and transform the lives in rural India there is a need of more comprehensive strategy. However, it has been found that infrastructural issues are the most frequently stated primary barrier. Inability to host sites on faster servers, poor tele-density and internet spread, electrical failures and cuts, lack of power backup, and other factors have a negative impact on the majority of government and public initiatives. Computer penetration in state government offices is still behind estimates. The offices either do not have enough computers and connections, or do not have the necessary expertise to use them for deep learning and updates.

The lack of such awareness or fear makes government employees resist from making use of computer even for their own purposes or enquiries. That may affect people dependence and faith on computerized system for such enquiries, leaving apart the transactions. It is evident that there are numerous issues that need careful analysis to ensure proper implementation, acceptance and ultimate sustainability of any such programs. Most of the time, the problems revolve around 'infrastructure-skills-commitment' triangle. It has been found that the synergic composition of these is missing in most projects. If infrastructure is found, skills or commitment is missing or vice versa.

As internet penetration expands, people' IT awareness needs increase. At the same time, initiatives must be done to guarantee that government services are made available to residents in regional languages, allowing for better accessibility and engagement. Furthermore, uniform standards must be adopted across the country for successful e-Government adoption. This will assure cross-departmental and state compatibility.

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