Technology for change: Sustainable Development in Rural India through CGNetSwara

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Abstract:

The correlation between technology, sustainable development, socio-economic issues have assumed significance in the changing global world. In the new millennium, there is no denying the fact that information and communication technologies play a key role in the growth of a country. There is substantial evidence that technology has power to harbor progress as it affects many dimensions of societal and economic aspects like education, health, quality of life. It is pertinent to develop an understanding about the methods and techniques in which technology can be utilized to respond to the emerging paradigms of development in a responsible manner. Recent findings show that ICT, which includes the traditional media comprising of radio television, press and the new computer based technology, plays a vital role in advancing economic growth and reducing poverty. ICT can be used to directly influence the productivity, cost effectiveness and competitiveness in industries. On the other hand, the results for not being able to recognize the benefits of ICT can also be devastating. It can be inferred that without a strategic integrated approach it will be intricate to take advantage of the potential ICT driving the socioeconomic development. Originally built by Massachussetts Institute of Technology and funded by Gates Foundation, UN Democracy Fund and others, CGNetSwara as an online website was created with the goal of bringing development through mobile phones and interactive voice recording. CGNetswara and Radio Bultoo has huge implications for creating awareness, improving governance and spurring development not only in rural India but in other developing countries which are affected by poverty and poor social indicators. Communication convergence with its potential for extensive interactive communication resources holds promise for India. If used in tune with the development concerns of majority of the people to provide them with essential information regarding their daily lives, technology can contribute greatly to economic progress and sustainable development in countries like India. This paper focuses on the on the role and extent of information and communication technology (ICT) in socio economic development, highlighting the utilization of technology for sustained development, the reach of technology, the access to it in terms of use and consumption and the potential of technology as an enabler in the developing world. It will also look at the

policy perspectives in dealing with socio-political and techno-economic aspects in building ICT policies for development.

Key words: Technology, development, socio-economic development, reach, access,

Introduction

Information and communication technologies (ICT,s) are playing a vital role in connecting communities in national, regional, and global development. ICT is being employed to fight poverty, promote economic growth and support development efforts in the developing world. Information and communications technologies (ICTs) are changing the world by transforming societies and economies. To take advantage of the advancements and applications of ICT, the 2030 Agenda for Sustainable Development calls on countries to deploy ICT to realize its transformational economic, social and environmental ambitions. ICT is an enabler for enhancing productivity, raising resilience and fostering greater civic engagement, while offering options for effective delivery of public services. National mobile strategies focusing on m-governance, m-business, m-education and telemedicine involves the use of mobile communications technologies to benefit communities within and across countries and regions.

Information sharing and communication are keys to democracy. However, many communities across the world are deprived of media and communication mechanisms rendering them voiceless and therefore vulnerable to exploitation. Mainstream media content is biased towards what sell s rather than what is balanced or relevant. Even with a tribal population of 90 million in Central India there are no newspapers, television channels or radio programmes in tribal languages. The internet and television are out of reach since both education and infrastructure are at a premium. In this landscape, mobile phones provide a ubiquitous medium that utilizes oral traditions already practiced by many of these communities. With more than 900 million cellphone subscribers, India is a prime market for voice based content platforms accessible via mass market cellphones. Connectivity—whether the Internet or mobile phones—is increasingly bringing market information, financial services, health services—to remote areas, and is helping to change people's lives in unprecedented ways.

Information and communication technologies for development (**ICT4D**)

The process of development using information and communication technologies refers to the application of information and communication technologies (ICTs) toward social, economic, and political development, with a particular emphasis on helping poor and marginalized people and communities. It aims to help in international development by bridging the digital divide and providing equitable access to technologies. ICT4D is grounded in the notions of "development", "growth", "progress" and "globalization" and is often interpreted as the use of technology to deliver a greater good. Another similar term used in the literature is "digital

development".ICT4D draws on theories and frameworks from many disciplines, including sociology, economics, development studies, library and information science, and communication studies.ICT4D (Information and Communications Technologies for Development) is an initiative aimed at bridging the digital divide (the disparity between technological "have" and "have not" geographic locations or demographic groups) and aiding economic development by ensuring equitable access to up-to-date communications technologies. Information and communication technologies (ICT's) include any communication device -- encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. While most of the world's population resides in countries that are wealthy or developing, the rest reside in low-income and least developed countries (LDCs), left behind and growing more disconnected. At the same time, mobile phones are widely adopted in these underdeveloped areas and demonstrate potential for economic development. However, technological innovation and policies have often addressed narrow dimensions of poverty and development. Sustainable development, on the other hand, assesses the welfare of a country in its entirety. This then begs the question of how mobile telephony technology, given its pervasiveness, can be beneficial on a systemic and sustainable level. The rapid penetration of mobile phones in the world's low-income regions has triggered widespread interest in building mobile systems and applications to benefit education, health, government, and other social ends. Recently, some projects from the ICTD conference series have emphasized the role of users as active participants and producers of information, analogous to Web 2.0 (Agarwal, Kumar, Nanavati, & Rajput, 2009; Banks & Hersman, 2009; Patel, Chittamuru, Jain, Dave, & Parikh, 2010; Sterling, 2009). Participatory processes are of particular interest to development practitioners, since they encourage accountability, local ownership, and problem solving, and these processes situate a broader share of power, decision making, and influence with communities, rather than outsiders (Midgley, Hall, Hardiman, & Narine, 1986). And as a medium for increasing or enabling participation, mobiles hold particular promise (Goggin & Clark, 2009), due partly to their support of voice communication. The spoken format transcends literacy, machine-written text/font issues, and local language issues, and it is accessible from any handset. CGNetSwara is an effort to assess the change due to these technologies and the socio-economic impact of mobile media on the people living in this area of central India.

Mobile Communication for Development (M4D)

The twenty-first century has witnessed major changes in the media landscape. Digital technologies and advances in media such as internet has driven the pace of development. As the internet audience continues to grow worldwide, along with technologies such as

mobile phones and broadband, these new media will continue to impact development (Leckner and Facht, 2010). The mobile phone which is spreading at a remarkable rate across the developed and developing world is the focus of attention in many private and public development initiatives. More research that explores mobile technologies which are employed deliberately for development purposes – in a more specific, economic and social sense – is needed (Donner and Tellez, 2008). Although mobile phones are diffusing rapidly, fast, data-capable third generation mobile networks are less common in low-income countries.

According to the census of 2011, 68.84 percent of the population of India is rural whereas 31.16 percent is urban. These figures clearly indicate that India still breathes in villages. But even after more than 70 years of independence, illiteracy, poverty and backwardness in all terms still plagues rural India. ICT's have become an integral part in the information flow for catalyzing the development efforts in rural India. ICT offers several strategies to achieve sustainable rural development. Realizing the importance of ICT's in rural development in India several rural projects have been implemented to achieve universal access to ICT's. These projects mainly focus on bridging 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. ICT's can help to overcome the various constraints in infrastructure. Through the use of ICT's people in rural areas can connect easily with the local, regional and national economy. ICT's can help to create awareness among the rural people regarding new technologies. The various ICT's can help to spread education among the rural masses and help them to connect easily with their urban peers.

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. Some of the more traditional forms of ICT such as radio and television have had a more prominent impact than the new forms of ICT. Due to their ease of use, easy accessibility and familiarity to the illiterate population these forms of ICT will remain vital to the rural development.

Mobile phones have an especially dramatic impact in developing countries - substituting for scarce fixed connections, increasing mobility, reducing transaction costs, broadening trade networks, and facilitating searches for employment and new markets. Mobile telephones provide market links for farmers and entrepreneurs and are mainly used for communication and information services. "Much of the voice traffic over the cell phones is commerce

directed. Access to agricultural market prices, access to agricultural trade information, facilitation of remittances from foreign workers, information on work opportunities using the phone can reduce substantial costs" (Richardson,1999). The incorporation of telecommunications policies into economic policies and national development agendas must involve the public and private sectors as both have important roles to play in the diffusion of mobile applications. The private sector is primarily responsible for providing access and competitive private sector-led markets go a long way toward making these services widely available. The public sector's main role is to provide a sound policy framework, regulate markets where they do not work well enough on their own, and support additional service provision where markets do not achieve economic and social objectives. The public and private partnership can be seen where mobile phones are widely shared and rented out by the call by local entrepreneurs, serving as de facto public telephones phones.

The mobile phone is more important than the other forms of ICT when it comes to rural development in India. This is because of two reasons. Firstly, they are easier to access for the rural poor than the other forms of ICT's which tend to be expensive and require infrastructure. If we take some recent statistics in consideration, in 2012, in India there were 929.37 million mobile phone users as opposed to 31.53 million landlines. This is up from 300 million in 2002 and is expected to reach 1.35 billion in 2016. Secondly the use of mobile phones increases the interactivity between the users. From being one channel for information the ICT's have progressed to creating the continent's largest transactional channel enabling people to communicate, connect, organize and broadcast themselves.

Rising mobile reach has a new meaning in social empowerment in social and behavioral changes through digital inclusion. It has raised the social position of underserved groups and populations like women. The government's policies have transformed the landscape for mobile telecommunications to ensure that the benefits of mobile communications can be shared amongst all of their citizens, not just the urban elite. Mobile based initiatives by the government, bilateral agencies, private sector players and the civil society has provided local solutions in local context and problem areas. With this, the social space of mobile in social and behavioral change has gained ground. In fact mobile phones have emerged as an effective mechanism to describe impact in information dissemination training of frontline workers and interpersonal communication and project monitoring. Unlike other forms of communication, including most web technologies, mobile or cell phones do not require literacy. Given the ubiquity of mobile phones and their use among a broader section of the global population, many creative thinkers are harnessing the potential of mobile technology to bridge knowledge gaps, alleviate poverty and help our environment.

Several experiments that turn on the participation of non-professionals in collecting, reporting, analyzing and disseminating news are provoking enormous ferment in journalism

around the world. New technologies and applications such as blogging, social networking and streaming help citizens challenge journalists monopoly to define, produce and disseminate news. Especially as the relevant technologies become cheaper and easier to learn and adapt, citizens without training or experience in journalism now have many ways to work with professionals, operating “outside, through and within “mainstream news media (Cottle, 2009). The present research analyses one such experiment CGNetSwara in Central India which is accessed via mobile phones, and is becoming a dominant medium throughout Asia for accessing information. What is distinctive about this free, voice based service is that even people with low levels of writing and literacy can contribute and share information: with its design and development team handling the complicated technology, anyone with a phone can call CGNetSwara to report local issues. Stories verified and approved by moderators are available for playback online (cgnetswara.org) as well as over the phone.

CGNetSwara: An Overview

CGNet Swara, a Bhopal-based project, is a voice portal for citizen journalists to report or listen to audio news bytes about Chhattisgarh using their mobile phones in Hindi and Gondi (a language spoken in the central Gondwana region of India, which comprises the central tribal region stretching from the Adivasi areas of Gujarat to West Bengal). It’s the first portal of its kind, where users can both listen and record their own content. This two way interface allows for quick reports and reactions from the ground about issues. Swara (Sanskrit word for voice) was initially developed as an extension of the CGNet discussion group which has been active since 2004. The aim was to extend the reach of CGNet into areas where there is no internet and television.

The portal comprises four components: callers, who give missed calls to the portal phone number to either report or listen to news; a server that returns the call and collects and stores the audio bytes; moderators, who publish the byte on the website; and website visitors, who can be either journalists from the mainstream media who want to cover a certain story, non-governmental organizations that want to extend support, urban activists who follow reported stories, or local authorities who want to address grievances.

Development of India’s internet infrastructure has been highly uneven; like the other components of the market based system that emerged as a result of liberalizing India’s economy, new media technologies are primarily limited to English speaking urban audiences. The story of CGNetSwara starts with its launch in 2010. After one and a half years in the pilot stage, the emergent behaviors of CGNetSwara users were characterized and published (ICTD 2012) Now, after more than five years after this initial inquiry, CGNetSwara has grown to encompass a total of 63,200 callers who have recorded over 6,900 stories and have called over 575,000 times to listen. Moreover, the platform has been

credited with considerable impact, including 287 cases (and counting) where users have narrated specific cases where problems were solved as a result of using CGNetSwara.
CGNet Swara's goal is to extend CGNet's reach to anyone with access to a low-end mobile phone. As described previously, callers record stories and listen to other recordings by navigating a simple interactive voice response (IVR) system. Recordings, which can be a maximum of three minutes, undergo moderation to ensure they are clear, audible, and appropriate for dissemination. Once the moderator approves a post, it is available for listening on both the phone and the Internet website. The website also includes the moderator's textual summary of each post (typically translated to English, though occasionally left in Hindi) to facilitate search and browsing. To keep the phone line available for multiple callers, only the four most recent posts are available for playback on the phone. These posts are played in time order, with the most recent first; callers may skip to the next post by pressing a key. Currently, there is no ability to search or browse older posts via the phone, though the textual summaries of posts are searchable on the website.

Chhattisgarh is populated primarily by the Adivasis, an indigenous people who are among the poorest and most socioeconomically disadvantaged in all of India. Of the state's 25 million inhabitants, 80% live in rural areas, and 30% are illiterate. The area is also home to the Maoist insurgency, a violent left-wing movement. In 2007, Prime Minister Manmohan Singh designated this insurgency as India's greatest internal security threat. Chhattisgarh, where internet penetration is a dismal 0.5 percent (Internet and Mobile Association 2012) villages could not benefit from the online projects opportunities. In 2010, Chowdhary, the founder of CGNetSwara decided instead to exploit mobile telephony in India's rural areas, where increased competition and deregulation brought down costs such that mobile penetration rates dramatically rose to 35%(Black 2012). With the benefit of a Knight International Journalism Fellowship, Choudhary launched CGNet Swara, or Voice. The service allows villagers to send and receive cell phone messages through an interactive voice response (IVR) technology. Approximately thirty students, community leaders, and activists learned the technology during a two day training program.
Since 2010, CGNet Swara has logged over 575,000 phone calls, over 6,900 published stories, and 287 reports of specific problems that were solved via the system. As a voice portal for citizen journalism in rural India and using low-end mobile phones, users can call CGNet Swara to report stories of local interest and to listen to stories that others have recorded. Submitted stories are reviewed by a team of moderators, and approved stories are made available for listening over the web as well as the phone. A follow-up team appeals to government officials to act on any problems reported, resulting in concrete changes in rural communities.

Innovative Solution:

The solution uses open source components, the core of which was developed as a student project in MIT. It consists of a server connected to a telephony interface, running a software PBX system. The PBX directs all incoming calls to a very simple (2 option) IVR interface. Users can choose to record new content, or listen to recordings left by other people that have been published by the moderators. Since the interface is almost completely voice based and in a local language, the user does not have to be literate or specially trained to use it. Once the content is recorded, it is filtered by trained journalists who frequently call the contributor back to check and verify details. Once the story has been verified, the moderator releases it to the web and the IVR. The web link is also published to subscribed mailing lists and social media. The target user group on the IVR are grassroots workers and rural activists. The target group for the Web are urban activists, international development/ human rights organizations and the administration. Swara also helps forge partnerships between urban and rural activists based on reports and carries out training programmes for moderators and citizen journalists.As of March 2017, CGNetSwara receivs 1,000 calls per day. Most callers merely listen to the reports. During 2015-2016. There has been an average of 6 reports published per day and 11 impact reports per month.

Radio Bultoo:

Bultoo Radio is basically a radio program that is shareable through Bluetooth, which is available on the most basic mobile sets – thus bringing an end to the need for internet and mobile signals. An interactive voice response (IVR) system gives the callers two options – record a message or listen to the reports. As soon as the recording is completed, a team of moderators gets a notification. They listen to the message, check the facts, verify the report, and publish the story. Most of the reports are in Gondi language – spoken by around two million people of the Gond tribe, living in Madhya Pradesh, Gujarat, Telangana, Maharashtra, Chhattisgarh and so on. They are also translated into Hindi and English, and published on the website where journalists, NGOs, and other organisations can listen to them and help resolve the issues that people talk about. Bultoo Radio has been initiated in the form of an experiment to give hope to people who wish to raise their voices but cannot find any medium.Launched in collaboration with the Chhattisgarh government, the 'Bultoo' radio enables the rural public to use their ordinary mobile handsets to make their point in their own language, and to record their songs, on the internet. These are converted to Internet-based radio programmes and transmitted to all gram panchayats that have broadband facilities.

Conclusion:

CGNetSwara has become a synonym for journalism of public matters in the rural areas of central India. In a scenario where mainstream media has not reached to these remote areas, an alternative medium like CGNetSwara is playing the role of subaltern media with its commitment on justice, development and democracy. Widespread acceptance of the Mobile Radio in this region further indicates that it raises the livelihood problems of local people in their own language.

Initiatives such as CGNetswara and Radio Bultoo have the potential to address many development problems in remote and rural areas. They have many advantages: low cost, rely on the existing penetration of mobile phones, they are based on oral communication, content is relevant and in indigenous languages such as Gondi and participatory in nature. This community media forms an important link between the citizen and the state. These initiatives are also an example of participatory communication. It is a bottom up approach with emphasis being placed on empowering the disenfranchised.

A low cost participatory initiative such as CGNetSwara and Radio Bultoo which is easily replicable has huge implications for creating awareness, improving governance and spurring development not only in remote and rural parts of India, but also in other developing countries which are also bedeviled by poverty and poor social indicators.

Developing countries in South Asia recognize the potential of mobile technologies for development and their economies and communities. But policies have to address the multidue of factors such as levels of technology and supporting infrastructure, access to mobile technologies, cost of mobile applications, the legal and regulatory framework and the integration of telecommunication policies before a country can take advantage of potential M4D. Greater international cooperation is needed to enable the developing countries of South Asia to move from their state of digital divide to one of digital opportunities in the international M4D policy and achieve sustainable development.

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