Social Dimensions of E-Government - Poverty Perspective

Sandeep Kaur[1]* and N. Mathiyalagan[1]

ABSTRACT

ICTs and e-governance offers a plethora of opportunities for improving demand-driven transparent and accountable service delivery targeting the poor and the underprivileged. The objective of this paper is to examine the effects of E-government implementation in the context of widespread poverty in India. This study will provide a comprehensive approach to pro-poor E-governance towards achieving the MDGs, thereby, to reduce poverty and improve rural livelihoods. Specific recommendations are made to involve the socially excluded groups in the design, implementation and access to e-government services. Governments to design appropriate public policies in implementing socially inclusive e-government strategies in the emerging information society draws the conclusion.

Keywords: ICT, Poverty, Millennium Development Goals, Socially Inclusive E-Government

1. Introduction

Universal access, development of capacities and relevant content enabling effective use of ICT tools to address social and economic concerns towards achieving the Millennium Development Goals (MDG) are on the development agendas of many countries. The information society envisages a society wherein everyone can create, access, utilize and share information and knowledge; enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, thereby expanding their choices and opportunities for income generation. E-government/E-governance initiatives facilitate effective public service delivery as well as potentially enable a greater interaction with citizens. UN E-governance Readiness Report (2005) ranks India 87th with an E-government Readiness Index score of 0.4001 against a world index of 0.42. According to E-government Readiness Data (2005), India has a Web Index Measure of 0.58, Infrastructure Index of 0.02 and Human Capital Index of 0.59. India ranks 34 in terms of E-participation Index of 0.15. But the emergent information economy still witnesses poverty and social exclusion as crucial challenges in the global society. It is believed that weak governance structure of a nation seriously obstructs poverty reduction towards achieving development goals (Country governance assessment for the Asian Development Bank, Asia Foundation, 2003-04). A UN study (2003) also pointed out that countries such as India could benefit from E-government if literacy and basic infrastructure can be improved.

Being the fastest growing telecom markets in the world, the mobile sector in India has risen to 150 million by early 2007, 200 million telephone subscribers (mobile and fixed) and 8.5 million Internet subscribers. Broadband penetration in India remains around only 0.2%. The year 2005 witnessed 40 million Internet

---

[1] Department of Communication, PSG College of Arts and Science, Coimbatore – 641014, India
* *Corresponding Author:* (Email: sandeepkaur78@gmail.com, Telephone 91-9362903312)

users (4% of total estimated Net users in the world), 2,00,000 cyber cafes, and half a million broadband connections. More than 10,00,000 users did online share trading and the total e-commerce transactions was Rs 570 crore of which the Indian Railway online ticketing accounts for 63% (Rs 370 crore). The Ministry of Communications and Information is targeting 250 million telephone subscribers by the end of 2007 and 500 million by 2010. The expansion is set to occur more in rural India with a current teledensity at around 1.9%. By 2008, India is expected to achieve PC penetration of 65 per 1,000 from the existing 14 per 1,000; internet penetration of 40 per 1,000 from existing 5 per 1,000 (number of subscribers); the domestic software industry, including the local language applications and content industry, to grow seven-fold from existing about USD 4 billion (Rs. 1,900 cr.) to USD 28 billion (Rs.13,300 cr.); all villages to be made online for agricultural, healthcare and education services; and IT should contribute significantly to the growth of the national GDP.

India constitutes the world's largest number of poor people with 35% of its billion plus population living on less than US$ 1 per day and more than 900 million people surviving on incomes less than US$ 2 a day, thus making poverty a multidimensional phenomenon. Being more concentrated among SCs and STs (24 % of the total population of India - 252 million people), The Human Development Report (2005) ranks India 127th among 177 countries overall and 58th among 103 developing countries on the Human Poverty Index (HPI-1). Poverty in India requires substantial and sustained efforts from government and international agencies in terms of sound macroeconomic policies; open trade relations; increases in human and physical capital; good governance; sound legal, incentives and regulatory frameworks; an adequately regulated and supervised financial sector; health, education and social services that reach the poor, women effectively; quality infrastructure and public services to promote rural development and livable cities; and policies to promote environmental and human sustainability, thereby, helping in the distribution of social and economic benefits across a broader base of the population. Countries should provide basic telecommunications and Internet facilities for development in rural and remote areas that lack telecommunication infrastructure coupled with high ICT access costs, lack of user skills, low literacy levels or lower awareness of the opportunities and benefits of ICT as pointed out at the World Summit on the Information Society, Geneva, 2003.

2. ICT and Poverty – Towards Millennium Development Goals (MDGs)

Indian ICT sector is marching towards achieving the MDGs in areas such as literacy, education, gender equity and employment by allowing larger sections of the population to benefit from new technology. Internet has the potential to address the developmental challenges to reach the un-reached by providing services at minimum cost, thereby, alleviating poverty in terms of increasing opportunity, enhancing empowerment, and improving security (The World Development Report 2000/01: Attacking Poverty). The Government's Working Group on Information Technology for Masses (2000) identified four categories of IT relevant applications that could have an effect on poverty reduction: *electronic governance; enabling literacy and education for masses; fulfilling local information needs of the people; and enabling a better economic condition of people.* ICTs in Rural India can be utilized for poverty reduction strategies by enhancing pro-poor access to markets, health, and education. ICT applications in this concern has proven successful in delivering desirable social, economic and government services to rural populations by increasing their efficiency and productivity; improving their livelihood and also helping them voice their concerns, demand their rights and participate in decision-making processes.

Despite the enormous potential of ICTs for poverty reduction, 10th Five-Year Plan (2002-2007) in India makes scant reference to it due to paucity of government efforts at central or state levels. A comprehensive UNDP-APDIP study by Roger Harris and Rajesh Rajora (2006) titled "Empowering the Poor Information and Communications Technology for Governance and Poverty Reduction: A Study of Rural Development Projects in India" examined the application of large-scale approaches to the use of ICTs for E-governance

and poverty reduction. The study expressed concern over the factors that hold back the wider rollout of ICTs for poverty reduction in spite of all its technical and human resources at the state and national levels. It was found that such initiatives are not promisingly benefiting the rural populace. Successful projects were mostly expanded into more economically active areas with a stable technology and power infrastructure, leaving behind poorer sections of the population that are more in need. The study suggested a more generalized approach to information and service delivery system applicable for communities with highly varying socio-economic characteristics.

3. National E-governance Action Plan of India (2003-2007)
Considered as basic for achievement of the Information Society, E-governance projects in India are poised for an explosive growth from the $693 million in 2006 to nearly $1,300 million by 2007. The government's IT expenditure is expected to increase from Rs. 2,200 cr. in 2004 to over Rs. 5,000 cr. by 2007, according to the Second Skoch E-governance report (2005). In a country with six lakh villages, 70% living in villages and 95% unable to speak English, ICT enables governments to reach out to rural communities, meet citizens' expectations by providing E-government services, thereby improving their quality of life and empowering them through their participation in the political process, and also reaching out to them in order to deliver much-needed public goods and services (UNDP/APDIP, 2004). But the incorporation and effectiveness of ICTs depend on the acceptance of individuals and organizations (Rivera, 2003).

"ICTs empower the people at the grassroots level to access information and service delivery effectively" is the underlying philosophy of the National e-Governance Action Plan (NeGAP) of India launched by the Central Government at a cost of Rs.12,400 crore ($1.3 billion) to connect 600,000 villages in a hub-and-spoke formation by August 2007 through participation by states, government agencies and corporates. About 100,000 broadband-enabled multipurpose computer kiosks or Common Service Centers are expected to be set up by the Government of India by March 2008 to enable services like e-learning, e-teaching, e-health, telemedicine, e-farming, e-tourism, e-entertainment and e-commerce in all of India's 600000 villages (Chandrasekhar, 2006). E-governance models that do not benefit the rural delivery system will not contribute much to good governance. Thus, the goal of e-governance is to benefit rural India and bridge the digital divide by making technologies accessible to all, regardless of any individual, social or cultural characteristic or geographical location.

4. Effects of E-Government on Poverty Reduction
The potential of E-governance as a development tool hinges upon three prerequisites: a minimum threshold level of technological infrastructure, human capital and e-connectivity for all. E-government readiness strategies and programmes will be able to be effective and "include all" people only if, at the very minimum, all have functional literacy and education, which includes knowledge of computer and internet use; all are connected to a computer and all have access to the Internet. The primary challenge of E-governance for development therefore, is how to accomplish this. A country's overall progress in E-government closely correlates with its social, political or economic composition. Despite the developmental potential of E-governance, few developing countries have implemented pro-poor E-governance strategies depending largely on the Government's willingness to develop and design content relevant and usable for them. ICTs and E-government applications play a critical role in strengthening the linkages between policymakers and the poor and between the poor and the service providers as well as between the policymakers and the service providers (Bestle, 2004). E-government applications help the poor to reach policymakers with feedback information about the progress contributing to the transparency and accountability in government services. Effective E-governance applications can minimize some of the vital causes of poverty such as overpopulation, lack of education, uneven distribution of resources, deep-rooted corruption by providing easy access to information to the poor, thereby, resulting in transparency, accountability and responsiveness in delivery of E-governance services (see Table 1). Therefore, a strong

political commitment, administrative support and managerial cooperation are vital for successful implementation of E-government aiming at tackling poverty.

Table 1: Successful ICT/E-government Applications for Poverty Reduction in India

State	Project	Objective	Outcomes
Andhra Pradesh	India Healthcare Delivery project	-Improving access to basic service -Improve health care delivery	-Handheld computers by ANMs eliminated redundant paperwork; data entry, freeing time to deliver health care to poor people. -Each Midwive serves about 5000 people to provide health services in the state's multiple villages and hamlets to administer immunizations, offer advice on family planning, educate people on mother-child health programs and collect data on birth and immunization rates.
Andhra Pradesh	Swayam Krishi Sangam (SKS)	-Improve access to microfinance	-Smart cards lower the cost of delivering services by eliminating paperwork, reducing errors, fraud and expediting transactions - Helps the poor gain easy access to financial services to reduce, mitigate and cope with risk - Record potential savings through efficient delivery
Gujarat	Computerized Milk collection centers	Promote local entrepreneurship -Support pro-poor market development	-Nearly 600 such systems in operation in the Kheda district in Gujarat. -Over 700 locations in India -Computerized milk collection has increased transparency; faster processing; provided immediate payments to farmers -Remarkable business success for private entrepreneurs. -Farmers benefited in their earnings due to an accurate measurement of fat content and weight. -Cooperative societies benefited with a fewer employees to manage daily accounts; automatic daily printing of payment slips helps easily communicate with the farmers.
Gujarat	Self Employed Women's Association (SEWA)	-Empowerment through access to information	-Since 1972, SEWA constitutes for women workers in the informal sector for full-employment and self-reliance. -Started with the SatCom (Satellite Communication) Programme in 1998 with its receiving terminals in nine districts and transmitting terminal in Gandhinagar. -Computer training for semi-literate women workers. Many of its milk cooperatives are using computerized milk collection software.
Karnataka	Bhoomi project (online delivery of land titles)	-Support good governance -Increase and improve access to Government services	-Computerized 20 million records of land ownership of 6.7 million farmers in the state from 200 taluks ot at Internet kiosks in rural area offices at a cost of Rs 15 per record. -Bio-logon metrics system authenticates all users of the software using their fingerprint. -Widely acclaimed as the most successful ICT project for land records in the country
Kerala	Akshaya project	-Empowerment through access to information	-A joint project between local bodies (gram panchayats) in rural areas, municipalities in urban areas and private entrepreneurs in Mallappuram district of Kerala -Started to bridge the digital divide by providing community access to computers and the Internet. -565 Community Technology Centres (CTCs) have been implemented in the district. -Operates PPPs in establishing the CTC in remote villages.
Maharashtra	Warana Wired Village Project	-Empowerment through access to information	-Started in 1999 by the Government of India, the Government of Maharashtra and Kolhapur Sugar Cooperative on a cost-sharing basis. -70 villages in Kolhapur and Sangli districts of Maharashtra linked through a Wide Area Network (WAN) using dial-up connectivity and VSAT technology.

			-Computerization in the dairy and sugar industries introduced transparency; improved delivery of these services; permitted efficiency gains. -Provision of agricultural and marketing information as well as education and health information benefited the villagers. -Generated employment opportunities for the local population as computers operators.
Madhya Pradesh	Gyandoot project	-Increase and improve access to Government services	-Intranet in the Dhar district connects rural cyber cafés catering to the everyday needs of the masses -Reduces time and money, immediate, transparent access to local government data and documentation for minimal fees -Caste, income, and domicile certificates through Kiosks help villagers avoid paying bribes to officials -Network of about 30 kiosks covers more than 600 villages run by local private operators along commercial lines - More than 24 public services installed, including land records, agriculture commodity rates, grievance opportunity, and applications to government departments. -Replicated in more than 45 districts in India.
Madhya Pradesh	ITC e-Choupal	-Enhance Rural Livelihoods	-Started in 42 villages of Ujjain district and around 1,800 kiosks in Madhya Pradesh and has around 3,300 kiosks in Central India. -Caters to soya growers for information, products and services required in soya farming through Kiosks. -Kiosks also handle dealerships of various commodities like Hero cycles and Eicher tractors that provides extra benefits to the villagers in terms of minimizing their cost on travel expense.
Pondicherry	Village Information Shops	-Distribute locally relevant information -Building capacity and capability - Increase and improve access to Government services	-Enable rural families to access modem ICTs -Easy rural access to information related to health, credit, input price and availability, transportation, pest surveillance and agronomic practices. -Use of Tamil language and Tamil script in the computers - Awareness in poor communities of the government programmes and entitlements that are available for them from a database of more than 100 such entitlements.
Rajasthan	Janmitra	- Increase and improve access to Government services	-a joint initiative of UNDP and the Government of India, operational since 2002. - A rural intranet provides e-governance, e-education, e-health and e-commerce services to the villagers through 30 Community Information Centres (CICs) -21 departments are connected to the server through dial-up connectivity and 13 departmental offices are on a Local Area Network (LAN) with the server. -Kiosks also function as stamp vendors, petition writers, computer education providers and desktop publishing (DTP) providers.
Rajasthan	Gramdoot	-Support good governance - Improves access to information	-Aksh Optifibre Ltd provides an integrated hardware and software solution for connectivity in the Gramdoot project. -provides e-governance through broadband services to 200 gram panchayats in Jaipur district besides providing cable connections to rural households on which 32 television channels are telecast. -High-speed non-dial-up Internet access at 70 Kbps is available to 200 villages. -Land records, prevailing market rates of agricultural commodities, Hindi e-mail facilities, application for certificates and online

			grievance opportunities are also provided.
Sikkim	Community Information Centres	-Empowerment through access to information	-Piloted in 30 blocks of seven North Eastern states in 2001 -Currently all 487 blocks in 79 districts of the states are provided with one telecentre (Kiosk) each to provide e-governance, e-health, e-education and e-business opportunities.
Tamil Nadu	India Agriland	- Empowerment through Access to Information	-EID Parry caters to 100,000 sugarcane growers. -Partnered with N-Logue Communications Pvt Ltd in 48 kiosks since in operation from 2003. -Disseminates market and commercial information to farmers and provides them with direct access to their markets. -Information includes crushing details of sugarcane, payments due to farmers, local news, weather forecast, information on cultivation and farming techniques, e-mail, etc. -Services are provided at user charges ranging from Rs 5 to Rs 10 per service. -Information kiosks also collect soil samples for testing and sale seeds, sugar, tea and candies.
Tamil Nadu	N-Logue Telecentres	-Empowerment through access to information	- 30 telecentres have been set up In Madurai district of Tamil Nadu, which provide a link between the doctors at Madurai Medical College and the villagers. Besides telemedicine, several other web-based services are also provided to the villagers.
Tamil Nadu	Vidyal Information Service Provider (VISP)	-Improving access to microfinance	-Activists for Social Alternatives (ASA) has been working in five districts of Tamil Nadu in rural microfinancing since 1993. -Has 2,000 women's credit and thrift groups and has 60,000 women members. -In May 2003, ASA launched VISP in six villages to provide services such as prices of agriculture commodities, horoscopes, rural market place, matrimonial services, educational services, grievance opportunity, government forms, etc., by using the software developed by Drishtee Foundation. -Kiosks also provide services like web-browsing, DTP, data entry job work, net-to-phone and basic computer education.
Uttar Pradesh	TARAhaat	-Empowerment through access to information - Improve access to government services	-Started by Development Alternatives (with the help of 12 project partners) in four districts of North India as a business model to cater to the unserved rural markets. -Provides services like TARAbazaar (e-bazaar), TARAvan (mobile kiosks), TARAguru (e-education),TARAdhaba (cybercafé), TARAreporter (news), TARAdak (e-mail), TARAvendor (e-commerce) and TARAcard (e-greetings). -Provides connectivity to franchisee kiosks through C-band satellite, VSAT or dial-up modem, according to the infrastructure available.

5. Impediments to E-government Development

The United Nations Department of Economic and Social Affairs (UNDESA) estimates more than 60 percent of e-government projects in developing countries as failures due to poor understanding of the barriers in the design, implementation and development of E-government systems. These Barriers are the real or perceived characteristics of the social, technological, legal and institutional context that hinder E-government development either through hampering demand by the citizens and businesses for E-government services or through obstructing supply of E-government services by the public sector. According to Castells' theory, demand- and supply-based barriers are the product of the organization of "flow spaces" in society and existing transformational structures. These barriers affect exchange and

interaction among different social actors in economic, political and social spheres. Demand-based barriers to E-government services have a variety of economic, social and cultural causes that hinder access to and the effective use of E-government services such as lack of confidence, illiteracy, training, trust, language and citizens' low expectations with respect to the government resulting in the limited use of online information and services (Helen Margetts & Patrick Dunleavy, 2002). E-government does not provide a timely opportunity in the decision-making process for people living in poverty. Being the most frequent users of government services, low-income groups require more information on social policies and programs, but experience greater difficulty in accessing the benefits of E-government. Thus, lack of considerable government efforts in making relevant information reach the poor deprives them from access to e-government services.

The digital divide is one of the crucial global barriers to E-government adoption. India records low Internet and personal computer (PC) penetration rates. World Information Society Report (2006, 2007) reports growth in Infrastructure in India from 0.04 in 2005 to 0.05 in 2006. Digital Opportunity Index (2006) ranks India 124 out of 180 countries surveyed in terms of eleven core ICT indicators. (http://www.itu.int/osg/spu/statistics/DOI/doi-guide.pdfT.) Several developing countries have attempted to overcome the digital divide problems through programs promoting PC ownership and the provision of public Internet access points. Nonetheless, computer illiteracy, low Internet and PC penetration are still widespread. E-government in many developing nations inadequately represent or lack appropriate strategies and objectives to enhance digital inclusion. Enhancing the reach and effectiveness of services provided to socially excluded groups do reap considerable efficiency gains. Therefore, social inclusion must be a priority in the future development of E-government to reap full benefits of digital transformation.

6. Towards Socially Inclusive/ Pro-poor E-governance strategy in India

Implementing E-government for the poor is a complex phenomenon. Most e-government for development projects fail, particularly large scale e-government projects with high costs, due to enormous gaps between project design and on-the-ground reality, known as "design-reality gaps" (Heeks, 2003), besides the lack of a supporting organizational and institutional reform as well as poor strategic planning and implementation. For e-government to be effective it must be implemented in a wider context of basic public sector reforms (Bhatnagar, 2004). Pro-poor E-governance strategy in India enhances opportunities for local service delivery to the poor as part of the national poverty reduction strategy and a way towards achieving the MDGs. Successful implementation of E-government initiatives for the poor depend on building trust, a sense of ownership, ensuring transparency, accountability and commitment and building networks. Strategic collaborative planning focuses on how different stakeholders can interact more effectively to add value, ensure that there are no gaps in service delivery, minimize duplication and enhance synergy (ESCAP 2004).

Development of socially inclusive E-government by identifying relevant context-specific, need-based applications is crucial to the success and sustainability of pro-poor E-governance. A suitable technology, the community's development capacity, national policy and infrastructure need to be addressed to make rural telecenters a viable option for poverty alleviation. Several Pilot projects demonstrate the value of projects targeting the poor, the outcome of which serves as models for replication into nationwide approaches for E-government to rural areas and to attain the sustainability of rural telecentres. Countries such as India, Sri Lanka and Malaysia have plans for large-scale national schemes to establish rural telecenters as a mechanism for providing access to E-government community services. Capacity building, participatory planning for civil servants, local government and communities is vital in designing, implementing and utilizing pro-poor E-governance services. The intended impact on the poor and the vulnerable need to be examined by regular monitoring and evaluation of the existing projects and programmes as well as planning future interventions followed by a feedback mechanism for stakeholders

and beneficiaries of the projects. This helps to create and sustain the accountability, transparency and effectiveness of service delivery. Visions and goals should be clearly articulated in terms of socio-economic development and quality of life enhancement for all members of society, including the marginalized poor. Stakeholders are a valuable resource for a sustained E-government function.

As stated by the Group of Eight Digital Task Force (G8 DOT Force) "efforts to increase access to ICTs should be rooted in a broader strategy to combat poverty" (Harris, 2004). The following conclusions from the current experiences with rural telecenters (Bhatnagar, 2004) are:

- Rural populations are willing to pay a fee for systems that have clear business potential and benefits for them.
- The uptake of electronic services depend on whether significant added value is delivered in comparison with existing ways of receiving information and services.
- Intermediaries are often needed to respond to the specific information needs of rural citizens, and to interpret and disseminate knowledge from public documents.
- Poor telecom and power infrastructure in rural areas can affect the economic viability of rural kiosks.
- Four pillars that need to be addressed for bridging the digital divide can be identified, as follows (Bhatnagar, 2004):
- Applications that draw a large clientele that pays for the service ensuring economic viability of the kiosks.
- Content that empowers rural citizens and enables the formation of communities.
- NGOs and grass-roots organizations that encourage and manage the community-building process.
- Technology that makes rural access inexpensive and robust.

The ITU study on communications for rural and remote areas identified the rural need-based ICT applications as e-education, e-health and e-administration. The report also emphasized the need to create ICT awareness among rural people that is one of major barriers for ICT diffusion in rural areas. The newer and more affordable technologies will be the key to providing access to such communities.

7. Policy Recommendations for Socially Inclusive E-Government

Technology is most effectively deployed in pursuit of some predefined developmental outcome, rather than as an outcome itself. A well-conceived project will be more likely to deliver useful benefits to its target audience in a sustainable manner. Confidential information provided to the study team from a recent project for the Organisation for Economic Co-operation and Development (OECD) found that E-government initiatives targeted on, or particularly useful to, socially excluded groups achieved the highest returns on investment amongst E-government initiatives for citizens. Considering lack of E-government strategies for socially excluded, following recommendations are drawn:

- For socially excluded groups to benefit from digital transformation, local government needs to seize the opportunities that ICT provides by:
  - o Making better use of information and data to understand the distribution and magnitude of social exclusion problems and to use this knowledge to underpin social inclusion strategies
  - o Greater legal clarity and promotion of the benefits of information sharing between public organizations
  - o Making better use of information, ensuring that key staff who work with these individuals/groups are informed and trained so they understand and therefore use their knowledge more effectively to target initiatives and to provide personalized services
- Central government objectives and goals need to emphasize the role of technology and E-government in meeting the needs of socially excluded groups. Action is required to ensure:
  - o Social inclusion is a priority in the future development of the E-government agenda

    o   Central government develops clearer objectives to support and guide the use of technology to enhance social inclusion

    o   Goals for E-government emphasize the provision of better quality services for users as well as increased efficiency for service providers

ICT driven poverty reduction and E-governance projects need to remain financially sustainable. The closer that it comes to self-financing sustainability, the better incentives need to be generated to stimulate people living in poverty to use and benefit from E-government.

8. Concluding Remarks

This paper examined the effects of E-government implementation in the context of widespread poverty in India through an analysis of several success stories on ICT Interventions in Poverty reduction. Considering the factors that impede the E-government development, specific recommendations were made to involve the socially excluded groups in the design, implementation and access to E-government services. E-government strategies must target poverty to efficiently serve the rural poor who lack access to relevant information and are less likely to participate in government. Lack of integrated E-government strategies will provide less opportunity for these communities to indirectly or directly participate in government, consequently widening the digital divide affecting the development of democracy and its institutions. Equitable access and use of E-government services requires a broader perspective by strengthening the strategies to include socially excluded. Government agencies should creatively extend the use of their information networks and replace current perspectives with a more decentralized focus that translates into the broader reach of their services. Government organizations should implement innovations to explore how citizens use and perceive Internet. High rate of access to technological devices (e.g., cellular phones) in rural areas must be considered by government to integrate strategies that incorporate the use of other devises to encourage increased use of e-government services to make E-governance a reality in India.

References

1. ADB, *Toward E-Development in Asia and the Pacific*: A Strategic Approach to Information and Communication Technology, 2003, www.adb.org, accessed 27 May 2007.
2. *Asia-Pacific Journal on Information*, Communication and Space Technology: Reviews and Updates. First Issue – 2006, Economic and Social Commission for Asia and the Pacific
3. 2007 Asia - Telecoms, Mobile and Broadband in India: http://www.researchandmarkets.com/reportinfo.asp? report_id = 481013
4. Baramati Initiatives, SKS-Smart Cards: Case Study, 2001. [www.baramatiinitiatives. com/cases/case10.htm].
5. Best, Michael and Maclay, Colin M. (2002), Community Internet Access in Rural Areas: Solving the economic sustainability puzzle, *The Global Information Technology Report 2001-2002*: Readiness for the networked world, ed., Geoffrey Kirkman (Oxford University Press, 2002). Available online at http://www.cid.harvard.edu /cr/gitrr_030202 .html (May 20, 2007)
6. Bhatnagar, Subhash (2004). *E-government: from vision to implementation – a practical guide with case studies,* New Delhi, Sage Publications, 2004, pp. 17, 53, 54, 73.
7. C. Kenny, J. Navas-Sabater and C. Quiang (2001), Information and Communication Technologies and Poverty in World Bank, *Poverty Reduction Strategies Sourcebook*, 2001. www.worldbank.org/poverty/ strategies/ict/ict.htm.
8. Centre of E-governance, IIM Ahmedabad, Evaluation Studies by the Centre for E-Governance, Indian Institute of Management, Ahmedabad (CEG-IIMA) Information Technology in Developing Countries, Volume 13, No. 1, June 2003. Available online at http://www.iimahd.ernet.in/egov/ifip/jun2003/ article6.htm (May 18, 2007)
9. *Critical Success Factors for Rural ICT Projects in India: A study of n-Logue kiosk projects at Pabal and Baramati*. Submitted in partial fulfillment of the requirements for the degree of Master of Management By Vivek Dhawan, IIT Bombay

10. CRISP Group, National Informatics Centre, Department of IT, Ministry of Communications & IT, Government of India, Information Needs Assessment for Rural Communities- An Indian Case Study, July 2003. Available online at http://ruralinformatics.nic.in/files/4_12_0_229.pdf (May 15, 2007)

11. Edwin Lau, Project Leader OECD E-Government Project. Challenges for E-Government Development. *5th Global Forum on Reinventing Government*, Mexico City, November 2003

12. Gartner estimate rates India as the fourth largest IT spender. *The Economic Times*, 13 July 2003. http://www. infochangeindia .org/archives1.jsp?secno=9&monthname=September&year=2003&detail=T

13. Handbook on Implementing E-Government with basic introduction to E-Commerce: Developed by D.Net - Development through Access to Network Resources

14. Harris, Roger W. (2004). Information and Communication Technology for Poverty Alleviation, *E-primers for the Information, Economy, Society and Polity* (Kuala Lumpur, UNDP-APDIP, 2004), pp. 21, 35.

15. Heeks, Richard (2003). Most e-Government-for-Development Projects Fail: How Can Risks be Reduced? (IDPM, University of Manchester, United Kingdom), accessed from http://www.egov4dev.org.

16. Heeks, Richard (1999).Information and Communication Technologies, Poverty and Development, Development Informatics Working Paper Series, Paper No. 5, 1999. www.idpm.man.ac.uk/idpm/di wp5.htm.

17. India targets PC penetration of 6.5% by 2008: http://mungee.org/archives/2005/05/19/india-targets-pc-penetration-of-65-by-2008/.

18. India: e-governance market to have an explosive growth by 2007: http://www.digitalopportunity.org/article /view/125575/1/

19. International Telecommunication Union, *Global Survey on Rural Communications*, ITU News, No. 5, June 2004, www.itu.int/itunews, accessed 28 May 2007.

20. J. James, Pro-Poor (2000) Modes of Technical Integration into the Global Economy in Development and Change, Vol. 31, 2000, pp. 765–783.

21. Keniston, Kenneth, (2002) Grassroots ICT Projects in India: Some Preliminary Hypotheses *ASCI Journal of Management* 31(1&2), 2002. Available online at http://web.mit.edu/~kken/Public/PDF/ASCI _Journal_Intro __ASCI_ version_. pdf (May 11, 2007)

22. Keniston, Kenneth (2007), IT for Masses: Hope or Hype? Available online at http://web.mit.edu /~kken/Public/PDF/EPW_paper.pdf (May 11, 2007)

23. Keniston, Kenneth (200&), The Four Digital Divides. Available online at http://web.mit.edu/~kken/Public/ PDF/Intro_Sage_1_.pdf (May 11, 2007)

24. McNamara, Kerry S. (2003), Information and Communication Technologies, Poverty and Development; Learning from Experience. A background paper for the *InfoDev Annual Symposium*. The World Bank.

25. Margetts, Helen & Dunleavy, Patrick (2002), Cultural Barriers to EGovernment, published by the National Audit Office, April 4, 2002 (HC 704-III) in conjunction with the Value for Money report "Better Public Services Through EGovernment."

26. Milestones in India's Internet Journey: http://www.amitranjan.com/category/5/

27. Mission 2007 India http://www.mission2007.org/

28. OECD (2005). The contribution of ICTs to Achieving the Millennium Development Goals (MDGs), forthcoming publication, Good Practice Paper on ICTs for Economic Growth and Poverty Reduction, 2005, http://www.oecd.org/dataoecd/15/38/34662239.pdf, accessed 23 May 2007.

29. Randall Spence, "Information and Communications Technologies (ICTs) for Poverty Reduction: When, Where and How?, OECD Inter national Development Rese arch Cen ter (IDRC) , 2003, http://netwo rk.idrc.ca/uploa ds/user-S/ 10618469203RS_ICT-Pov_18_July.pdf, accessed 2 June 2007.

30. Recommendation Rec (2004)… of the Committee of Ministers to member states on electronic governance ("e-governance"): (Adopted by the Committee of Ministers on 15 December2004 at the 909th meeting of the Ministers' Deputies)

31. S. Bhatnagar (2000), Empowering Dairy Farmers through a Dairy Information & Services Kiosk,World Bank,Washington, DC, (2000) www1.worldbank.org/publicsector/egov/diskcs.htm.

32. S. Bhatnagar and N. Vyas (2001), Gyandoot: Community-Owned Rural Internet Kiosks, World Bank, Washington, DC, 2001. [www1.worldbank.org/publicsector/egov/gyandootcs.htm].

33. S. Bhatnagar and R. Schware, eds (2000), *Information and Communication Technology in Rural Development*. *Case Studies from India*, World Bank Institute Working Papers, 2000. [www.worldbank.org/wbi/pubs case37160.html].

34. S. Cecchini (2001), *Back to Office Report: Information and Communications Technology for Poverty Reduction in Rural India*, Mimeo, World Bank, Washington, DC, 2001.

35. S. Cecchini (2002), *Back to Office Report: Evaluation of Gyandoot and Bhoomi and International Conferences on ICT for Development*, Mimeo, World Bank, Washington, DC, 2002.

36. S. Cecchini and M. Raina, (2002) Warana: The Case of an Indian Rural Community Adopting Information and Communications Technology in *Information Technology in Developing Countries*, Volume 12, No. 1, April 2002. www.iimahd.ernet.in/egov/ifip/apr2002/apr2002.htm.

37. S. Cecchini and T. Shah (2002), *Information and Communications Technology as a Tool for Empowerment in Empowerment and Poverty Reduction: A Sourcebook*. World Bank, Washington, DC, 2002. www.worldbank.org/poverty/empowerment/.

38. Singh, Subir Hari. (2000). Ways and Means of Bridging the Gap between Developed and Developing Countries, *High-Level Panel on Information Technology and Public Administration*, United Nations, New York, 26th September.

39. Sociocultural Barriers to E-Government: An Analysis from a Poverty Perspective: María Inés Salamanca1, FLACSO Chile, DIRSI (Regional Dialogue on the Information Society), funded by the IDRC. December 2006.

40. Sood, Aditya Dev (2003), The Kiosk Networks: Information nodes in the rural landscape, *i4d*, Volume I Number 1, May-June 2003. Available online at http://www.i4donline.net/issue/may03/aditya_full.htm (May 23, 2007)

41. The E-Government Divide: Mutual Effects of Digital Divide and E-Government. World Congress on Engineering and *Digital Divide*, Tunis, 12-19 October, 2003

42. UNDP (2006), *Human Development Report*, India, 2006.

43. UNDP-APDIP (2004). *ICT for Development: A Sourcebook for Parliamentarians* (New Delhi, Elsevier, 2004), pp. 39.

44. V.B. Akula (2000), Putting Technology to Work for Poverty Alleviation: A Draft Proposal for $151,030 to Develop Smart Cards for Microfinance, Swayam Krishi Sangam, Hyderabad, 2000.

45. World Bank, *World Development Report 2000/01*: Attacking Poverty, Oxford University Press, 2001. www.worldbank.org/poverty/wdrpoverty/.

46. World Bank Group (2004). *World Development Report 2004*: Making Services Work for Poor People (Washington, D.C., World Bank, 2003), pp. 7.

47. World Bank, *ICTs and MDGs: A World Bank Perspective*, 2003, www.worldbank.org, accessed 26 May 2007.

About the Authors

Sandeep Kaur is currently pursuing her Ph.D from the Department of Communication, PSG College of Arts and Science, Coimbatore, Tamilnadu, India. She is researching in the area of Rural E-governance. She has completed Graduation in Science and Postgraduation in Arts from colleges affiliated to Bharathiar University, Coimbatore, Tamilnadu, India. She has done her M.Phil Degree programme on Youth Attitude towards Internet Use in 2002. Her major areas of interest are New Media Uses and Effects, Media Convergence and its Dimensions, E-Governance.

N.Mathiyalagan is a Reader in Department of Communication, PSG College of Arts and Science, Coimbatore, Tamilnadu, India. He has a commendable teaching experience of 22 years. He obtained his Ph.D on Television and Children. He has completed Graduation and Postgraduation from Madras University and university studied research, Bharathiar University. He has guided and is currently supervising M.Phil and Ph.D researches primarily focusing on New Information and Communication Technologies. His research interests includes New Media Studies, E-development led Issues.