ICTs and Development

A Study of Telecentres in Rural India

Maitrayee Mukerji

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List of Abbreviations

APDIP	Asia Pacific Development Information Programme
BJP	Bhartiya Janta Party
BoP	Bottom of Pyramid
BPO	Business Process Outsourcing
BSP	Bahujan Samaj Party
CAD	Computer-Aided Design
CAM	Computer-Aided Manufacturing
CDAC	Centre for Development of Advanced Computing
CSCs	Common Service Centres
CSOs	Civil Society Organizations
CT	Communication Technology
DDCL	Drishtee Dotcom Ltd.
DFID	Department for International Development
DHAN Foundation	Development of Human Action Foundation
DIT	Department of Information Technology
DSS	Decision Support System
DTP	Desktop Publishing
EID	East India Distilleries
FMCG	Fast Moving Consumer Goods
FRIENDS	Fast Reliable Instant Efficient Network for Disbursement of Services
G2C	Government to Citizen
GIS	Geographic Information System
GO	Government Organization
GoM	Government of Maharashtra
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development

IDRC	International Development Research Centre
IIT – Chennai	Indian Institute of Technology, Chennai
IIT – Kanpur	Indian Institute of Technology, Kanpur
IL&FS Ltd.	Infrastructure Leasing and Financial Services Limited
IMR	Infant Mortality Rate
IT	Information Technology
ITC-ABD	Indian Tobacco Company – Agri-Business Division
ITeS	Information Technology Enabled Services
ITI	Indian Technical Institute
ITU	International Telecommunication Union
KCC	Kisan Credit Cards
KELTRON	Kerala Electronic Limited
KSITM	Kerala State Information Technology Mission
MCT	Multipurpose Community Center
MGP	Modernisation Government Programme
MIS	Management Information Systems
MLA-Mumbai	Media Lab Asia Mumbai
MNCs/TNCs	MultiNational Companies/TransNational Companies
MSSRF	M. S. Swaminathan Research Foundation
MSWAN	Maharashtra State Wide Area Network
NASSCOM	National Association of Software and Services Companies
NeGP	National e-Governance Plan
NGOs	Non Governmental Organisations
NH	National Highway
NIC	National Informatics Centre
NIIT	National Institute for Information Technology
NO	Network Orchestrator
NT	Notified Tribes
OBC	Other Backward Castes
OECD-DAC	Organization for Economic Cooperation and Development – Development Assistance Committee

PGDCA	Post Graduate Diploma in Computer Applications
POPs	People Oriented Projects
SARI	Sustainable Access to Rural Internet
SC	Scheduled Caste
SEEPZ	Software Export Processing Zone
SHG	Self-Help Groups
SP	Samajwadi Party
ST	Scheduled Tribes
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UP	Uttar Pradesh
UPS	Uninterrupted Power Supply
VBCP	Vistaar Block Channel Partner
VSAT	Very Small Aperture Terminal

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My engagement with this research began in 2003 when the hype about ICTs for Development (ICT4D) was at its peak and I enrolled for my doctoral studies at the Institute of Rural Management, Anand (IRMA), India. While the initial question was 'Did telecentres actually bring about any socioeconomic, institutional or political change in the village?' By the time the coursework was over, the quest was to understand why despite evidences of limited outcomes, the enthusiasm for ICT4D interventions appeared to have increased. For example, the policy directive by Government of India to rollout one lakh common service centers (CSCs) as part of the National e-Governance Programme. At the time of writing this book, the CSCs appeared to be struggling from issues very similar to, if not more complicated than those of the early telecentre initiatives in India. While this endeavour was not very successful in finding evidences of 'impact,' it does have some insights for the policymakers and practitioners engaged in the area.

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1
Introduction

During the 1990s, advances in digital technology enabled simultaneous creation, processing and transmission of all forms of data – textual, sound and image. Along with the evolution of the Internet and World Wide Web, such advances led to the convergence of media, access equipment, gadgets and devices, applications and services. In common parlance, convergence also refers to the technical, functional and corporate integration[1] of key sectors like telecommunication, broadcasting, microelectronics and information technology (Soriano, 2003, pp. 15–16; UNESCO, 1997, p. 33). The origin and popular use of the term Information and Communication Technologies (ICTs) is attributed to such convergences and to the fusion of computing and communications – especially through the Internet (Labelle, 2003, p. 1). Broadly they include devices, applications and services associated with radio, television, mobile phones, computers, network and satellite systems (Kleine & Unwin, 2009, pp. 1045–6). ICTs enable communication and exchange of information between individuals and organizations across geographic locations (UNDP, 2001b). They are central to the process of globalization and in the creation of economies and societies, often described as 'global', 'digital', 'networked', 'information' or 'knowledge'.

ICTs for Development (ICT4D) refers to the trend in development thinking and practice that considers information, knowledge and communication important for bringing about development and thus propound active deployment of new ICTs like computers and Internet in developing countries for (a) spurring economic growth, as in production of ICT goods and services and by using ICTs to increase the productivity and efficiency of other sectors; (b) facilitating governance reforms through computerization of key administrative functions and e-Governance initiatives; and (c) human development by using

technologies to bridge the digital-divide and enhance delivery of services like education, health, etc. (Accenture, Markle Foundation & UNDP, 2001; Cecchini & Scott, 2003, pp. 74–5; Kramer & Derick, 2002 c.f. Joseph, 2002, p. 3). This dominant view espoused by practitioners assumes a techno-deterministic and unidirectional (the emphasis on 'for') relationship between provisions of new technologies and development. It does not take into consideration the historical or political economy aspects of the production, deployment and use of ICTs (Sreekumar & Rivera-Sanchez, 2008, p. 160). The term ICT *in* Developing Countries is also used in literature since the focus had been specifically on information systems and use of ICTs in developing countries (Avgerou, 2008; Walsham & Sahay, 2006). In contrast, ICTs *and* Development (ICT-D) as an alternate term is often used for describing the emerging interdisciplinary area of research on implementation, diffusion, adoption and impact of ICTs in developing countries (Sreekumar & Rivera-Sanchez, 2008).

In the extant literature, the difference between the dominant ICT4D approach and the critical ICT-D perspective manifests in the basic notions held about the role of technologies in development and consequently in framing of the research objectives and questions.[2] To illustrate, the dominant perspective believes that ICTs have inherent characteristics to overcome infrastructural and institutional obstacles and hence by bridging the digital divide using telecentres, existing socio-economic divides can also be bridged. The research questions then revolves around issues of developing appropriate technology, connectivity, favorable policy, business models, sustainability, entrepreneurship, etc. Despite recognizing that access to technology is shaped by contextual characteristics, the perspective essentially puts an emphasis on the instrumental and/or techno-centric if not techno-deterministic options.

In comparison, by substituting 'and' in place of 'for' allows the researcher to question the basic assumptions in conceptualizing the digital divide itself. The ICT-D approach acknowledges and foregrounds the historical, socio-cultural, market and political-institutional factors that often play a role in the implementation, diffusion and adoption of technologies (Sreekumar & Rivera-Sanchez, 2008). Adopting a critical perspective enables a holistic understanding of the larger discourse on ICT and development, which in turn is necessary for making sense of the actual outcomes. Both the terms ICT4D and ICT-D are used in the book. The former is used while referring to the dominant perspective or describing ICT-enabled projects and interventions. The latter denotes the stance adopted by the study for investigating telecentres

and development against the backdrop of the larger discourse on ICTs and Development.

Telecentres and development

Within the wide variety of ICT-D applications and approaches, one popular form of intervention has been the telecentre. They are also known as telecottages, multipurpose community telecentres, community multimedia centres, public Internet access centres etc. In the case of developing countries, use of terms like rural knowledge centres, information kiosks, village knowledge centres, common service centres etc. are also common. Within India, telecentres are popularly referred by their brand names like Gyandoot, Drishtee, Akshaya e-Kendra, e-Choupal etc. In this study, telecentre is defined as a generic term for all kinds of arrangements that provided shared and mediated access to information and services using new technologies like computers and the Internet. The concept of shared access emerged in response to the perceived constraint that households in rural areas cannot afford expensive technologies (Proenza, Bastidas-Buch & Montero, 2001, p. 2). Access is said to be mediated because a telecentre operator, also referred to as entrepreneur or infomediary (Ballantyne, 2002, p. 185), mediates between information, technology and the people. Mediated access was considered as a way to overcome the barriers of low levels of literacy, awareness about technology and availability of required computing skills.

The earliest telecentres were established in developed countries during the mid-1980s (Fuchs, 2007).[3] At that time the cost of computers and associated software was very high. The primary purpose of the telecentres was to provide shared access to expensive computing resources. They were deployed in remote and rural locations to enable communities to overcome social and economic isolation (Oestmann & Dymond, 2001, p. 2). The acceptance of telecentres as development intervention is often attributed to the telecentre movement[4] in Hungry in the mid-1990s. After the collapse of centralized political and economic structure, around 150 telecottages were established in Hungry as part of a USAID-supported, public-funded programme for building the local government (Colle and Roman, 2001, p. 4; Mátyás, 2001; Murray, 2001). Around the same time, there was a global call to bridge the digital divide through provision of universal and affordable access via publicly available facilities. Numerous pilot projects were initiated in developing countries by various international agencies like UNESCO, ITU, IDRC and FAO etc. These pilot projects facilitated understanding about the role of ICTs in

enabling development in different contexts. While the experience of telecentres in developed and developing countries differed in terms of technology deployed, resources mobilized, organization and impact, the discourse was similar in terms of hopes and expectations (Sreekumar, 2011). The current phase of the telecentre movement is often referred to as Telecentre 2.0 where the telecentre is considered as 'a mature development mechanism' for 'implementing a judicious development strategy in resource-poor situation of developing countries and marginal areas' (APDIP, 2007a, p. 1).

Roman and Colle (2002, p. 3) identified three basic assumptions guiding the telecentre movement across the globe: (a) information can contribute significantly towards individual and community development, (b) ICTs can accelerate the flow, exchange and effectiveness of information, and (c) people can use telecentres to access ICTs. These basic assumptions can be traced to the emergence of certain supply-side and demand-side factors at global and national levels. On the supply side, technology push was provided by successive reduction in the price of the basic personal computer, increasing computing power and robustness, and innovations in satellite and wireless technologies, evolution of the Internet and World Wide Web, and convergence of digital media (Oestmann & Dymond, 2001, p. 2). These in turn spurred the computer and Internet industries to expand their market in newer areas (Dagron, 2001; Ya'u, 2002).

On the other hand, demand was created by both government and business organizations. The revolutionary changes brought about by information technology in restructuring manufacturing and reengineering business processes generated much hope with regard to the nature of interaction within the public sphere and about the possibilities of online democracy, participation, digital empowerment, inclusion and equity (Gomez & Ospina, 2001). The need and urgency to adopt ICT-enabled management practices under the e-Governance rubric for a responsive, accountable, accessible and transparent administration was another key driver of telecentre deployment (Madon, 2005, p. 402). Business organizations and private enterprises perceived an opportunity to establish and expand their business by using new technologies to serve 'the bottom of the pyramid' (Prahalad, 2004; Schwittay, 2008). Further, the efforts directed towards bridging the digital divide and 'enabling everyone everywhere to participate in the global economy' mainstreamed telecentres as a development strategy of various aid organizations (IIIT-B, 2005; Thomas, 2006; UNDP, 2001b, p. 2).

Specifically, telecentres as ICT-enabled development strategy were envisioned to contribute to socio-economic development in one or more of the following interrelated ways (Oestmann & Dymond, 2001):

1. Development of physical infrastructure: Telecentres, as means of bridging the digital divide, provide connectivity and thereby enable rural areas to overcome lack of traditional infrastructure like road and transport.
2. Economic development: Telecentres effect economic development by generating direct or indirect employment; accelerating exchange of private goods and services, reducing transaction cost of the agencies and enhancing livelihoods by providing access to market information, better farming practices, employment opportunities, etc.
3. Administrative reforms and institutional changes: Telecentres as delivery points for e-Governance services lead to better local administration and improved government-citizen/business/government interface (G2C, G2B, G2G), thereby increasing reach, transparency, responsiveness, accountability, efficiency, effectiveness, citizen's empowerment and participation. Institutional change is also expected as telecentres enable people to bypass the traditional knowledge brokers like middlemen and moneylenders by providing direct access to information.
4. Social and cultural development: Telecentres improve access to basic services like health and education, thereby increasing capacity and employability of people. They also enable communication and exchange of ideas, expertise, goods and services via national and international networks and online forums.

Telecentres in rural India

The growing popularity of telecentres can be seen from their emergence and evolution in rural India. A compilation of ICT4D projects in 2004 showed that India had the largest number of ICT-enabled projects, more than the combined figure for all other Asian countries (Paul, Katz & Gallagher, 2004, p. 6). The projects were both sector specific as in applications of ICTs for education, microfinance, etc. and cross-cutting the three broad thematic application areas – economic development, governance reforms and human development. Apart from the supply-side and demand-side factors mentioned above, deployment of telecentres in India emerged primarily from the policy concern that the benefits of the new technologies in terms of

employment and income had accrued only to the educated and urban population.

At the start of this study, a web-based compilation indicated around 50 different types of telecentre-based projects which together had around 50,000 kiosks dotting the rural hinterland (See Annexure 1). However, it is difficult to estimate the actual number of telecentres in rural India. Many of the earlier pilot projects like Gyandoot, Mahiti Shakti or n-Logue Chiraag have closed down. And few like Drishtee have changed their initial orientation. Others like Akshaya in Kerala and e-Gram in Gujarat have aligned with the national level Common Service Centre (CSC) programme. The number of telecentres in rural India may have actually increased with 100,000 Common Service Centres planned for deployment under India's National e-Governance Programme (NeGP) (www.mit.gov.in). Whatever be the number, the telecentre movement in India is characterized by considerable diversity in terms of agencies involved, purpose, organizational structure, etc.

However parallel to hope and optimism regarding the potential of ICTs and telecentres to bring about development in rural areas, there was scepticism also. The scepticism was partly due to the fact that many celebrated projects never took off after the pilot phase was over, and failed to create the desired impact (Keniston, 2002a, pp. 3–6; Kothari, 2002). Only a handful of telecentre projects could demonstrate some incremental change in the villages (Dagron, 2001, Sreekumar & Sanchez, 2008). The anecdotal evidences of social and economic impact of telecentres were not adequately substantiated by field-based investigations (Gomez, Hunt & Lamoureux, 1999; IIIT-B, 2005; Keniston, n.d.). Further, perceptions on success and failure of telecentres were mixed, depending upon the criteria selected for judging them. For example, the progress of large-scale programmes like CSCs are still given in terms of the number of CSCs rolled out, instead of measurable and quantifiable socio-economic outcomes and impact. The quest for a sustainable, successful and replicable model remains. The sense of 'not knowing for sure' as to whether telecentres and ICTs for development was 'more hype than hope' was the primary motivation for undertaking this empirical study. It was an attempt to investigate the changes brought about by telecentres in the villages and also to comprehend their long-term social and developmental impacts.

Research questions and objectives

The research started with two broad questions: (a) What are the changes brought about by telecentres in rural areas, and (b) how are the changes

mediated or shaped by the macro, meso and micro contexts? However, preliminary fieldwork revealed certain theoretical and methodological challenges of the endeavour.

Telecentres were deployed by many different types of agencies as part of their ICT4D strategies. At the time of the study, evidence about their impact was primarily anecdotal. The general belief or rather 'groupthink' was that provision of technology and services would automatically solve the issues of development (Wade, 2002). No deliberations were deemed necessary for debating the often contested notions of development. For example, what kind of development was propounded by ICT4D? Who benefited from such developmental strategies? How development at one level – macro, meso or micro – was shaped and/or influenced by development at another level. Efforts have been made to draw upon areas like development studies and management for theorizing about the linkages between ICTs and Development (Avgerou, 2008; Heeks, 2007; Kleine & Unwin, 2009; Schech, 2002). However as pointed by De (2011), while investigating various aspects of any ICT4D project, prior theory is often found to be inadequate to factor in the complicated contextual issues shaping design, implementation, diffusion and adoption. Moreover, as observed by Sreekumar (2006), traditional metatheories of development policy and practice like modernization and dependency provided only partial explanations of the contemporary phenomenon. The empirical evidence of impact was mixed and highly dependent on the context. The overall ICT4D experience was diverse, fragmented and at times contradictory.

Methodologically, the main challenge was due to the elusiveness of observing, measuring and establishing the causal linkages between provision of technology/information and development. As interventions, telecentres were often deployed as part of broader development/business goals, making it difficult to explicitly map a particular development outcome like enhancement of the quality of life, increase in income or increase in efficiency of service delivery to the provision of information and new technologies. At the field level, because there are simultaneous interventions in other areas and by multiple agencies, it was also difficult to isolate and attribute a particular impact to the provision of telecentres. Many also consider that since the process of diffusion and adoption of such interventions is still underway, it is too early to observe their impact (Abraham, 2007; Heeks, 2007). Moreover as pointed by a recent review of literature (Sey and Fellows, 2009), even after around 15 years, the evidence of downstream impact is almost nil. Diversity in models and contexts makes it difficult to apply a particular

theoretical framework and draw generalizable conclusions (Kuriyan and Toyama, 2007).

To overcome such theoretical and methodological challenges, the study first made an attempt to delineate ICT-D as a development paradigm. And then the emergence and evolution of telecentres as development interventions was mapped against this broader context of ICT-D. As a paradigm, development was considered not only in terms of development outcomes or processes but also in terms of the ideologies, assumptions and strategies of various actors and agencies. This approach identified the key trends and agencies shaping the ICT4D discourse, in particular those driving the deployment of telecentres in rural India. It also allowed juxtaposing the findings from the field against the larger discourse for drawing implications for policy and practice.

Second, the conceptual framework for the study was derived from the existing literature on telecentres and development. Generic by nature, the conceptual framework was informed by many related areas and fields of study like development communication, diffusion of media and innovation, rural sociology and anthropology. Since impact was not directly observable or measurable, the conceptual framework put forth that the socio-economic change brought about by telecentres within a village can be studied by investigating the pattern of access and use of the telecentre and its services by households belonging to different socio-economic groups. It was based on the premise that technology access and appropriation is differentiated across different socio-economic groups within the village; an examination of access/non-access and use/non-use of its services would give an indication of the possible impact on different groups and consequently to the village as a whole.

Existing studies lent support to this assumption. In a study of the Sustainable Access to Rural Internet SARI initiative in Tamil Nadu (Kumar & Best, 2006b), a key finding was that telecentres sustain existing socio-economic inequalities within communities because the dominant users tend to be young, male, students, relatively more educated, belonging to higher-income households, and coming from socially and economically advanced communities. Another comparative study of two different telecentre initiatives in different states of Kerala and Andhra Pradesh indicates that access and use are differential across different developmental context (Thomas, 2006). Similar approach for assessing the socio-economic impact of telecentres by investigating the usage pattern has been adopted by many researchers (see Kumar & Best, 2006a, 2006b; Mukhopadhyay & Nandi, 2007; Pal, 2007; Thomas, 2006; Tiwari, 2008). However, this study differs from existing ones in few aspects.

First, for both conceptual and methodological reasons, the study considered household instead of individual users and non-users as the unit for data collection and analysis. Conceptually, telecentres provide shared and mediated access. Thus, to focus only on users who can operate the computer and surf the Internet, overlooks this basic assumption. Further, mere provision of technology or information often does not automatically lead to possible impact. It depends on specific capabilities and resources, at the individual and household levels. The possible impact of telecentres on individuals is also mediated by the telecentre characteristics. As some studies reveal, focusing only on individuals as users or non-users is also fraught with the methodological issues of locating them since records are often not maintained properly (Best & Maier, 2007; CEG-IIMA, 2002; Kumar & Best, 2006a, 2006b). Also, the usage itself is seasonal, and at times only occasional.

Second, attempts have been made to distinguish between access and use. While the term 'access' primarily has a technological connotation (since telecentres provide access to new technologies), it also has a physical, social and structured nuance. The telecentre has to be located at a place that is physically accessible to all, including women. And, it has to be socially accessible in that people irrespective of their socio-economic status, caste, education etc. are able to enter its premises. Access is considered as structured because the network orchestrator and the kiosk operator design it to be so. In contrast, use refers to the actual services availed by the people. Since telecentres provide shared and mediated access, use does not necessarily indicate that people have to operate computers and the Internet.

Last, the study examined access and use for each category of available services separately and for each of the observable and measurable parameters that together constitute the socio-economic status of the household. Such an approach, not followed by any of the existing studies, enables linking access and usage of the telecentre and its services by various socio-economic groups to the specific characteristics of the telecentre model, and to the local village level contextual features.

Thus, the overall objective of the study was to examine, within the broad context of ICTs and Development (ICT-D), the emergence and developmental implications of telecentres in rural India through field-based investigations of the pattern of access and use of the telecentre and its services by households in the village. The attempt was to understand the changes brought about by telecentres in villages by juxtaposing the discourse at macro contexts with the empirical data from the field and examining how the changes brought about by telecentres in

the village are mediated by multiple contexts – policy (macro), organization (meso) and village (micro). Further, implications are drawn with regard to the possible development pathways or trajectories of rural areas through the provision of ICTs.

Overview

The book consists of nine chapters. Following the introductory Chapter 1, Chapter 2 delineates ICT-D as a development paradigm by putting forth two perspectives on ICTs and Development. The dominant perspective espouses the ICTs for Development by propounding the deployment of new technologies for spurring economic growth, facilitating governance reforms and enabling human development. And the critical perspective calls for examining ICT-D within the prevailing political economy of the development by questioning 'who benefits'. Together, these two perspectives aid in identifying the factors driving the deployment of ICTs for development in general and telecentres in particular.

Chapter 3 reviews the available literature on telecentres in rural India to chart their emergence as development interventions. The multiplicity of agencies shaping the telecentre movement in India is manifested in the multitude of telecentre models and projects. On the basis of the type of network orchestrator and ownership of individual kiosks, a typology of telecentres in rural India is put forth to map the diversity into specific categories. Finally, the chapter briefly examines the literature for emerging discussion on telecentre sustainability and evidences of the socio-economic impact of telecentres in rural India.

Chapter 4 outlines the conceptual framework and methodology for the field-based investigation. The conceptual framework puts forth that the telecentre located in a village is embedded within multiple contexts: the external macro policy environment, the organizational characteristics and the local contextual characteristics of the village. The developmental implications of telecentres are drawn by studying the pattern of access and use by households belonging to different socio-economic groups. Case-study research using multiple and mixed methods of data collection was adopted as the research strategy. The unit of analysis was the particular telecentre located within the village. Key insights for conceptual framework and methodology from the pilot study on a n-Logue's Chiraag Banas kiosk at Kanodar in Palanpur district of Gujarat is also described.

Chapters 5, 6 and 7 present three in-depth case studies on Akshaya e-Kendra at Ariyallur in Kerala, e-Choupal at Pimpri Buti in Maharashtra

and Drishtee kiosk at Kesarpur in Uttar Pradesh respectively. All the three case studies have similar structure for facilitating their comparison. The comparative analysis of the three case studies is done by highlighting the similarities and differences across the three locations with regard to the policy, organizational and village characteristics and their influence on the pattern of access and use. The analysis and the key findings of the study are presented in Chapter 8. Chapter 9 puts forth the discussion and implications of the research for development policy and practice.

According to the typology of research purposes put forth by Patton (1990, pp. 160–1), this particular research study will fall between basic research (knowledge as an end in itself; discover truth) and applied research (understanding the nature and source of human and societal problems). The purpose of research is to contribute towards knowledge building by conducting a 'thematic evaluation that examined evidence across many interventions to understand what kinds of interventions were successful, under what circumstances, to what extent and why' (Stern, 2005, p. xxvii). It attempts to bridge the worlds of academic and applied research and the worlds of policy and practice (ibid., p. xxiii).

Within the broad disciplinary domain of rural management, the academic contribution of the study includes consolidation of the existing perspective, studies and literature on telecentres in rural India. It puts forth an integrated conceptual framework for studying telecentres in rural India and substantiates it by empirical data from the field. The study was also an attempt to move beyond anecdotes and hype surrounding such initiatives. The conceptual framework and the tools for the data collection are important methodological contributions of the study. The data collection tools with appropriate modification can be converted into instruments for administrating large-scale impact assessment study of shared, structured and mediated access to technology in rural India. Theoretically, the study hopes to contribute towards the debates on technology and development, specifically on how the existing social structures influence the pattern of access and use of new technologies in a rural setting. Managers and policy makers in the area of ICT4D have been primarily concerned with issues like sustainability of models, replication of models, deployment strategies, service offerings, revenue structure, etc. While these do not form the focus of this study, it is hoped that insights from this study would aid in improving the design and management of telecentres.

2
Perspectives on ICTs and Development

A particularly interesting aspect of the ICT-D discourse in India and elsewhere around the world has been the popularity of telecentres as a preferred strategy of many different types of agencies. The agencies not only had different organizational purpose and goals, their objective(s) for deploying telecentres in rural areas also varied widely. To comprehend the emergence and popularity of telecentres as ICT-D interventions, a broad understanding of the thinking and practice on ICTs and Development becomes imperative. The purpose of this chapter is to put forth two perspectives on ICT-D. The dominant perspective espouses the ICTs *for* Development (ICT4D) by propounding the deployment of new technologies for spurring economic growth, facilitating governance reforms and enabling human development. On the other hand, the critical perspective calls for examining the discourse considering the political economy of technology and development. Together the two perspectives provide the theoretical background for investigating the linkages between ICTs, telecentres and development.

Characteristics and potential of ICTs

The term 'ICT' reflects the convergence of information technologies (ITs) and communication technologies (CTs),[1] made possible by the advances in digital technologies[2] and the evolution of the Internet and World Wide Web (Labelle, 2003, p. 1). In common parlance, convergence refers not only to the convergence of media, equipment, gadgets, applications and services, but also of key sectors like telecommunication, broadcasting, microelectronics and information technology (Soriano, 2003, pp. 15–16). ICTs are broadly defined as the entire gamut of software and hardware

technologies for creating, storing, processing, disseminating and exchanging information[3] (UNDP, 2001b).

ICTs belong to the category of the 'new' and 'generic' technologies like genetics, biotechnology and microelectronics (Ernst & Connor, 1989; UNDP, 2001a). Pervasive by nature, these generic technologies find application in almost all types of organizations and processes. They have the potential to drastically increase the efficiency, productivity and consequently competitiveness of firms and countries. Specifically, the potential of ICTs can be characterized by their inherent abilities to (a) capture and/or create all forms of data – sound, text and image – individually or in integrated manner, (b) store huge volume of data, (c) calculate and manipulate voluminous data programmatically and quickly and (d) facilitate rapid transfer of data across wide geographic regions. These four characteristics facilitate faster calculation, better organization, improved tracking, quicker analysis and easier reporting, leading to reduction of processing time, lower transaction costs, lower inventory costs and less material (Mody & Dahlman, 1992, p. 1708). Following sections describe the other potential of ICTs, often put forth in terms of the opportunities presented to the developing countries to 'leapfrog' and 'catch-up'.

Perspectives on ICTs and Development

Development per se can be conceptualized both as a process and outcome. As a process, it refers to the interaction between various physical, economic, socio-cultural, technological and organizational factors that transform a society from one state to another, often taking a particular path towards change (Riggs, 1984, c.f. Martinussen, 1997, p. 14). Outcomes or end results are a set of desired societal goals and objectives achieved through these interactions. Traditionally the desired goals and objectives of development were concerned with issues like economic growth, poverty alleviation and improving the quality of life. But now, they deal with concerns ranging from individual entitlements, empowerment, freedom from oppression and community participation to national sovereignty, global competitiveness and climate change and encompass issues like gender equality, livelihood security, etc.

Following Hettne (1995, cited in Desai & Potter, 2002, p. 61), the processes and outcomes of development are guided and influenced by development strategies, theories and ideologies. Development strategies are paths to development pursued by developmental actors like international agencies, states, non-governmental organizations and individuals

for stimulating change within particular nations, regions and countries. Actors have their own developmental agendas, priorities, policies, programmes and procedures, often reflecting different goals and objectives, formulated under the influence of the prevailing social, economic, political, cultural, ethical, moral and even religious conditions (Desai & Potter, 2002, p. 62). The key implication is that the notions about development are never value-free. They always reflect the notions of what is understood of development by particular agencies (Riggs, 1984 c.f. Martinussen, 1997, p. 14).

While development strategies direct the efforts of the different actors aimed towards achieving some development objectives, say poverty alleviation or building the competitiveness of a nation, development theories explain how development has occurred in the past (the positive orientation) and/or should occur in the future (the normative orientation) (Martinussen, 1997). Modernization and dependency theories are the two dominant and often competing meta-theories subsuming a number of theories within the development discourse. Guiding and defining the basic values, beliefs and assumptions of the various theories and strategies are the development ideologies. Combinations of certain development strategies, theories and ideologies influencing the processes and shaping outcomes are called development paradigms. Paradigms can also be considered as models of development or patterns effecting social change.

ICT4D as a development paradigm refers to the trend in development thinking and practice that considers information, knowledge and communication as important for bringing about development and thus, propounds active deployment of new ICTs like computers and the Internet. Its key concern is of digital divide or the gap between 'information-have' and 'information-have-nots', whereby many individuals, communities, societies and countries are unable to participate in the information economy or knowledge society. Actors shaping the discourse with their ideologies, agendas, policies and programmes include aid agencies, bilateral and multilateral development organizations, multinational and transnational companies (MNCs/TNCs), governments, non-profit and civil society organizations (CSOs). Also active in framing policies and programmes are collaborative networks of such organizations.

Meta-theories of development like modernization and dependency provide theoretical frameworks for framing policies or for examining the relationship between technology and development. Traditionally associated with the 'means of production' and large infrastructural

facilities, capital- and resource-intensive labour-saving technologies were considered to be the key drivers of modernization and economic growth through industrialization, urbanization and rapid mechanization of agriculture. Propounders of modernization believed that regular and systematic application of modern technologies to agricultural and other sectors will enable 'traditional societies' to 'take-off' and become as productive and prosperous as the Western nations. Modernization theories often take a techno-deterministic/techno-centric position whereby it is considered that the dominant technologies virtually define the nature of society and its development trajectory.

Challenging the basic tenets of modernization and rejecting it as a historical process undertaken for accumulating capital, the scholars of dependency school looked not at technology per se, but at the effect of technology on the relationship between different sections of the society and between countries. Without negating its importance in the functioning of the economy, they argued that technology has been and continues to be a means of exploitation (of the labour class by the owners of the factors of production) and domination of the underdeveloped and developing countries by the developed countries. The prevailing political economy determines which technologies are developed and deployed.

However, such meta-theories appear to provide only partial explanations of the possible linkages between ICTs and development, since existing empirical evidence are mixed and at times contradictory. For example, while the use of the Internet enables rural communities to interact with each other, or facilitates NGOs in their advocacy and support programmes, the structure, ownership and governance of the Internet actually reflects and reinforces the dominance of the developed countries. Further, ICTs simultaneously display the tendency to centralize and decentralize power. Thus, the level of analysis (global, regional, national etc.), and the socio-cultural-institutional context of technology deployment becomes important parameters for selecting particular theoretical frameworks for investigating change brought about by ICTs. For example, the power-knowledge framework is often used for examining global discourses or role of global agencies (Thompson, 2004; Wilson, 2003) while application of Amartya Sen's capability approach (Madon, 2004; Thomas & Parayil, 2008) is common for investigating ICT-D within micro contexts.[4]

Stating ICTD as a paradigm acknowledges the presence of multiple, and at times conflicting, notions of development embodied in the discourse. It also points to the existence of many, at times overlapping and/or opposing, theoretical/ideological standpoints. While some

consider ICT4D as a new paradigm of socio-economic development because of the emphasis on knowledge and information (Kleine & Unwin, 2009), others view it as an extension of modernization in the age of globalization and neoliberalism (Pieterse, 2010; Wade, 2002). The two perspectives on ICTs and Development is an attempt to delineate ICT-D as a paradigm. While the dominant perspective identifies the main actors, their policies and programme, the critical perspective seeks to examine the basic assumptions and possible developmental implications.

Dominant perspective

The dominant perspective espousing ICTs *for* Development is championed by agencies including governments, international aid and development agencies, MNCs/TNCs and civil society organizations. The origin and evolution of the dominant perspective on ICT-D can be traced to the key trends underlining development in the age of technology-driven globalization and neoliberalism. These include liberalization of telecommunication, privatization of public service delivery, and informationalization. Informationalization, coined by Castell (1996, c.f. Sapey 1998–9, p. 19), refers to the centrality of information and its flows in all forms of organizations, their structures and processes. As manifested in global production and outsourcing units, global supply chains and distribution channels, information generation, processing and transmission redefined the relationships between labour and capital. Information as a resource became important for enhancing efficiency, increasing productivity, coordinating allocation of resources, assessing demand and supply and building competitiveness of firms and countries. Aiding the exchange of information, investments and ideas across geographic locations were the new ICTs.

Simultaneous with the growing use of ICTs in the developed countries, there was an increasing concern about the uneven diffusion of new technologies between the developed and developing countries. Bridging the digital divide at the global, regional, national and sub-national level thus became the focus of many developmental efforts. The beginning of global discourse on ICT4D is often attributed to the first Global Knowledge Conference hosted by Canada and the World Bank in June 1997 at Toronto (OECD, 2003, p. 7). The conference deliberated upon the challenges faced by developing countries in the age of information and led to the creation of the Global Knowledge Partnership (GKP), a worldwide network committed to harnessing the potential of ICT for sustainable and equitable development (ibid.). In subsequent years, the

World Development Report 1998–9 titled Knowledge for Development (World Bank 1998–9), the Human Development reports of 1999 and 2001 with themes like Globalization with Human Face (UNDP, 1999) and Making New Technologies Work for the Poor (UNDP, 2001a) were instrumental in influencing the policies and programmes of various developmental agencies.

However, the urgency to bridge the divide, and make new technologies widespread, gained prominence mainly after the G8 summit held in Kyushu-Okinawa, Japan, in July 2000. Considered as a landmark summit for ICT-D, the summit called for 'enabling everyone, everywhere to participate in and benefit in the Global Information Society' (UNDP, 2001b, p. 2). The summit led to the formation of the Digital Opportunity Task Force (DOT Force), consisting of representatives from the government, private sector and non-profit sector of the G8 countries and some governmental representatives from the developing countries. The DOT Force was entrusted with the task of identifying and suggesting concrete ways of (a) fostering policy, regulatory and network readiness, (b) improving connectivity, increasing access and lowering costs, (c) building human capacity and (d) encouraging participation in global e-commerce and other e-networks as the priority action areas for helping the developing nations to adopt ICTs for Development (DOT Force, 2001). The stance was highly techno-deterministic, conferring that the society and its development trajectory will be defined by technology.[5] Poverty can be alleviated by increasing the number of telephones, computers and Internet connections.[6] Often techno-economic in orientation, the perspective also opined that reduction in the cost of technology and access services via R&D and telecom reforms would increase its penetration across the country, thereby triggering economic and social development.

However, there appeared to be a gradual shift in the dominant perspective on ICT-D. Technology was no longer looked as the 'end' but more as just another 'means' to bring about progressive change (Gomez & Ospina, 2001). The shift was in response to the debate that questioned the prioritization of investments in ICTs over allocation of funds for fulfilling more pressing needs and development goals. The final report of the digital opportunity initiative titled *Creating a Development Dynamics* (Accenture et al., 2001) positions ICTs as general-purpose technologies, effective as tools for development only when their use is directed by development priorities and poverty reduction strategies of the respective countries. Acknowledging that technology alone cannot serve as the magic bullet, it highlighted the importance of an enabling

policy environment, corresponding institutional changes, infrastructure, capacity building of the people plus effective partnership between governments, donors, technology and service providers and non-profit agencies. The report called for shifting the old debate about choosing between ICT and other development imperatives, from one of trade-offs to one of complementarity (ibid.).

Following the declaration of the Millennium Development Goals (MDGs) in 2000 and the release of the report by DOT Force titled Digital Opportunities for All: Meeting the Challenge in 2001,[7] most agencies started mainstreaming ICTs by linking them with their existing and new programmes (Labelle, 2003; SIDA, 2003; UNDP, 2001b). The World Summit on Information Society (WSIS) held in two phases at Geneva in December 2003 and again in Tunis in 2005 reiterated the role of ICTs in achieving the MDGs. It called for developing a common vision for a truly global society and building a consensus for a collaborative partnership between governments, bilateral and multilateral development agencies, the private sector and the civil society for bridging the digital divide.[8]

While there are differences in the specific objectives, goals and strategies of different agencies, most envisaged use of ICTs in developing countries for (a) spurring economic growth through production of ICT goods/services and using ICTs to increase the productivity and efficiency of other key sectors, (b) facilitating governance reforms through computerization of key administrative functions and e-governance initiatives and (c) human development by making use of the technologies to bridge the digital divide and enhance delivery of services like education, health, etc. (Accenture et al., 2001; Cecchini & Scott, 2003, pp. 74–5; Kramer & Derick, 2002 c.f. Joseph, 2002, p. 3).

ICTs for economic growth

In the early 1980s, unlike other established industries and manufacturing units, the ICT industry had no predecessor, no history and no formal or informal institutions that could create competitive barriers in knowledge, capital or labour skills[9] (Thatchenkery, Kash & Stough, 2004, p. 773). This created the potential for the developing countries to improve the competitiveness of their economies by using new technologies to upgrade their traditional industries and/or take advantage of the new opportunities in manufacturing and services, spawned by the pervasive application of these new technologies (Ernst & Connor, 1989, p. 22; UNDP, 2001a). Software development as an industry was especially attractive because of factors like low threshold costs, labour

intensiveness and skill requirements that could be easily acquired by formal education and training (Ernst & Corner, 1989, p. 24). ICTs thus were envisaged to contribute towards economic development of a country in two different but interrelated ways: (a) through the diffusion of ICTs across economic sectors, and (b) on account of the growth of ICT as a production sector (Kraemer and Dedrick, 2001 c.f. Joseph, 2002).

The first approach refers to ICT-induced development through enhanced productivity, competitiveness, and growth on account of the use of this technology by the different sectors – manufacturing units, industries, banks and credit institutions, agriculture, railways and ports. Computers are used for automating routine tasks like accounting, employee management and payroll processing, Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM), Management Information Systems (MIS) and Decision Support System (DSS). In developing countries, early adopters were sectors requiring heavy data processing and logistic supports, for example, banks, shipping, aviation and railways. For banks the need to automate was spurred by the urgency to become more efficient, responsive and competitive in the wake of economic reforms both within and outside the country (Frischtak, 1992; McKendrick, 1992). Use of ICTs increased manifold with the emergence of globalization and transformation of the industrialized economies to knowledge-based service economies. ICTs aided multinational corporations to shift their production to those parts of the world having lower operating costs, control them from remote location, monitor investments, track consumer demand, consolidate supply chains, expand markets and in general to be competitive. ICTs also enabled Small and Medium Enterprise (SMEs) to expand their consumer base and deal better with their supplier and dealers without making huge investments.

The second approach refers to the contribution of the sector towards national output, employment, export earning, etc. through the production of ICT-related goods and services. Strategies focused on increasing penetration in the domestic market or having an export orientation or both. Inward looking, domestic focus dealt with research and development of ICT goods and services tailored to local needs (Accenture et al., 2001). They helped in building local technical capabilities and facilitated the wider diffusion of ICTs. However, during the initial phases, the main focus of this approach was confined only towards producing computers and related equipment; since no efforts were made to deploy ICTs to increasing the productivity, efficiency and competitiveness of other sectors within the country, the spillover effects of such an

approach was limited. Outward-looking, export-orientation approach was initially followed by some developing countries like India and Costa Rica (Accenture et al., 2001). Such strategies had a positive impact on balance of payment, but because of few backward and forward linkages they had limited spillover effects on the rest of the economy

ICTs and governance reforms

The state as a provider, regulator and the largest consumer played a very definite role in promoting ICT-based systems for delivering services. Public-sector corporations, railways and shipping yards were the first ones to be computerized followed by automation of the processes within different ministries and their departments. Defence services, economic planning, census and elections and tax collection were some of the early application areas (De, 2006). Beginning 1990's, the emphasis shifted to e-Governance – the use of ICTs by the government to serve a variety of objectives: better delivery of services to citizens, improved interaction with other government departments, business and industry, citizen empowerment through access to information and more efficient internal administration (Bhatnagar, 2002, p. 164).

The concept of e-Governance emerged from the larger discourse on governance and development. Development was first correlated with governance in a World Bank report of 1989 on Sub-Saharan Africa, which suggested a deviation from the traditional view of governance as public administration to that of 'development management' (Jayal, 1997, p. 407). The Bank conceptualized governance as 'the manner in which power is exercised in the management of a country's economic and social resource' (ibid.). Primarily apolitical by definition, the four key dimensions of 'Good Governance' were (a) sound public-sector management, (b) accountability, (c) a legal framework for development and (d) information and transparency. One of the underlying beliefs in the concept of good governance was that the traditional state model had failed and there was a need for an alternate system based on neoliberal principles (Medury, 2003).

Neoliberalism considers that market forces best determine the production, allocation and consumption of almost all goods and services, and that interference by the state tends to distort decision making, leading to inefficiencies. Within this new framework for public administration, the state was advised to roll back and limit its role to that of a facilitator for decision-making by the market (Mathur, 2003, p. 51). Furthering the cause of neoliberalism was globalization that compelled governments to streamline their management and work more efficiently in order to attract more foreign investments. This was apart from the influence that

the international funding agencies exercised on national governments to bring about reforms in order to become eligible for more loans and aid. Against this backdrop, ICTs for good governance was envisaged to bring about this paradigm shift in the working of the government through decentralization, procedural simplicity, speed, reduction in cost and convenience for the citizens, efficiency and effectiveness, accountability, transparency, participation and responsiveness.

ICTs and human development

The demonstrated potential of ICTs for enhancing productivity, competitiveness and growth in different sectors of the economy generated much hope among policymakers and practitioners about the numerous possibilities provided by new technologies for human development. It was envisaged that application of ICTs in the delivery of health care and education, building of market and other social linkages, management of natural resources, etc. would drastically improve the socio-economic-political conditions in rural areas. Behind this hope was the assumption that commonness of 'knowledge gaps' and 'information problems' were the main reasons for the persistent poverty in the developing countries. There was also a concern that unless immediate steps were taken to harness the new technologies for development, disparities between the developed and the developing countries would increase manifold (World Bank, 1998–9). ICTs for Development (ICT-D or ICT4D) referred to all developmental initiatives and programmes aiming to alleviate poverty by bridging the 'digital-divide'.

The OECD-DAC Donor Information and Communication Technologies Strategies Matrix gives an overview of approaches adopted by key bilateral and multilateral agencies to mainstream ICTs in their development assistance programmes (OECD, 2003). The policy and strategy foci of the organizations have been on (a) poverty reduction alignment whereby donors like Department for International Development (DFID) have linked ICTs to achievement of the MDGs (for example see ITU, 2003, p. 81), (b) knowledge sharing, based on the premise that knowledge is a key factor for development and beneficiaries should be able to access, utilize and disseminate information and knowledge and (c) application of ICTs in sectors like e-Governance, health, etc.

Critical perspective

The critical perspective calls for examining the role of various state, market and civil society agencies in framing the ICT4D discourse, setting the policies and influencing their implementation and evaluation. Critiques

have also questioned the basic assumptions underlying ICT4D, especially those reflecting the tenets of modernization and neoliberalism.

Many different agencies and groups can be identified: information capital/private-sector organizations, governments, elites and the middle class in the developing countries, the 'development industry' and global civil society that benefit by promoting digital divide as an issue of development policy and action (Luyt, 2004). Digital divide as a global development concern actually reflected the convergence of interests and abilities of such agencies to set a collective agenda to expand and deepen markets for multinational and transnational companies operating from developed countries (Kleine & Unwin, 2009, p. 1048; Luyt, 2004).

In the globalizing economy, ICTs aid 'new division of labour' by facilitating MNCs/TNCs to relocate their production units and outsource clerical jobs to developing countries. The urgency to liberalize and privatize the telecommunication sector in developing countries was concomitant with the needs of the MNCs/TNCs to have a global communication infrastructure for transferring capital and information required for controlling their resources at such spatially dispersed production centres. Such ventures did generate employment in developing countries, but often many people in developed countries were rendered jobless and/or without the requisite skills to find a job. They were forced to compete in hostile labour market conditions and suffer from job insecurities (Golding, 2001, p. 76).

ICTs also form an integral part of the 'Bottom of the Pyramid' (BoP) strategies (Prahalad, 2004) of companies that range from prototyping and developing technologies for emerging economies,[10] marketing new products and services or using technologies to increase the reach of the procurement and distribution channels. The efforts to 'bridge the digital divide' were ways to develop new markets for information products and technologies (Schwittay, 2008). The products and services marketed to the BoP were often as per the needs of the companies, and not necessarily of the beneficiaries (ibid.).

Proponents of ICT4D put forth that new technologies are 'free' for the developing countries for they did not invest in their research and development (Mody & Dahlman, 1992, p. 1704; UNDP, 2001a, p. 95). However many consider it as new form of digital dependency (Wade, 2002, p. 43; Ya'u, 2002). The technologies forming the backbone of all communication infrastructures reflect the global capital structure. Ownership, governance and regulation of the global information infrastructure are dominated by the developed countries with very little scope for the developing countries to push for their own standards or regulations (Wade, 2002). Representation of public bodies from developing countries

in groups involved in setting standards or technology regimes is often less than those from developed countries or even private sector organizations (ibid.). Technology companies and solution providers are often designated as partners in framing ICT strategies, and they play key roles in design and implementation of e-Governance programmes in developing countries using proprietary software (Wade, 2002, p. 443). Recurring issues of technology upgradation locks-in developing countries with their technology/solution providers. Despite the intuitive appeal of open systems, the negative effects of network economies make its spread and acceptance among large number of users difficult as they encounter issues of compatibility and standards. Overall dependencies of developing countries are further reinforced when Western aid agencies linked financial aid to good governance (Wade, 2002, p. 444). The emphasis on digitalizing government functions and processes in many ways channelize investments from bilateral and multilateral agencies to technology providers and system integrators.

To function smoothly in developing countries, MNCs/TNCs require a threshold level of key physical infrastructure (e.g., roads, electricity and telecommunication) and social infrastructure (e.g., technically skilled manpower, investments, regulations, flexible labour laws etc.). And here the national governments of the developing countries are often called upon to play a role in framing the appropriate policies, creating an enabling environment and at times to make investments. Under the rubric of e-Governance, governments also become the single largest creator of demand for new technologies. Taken together, these two trends highlight a contradiction in the role of the state prescribed by neoliberals. On one hand adoption of e-Governance practices are based on the premise that the state would withdraw from areas where market is more efficient and also adopt technology and management practices to become more efficient. On the other, the state is asked to become a facilitator and/or provider of the key physical and social infrastructure. Luyt (2004) points out that the discourse on ICT4D was concomitant with the efforts to resolve this contradiction. The work of Joseph Stiglitz, former president of World Bank, highlighted that market mechanisms failed to achieve the expected efficiency because the lack of required information and hence non-market institutions like the state should intervene to address such information imperfections. Thus, ICTs as information-related tools legitimized and gave a new direction for neoliberal principles, which at one point of time had come under much criticism for failing to deliver (ibid.). As mentioned before, ICTs also provided new opportunities to governments in developing countries for spurring export-led economy

and creating new jobs, thus gaining legitimacy, especially from its middle class (Luyt, 2004). This socio-economic category, privy to good technical education and English-language skills gained much, both economically and socially, from the IT revolution.

The basic assumptions and approaches adopted by the proponents of ICT4D have also been critiqued. By holding the lack of access to ICTs as important as other basic necessities of life, ICT4D constructs 'information poverty' as a new form of poverty that can be alleviated by supplying more technology to the poor (Wade, 2002; Wilson, 2003). First, it fails to appreciate the knowledge and wisdom of the local people by deeming only certain type of knowledge as more appropriate and legitimate (Wilson, 2003). Second, the techno-deterministic view assumes ICTs as neutral tools having inherent characteristics to overcome infrastructural and institutional constraints and enable developing countries to leapfrog all kind of developmental problems (Wade 2002, p. 445). It does not recognize the socio-cultural and political-institutional context of technology adoption and diffusion. Further, it also leads to possible misplacement of development priorities and misallocation of resources. An all-encompassing groupthink of various development agencies and actors promote investments for bridging the digital divide as the top development priority despite glaring absence of conclusive evidences, feasibility reports and cost-benefit analysis (Wade, 2002, pp. 443–6).

Thus, as donor and other development agencies mainstreamed ICTs in their policies and programmes, more funds became available for ICT4D interventions. This not only gave impetus to creation of ICT-enabled service delivery platforms by government and quasi-government agencies, but also enabled many NGOs/CSOs to plan and implement programmes centring on deployment and use of ICTs. NGOs and CSOs with their familiarity about the local context and expertise in implementing programmes partnered with MNCs and global developmental agencies for prototyping and handholding ICT-D initiatives in developing countries. Availability of social venture fund also saw emergence of social enterprises seeking to balance for-profit motives with social goals by delivering ICT-enabled services for socio-economic development.

However, many aspects of such interventions were problematic. First, issues of development were translated as issues of access to information and/or technology. Second, the 'solutions' revolved around the provision of technology (Schwittay, 2008). Thus, both the notion of development and development needs were often articulated from the perspective of the donor and/or technology providers rather than the intended beneficiaries (Kleine & Unwin, 2009, p. 1049). Further, online

platforms for knowledge sharing and management among various actors and agencies, often articulated development from the dominant perspective.

Third, the ICT4D interventions were often programmatic in nature, and did not address any systemic or structural issues like land rights or socio-economic power structures within the village. ICT4D interventions typically adopted a quick-fix approach for 'developmental problems', often with no blueprint for addressing the structural factors or systemic issues underlying the digital divide. Thus, the interventions often failed to make any impact or delivered only on piecemeal basis. Development-related concepts like empowerment, participation or social inclusion were either reduced to tokenism or acquired a new meaning. For example participation was often articulated as voluntary service, free space for kiosks or even user fees for accessing services.

Fourth, unsubstantiated and uncritical narratives of success of the pilot projects were instrumental in raising the hype about the potential of ICTs to alleviate poverty and solve all possible issues of development (Wade, 2002). In the initial years, failures were rarely admitted, unless the possible solutions were more supply-driven inputs like policy changes, training, connectivity etc. When issues like sustainability became too obvious to be ignored, demand-side constraints like culture, political will, community participation etc. were commonly cited as reasons for failure. The reluctance to admit failure and to understand the reasons for less-than-accepted rate of diffusion and adoption fuelled sceptism and pessimism for subsequent projects.

Table 2.1 summarises the two main perspectives on ICTs and Development. In order to examine the link between telecentres and development, development should not be understood only in terms of outcomes or processes but more as an assemblage of agencies, their agenda, policies and programmes. The dominant perspective propounded by such agencies is based on the assumption that given appropriate context, the provision of technology will solve all kinds of development problems. In contrast, the critical perspective foregrounds the agenda and policies of the organization while deploying ICTs for bridging the digital divide. It also puts forth that ICTs by themselves cannot enable communities and countries to 'leapfrog' the more fundamental development problems. Technology per se might be have the potential to improve the living conditions of the people, build their capacities and empower them, but the people themselves do not often have the capabilities and resources available to harness this potential. The technological gap will always exist and so would the ones related to human capacities and other

Table 2.1 Linking ICTs and Development

Perspective/ application	**ICT outcomes**	**Specific development outcomes/impact**	**Broad developmental outcomes/ impact**
Economic Growth	Information access Information dissemination and broadcasting Greater reach Easier networking Interactive access Faster communication and coordination Reduced transaction cost	Better access to markets away from the immediate neighbourhood Better price Agricultural best practices and inputs Knowledge and information sharing Increased productivity	Improved quality of life Development of human capacity Creation of new opportunities
Good governance		Efficient and effective governance Transparency and accountability Increased responsiveness Decentralization Citizen outreach and participation	
Human development		Social inclusion of the people living in remote areas and with/among disadvantaged groups Telemedicine and distance learning Early warning systems for epidemics/disasters Social empowerment	
Critical perspective		De-skilling, job-loss, job insecurity Misplaced development priorities and misallocation of resources Unequal development at all levels	Increased inequality Continued domination of corporates New forms of dependency

resources. And building up of these basic capabilities and providing access to the required resources again depends on the existing social, economic and political contexts. Together, the two key perspectives highlight a methodological challenge in studying the impact of ICTs. The sustainability of telecentres and their impact are not only shaped by the local context, but are also influenced by multiple factors at the macro policy level and the organizational factors at the meso level. In order to fully comprehend the change brought about by the telecentres in the villages, it thus becomes imperative to understand not only the macro-meso-micro contexts but also the inter linkages between them.

3
Telecentres in Rural India

Conceptualizations about telecentres essentially connote shared access to computer and the Internet for socio-economic development. Based on the available literature, the chapter traces the emergence and evolution of telecentres as development interventions in rural India. Deployment of telecentres in rural India by various agencies are not stand-alone phenomenon, but embedded in the larger discourse on ICT-D. Their deployment in rural India was spurred by policies and programmes of development agencies, NGOs, government agencies and private sector organizations. Objectives vary from efforts to bridge the digital divide, expand the reach and effectiveness of service delivery systems or to build a platform for rural distribution and procurement channels. The multiplicity of agencies and their objectives manifests in the multitude of telecentre models. The chapter puts forth a typology of existing telecentre initiatives in order to identify the key characteristics of different models. This along with the brief review on impact of telecentres forms the background for the conceptual framework delineated in the next chapter

Review of literature

The available literature on telecentres and similar initiatives is voluminous in the form of reports, articles and case studies in print and on the Web. In general, literature is dominated by publications from developmental agencies or related organizations. Systematic studies are less but emerging. Moreover, there is an increasing interest in this area of research as reflected by successive publications of special issues on telecentres of both online and print journals[1] and in the number of ongoing and completed master and doctoral dissertations/thesis.[2]

Literature on telecentres in rural India can be broadly divided into five different sets. The first set of literature consists of anecdotal case studies and journalistic accounts like the project stories and case studies posted on websites of international agencies (e.g. www.apdip.net). These were written for sharing experience and disseminating the success stories of pilot projects that demonstrated the potential of telecentres to bring about rural. The documents are often overenthusiastic and uncritical. They have been critiqued for being repetitive, digitally immortal,[3] projecting stories of individual or group success as project success and in generating hype to the extent of creating 'new folklores of the rural network society in making' (Saith, 2008, p. 113; Sreekumar, 2006, p. 83).

The second set of literature includes the various reports from international developing agencies sharing best practices, policy directions, etc. (Accenture, Markle & UNDP, 2001; DOT Force, 2001; Ernberg, 1998b; Latchem and Walker, 2001; Proenza, Bastidas-Buch & Montero, 2001), book chapters (Best & Maclay, 2002) and other documentation like source books (Badshah, Khan & Garrido, 2003; Colle & Roman, 2003), e-primers (Carvin & Surman, 2006), preliminary evaluation guidelines (Hudson, 2001a; Whyte, 2000) and reports (Aral, Escobari & Nishina, 2001; Ernberg, 1998a), toolkits (MSSRF, n.d.), etc. The main purpose of this set of documents was to generate awareness among international development agencies for mainstreaming ICT-D applications in their bilateral and multilateral assistance programme, and also to educate policy and decision makers in developing countries about the potential of telecentres. These publications relate to the early days of the global telecentre movement when donor agencies funded pilot projects all over the world; the recent ones deal with issues of sustainability, scalability and replicability of what is now referred to as Telecentre Movement 2.0 (APDIP, 2007a, 2007b; Siochru & Girard, 2005).

While this set of literature has undoubtedly contributed towards generating awareness and consensus at the global policy level for deployment of telecentres, their theoretical and methodological contributions, other than evaluation guidelines, have been comparatively less. The studies have been critiqued by authors (Sreekumar, 2006, p. 81) for not representing ground reality. Wade (2002, p. 445) also finds the discourse propagated by such literature problematic for they fail to distinguish between actual plans, intentions and opportunities and verified action on ground. Only benefits are described without considering costs; also absent are cost-benefit analysis between investments in ICT-D projects and other development projects. He further points out that failures are

described in such a manner so as to protect the assumption that investments in ICTs are top developmental priority.

The third set of literature includes detailed case studies on the Web and print, and most articles in the special issue of *Regional Development Dialogue* (2002), *Journal of Development Communications* (2001) and *International Journal of Services Technology and Marketing* (2005) (see Table 3.1). Also relating to the early phase of the telecentre movement, the purpose of this set is not much different from the second. But, the

Table 3.1 Case studies and other publications

No.	Type of publications	Select literature
1	'What Works' case studies popularized by World Resource Institute, USA. Aimed towards understanding issues related to management, implementation and operations of telecentres	• Annamalai and Rao, 2003; Paul, 2004
2	Detailed descriptive/analytical case studies commissioned by different agencies. Focus on examining some particular aspect or issue related to telecentres and their deployment in rural areas	• Connectivity (Kumar & Jhunjhunwala, 2002), empowerment, ownership models and financial mechanism (Gurumurthy, Singh & Kasinathan, 2005), sustainability (Harris, Kumar & Balaji, 2003).
3	Research notes, book chapters and other articles based on action research and other studies carried out by various agencies, and academicians during the initial days of telecentre movement	• Understanding the demand for information and communication (Roman, 2003; Roman & Blattmann, 2001), • Mapping of information flow and exchange through various channels (Thamizoli & Balasubramanium, 2001), • Identification of 'success factors' (Dhawan, 2004; Dossani, Jhaveri & Mishra, 2005) and success model (Harris, 2001) • Preliminary insights into development potential (Kanungo, 2004; Kaushik & Singh, 2004),
4	Preliminary observations, commentaries, and critical perspectives on the telecentre movement in rural India by practitioners, experts and others.	• Byfield, 2004; Dagron, 2001; Keniston, 1998, 2002a; Kothari, 2002; Mehta, 2005; Sarkar, 2003; Sood, 2001; Wade, 2002

orientation is more towards understanding and documenting issues related to implementation, operations and management of telecentre initiatives.

The fourth set of literature (see Annexure 2) consists of formative evaluation and impact assessment studies, primarily related to service delivery, implementation and usage of e-Governance projects and mostly commissioned by donors (for example-CEG-IIM, 2002; Dhingra & Mishra, 2004; Gurumurthy, Singh and Kasinathan 2005; Harris & Rajora, 2006; IIIT-B, 2005; Jafri et al., 2002; Lobo & Balakrishnan, 2002; Patel, Mehta & Modi, 2003). These studies are less on rhetoric, more systematic and rigorous in terms of methodological treatment; although use of explicit theoretical framework is generally absent. Comprehensive frameworks for studying the impact of telecentres have been proposed by many authors but have been applied primarily on secondary literature (Antin, 2005, 2006; Bailur, 2007b; Madon, 2004, 2005; Rothenberg-Aalami & Pal, 2005; Stanforth, 2007).

The fifth and the final set includes research studies on telecentres published as book chapters (Sreekumar, 2006; 2008; Thomas, 2006), articles in peer-reviewed journals (Madon, 2005), and as part of conference proceedings (Kuriyan & Ray, 2007; Srinivasan, 2007; Pal, 2007). The foci of the studies are varied, looking primarily to the process of telecentre deployment; many of them revolving around the issue of sustainability (see Annexure 2). Theoretical frameworks applied are also eclectic, being derived from many areas of inquiry including diffusion of innovation (Harris, 2001; Kaushik & Singh, 2004; Thomas, 2006), information systems (Harris, 2001; Madon, 2004), administrative reforms and governance (Madon, 2004; 2005) and capability (Thomas & Parayil, 2008). Most frameworks are generic in nature. Though recent, these studies document the phase of telecentres that has changed rapidly and thus, encapsulate empirical realities of the time. Methodologically, the studies vary across the continuum from ethnography to ethnographic approaches to case studies and surveys. However, the use of mixed methods for collecting data is most common and popular. Ethnographic approaches have been adopted for understanding the context of telecentre deployment and use, while surveys are common for studying the usage pattern; the only drawback is that except for a few (Kumar & Best, 2006a, 2006b; Pal, 2007), most studies have concentrated on individuals, creating a dichotomous distinction between users and non-users. Also included in this set are meta-reviews on telecentres and development (Kuriyan & Toyama, 2007; Sey & Fellows, 2009).

Definition of telecentres

In the literature, there are divergent definitions and description of telecentres (see Table 3.2). Conceptualizations about telecentres vary but essentially connote shared access to computers and the Internet for socio-economic development. Individual and households who could not afford to own expensive new technologies benefited from access to shared resources (Proenza, Bastidas-Buch & Montero, 2001, p. 2). The related concept of mediated access emerged to address the barriers of low level of literacy and computing skills (Mani, 2002). Often a kiosk operator or entrepreneur mediates between the technology and the people seeking information using new technologies.

Initial notions about telecentres were purely techno-deterministic, whereby it was believed that once technologies like the Internet and computers are provided to rural communities via telecentres, issues of development will get solved automatically. Telecentres were 'shared premises where public can access information and communication technologies' (Proenza, 2001). The emphasis was on 'technology as an end' for providing shared access to expensive technologies like computers and services through the Internet (Oestmann & Dymond, 2001, p. 2).

Subsequent conceptualizations of telecentres were more process oriented, acknowledging their embeddedness within local socio-economic, political and institutional contexts. It was recognized that technologies per se did not bring about any change, they need to be complemented by supporting physical and social infrastructure. The emphasis also shifted from technologies to services geared towards catering to all kinds of information and communication needs of the people including education and training, access to credits, web browsing, etc. For example, telecentres were then defined as shared public facilities that provide information and communication services (Roman and Colle, 2002, p. 3). The focus was also on projecting telecentres as means of providing solutions, often as technical fixes, to developmental (Schwittay, 2008). Telecentres are now commonly considered as an approach, strategy or a component of large-scale programmes, like the CSC programme under NeGP in India.

For this study, telecentre is defined as a generic term referring to all kinds of arrangements that seek to provide shared and mediated access to information and services by using new technologies, especially computers and the Internet.

Table 3.2 Select definitions and descriptions of telecentres

1. 'While there is no single definition of telecentres to satisfy everyone, a common characteristic is a physical space that provides public access to ICTs for educational, personal, social, and economic development' (Gomez, Hunt & Lamoureux, 1999, p. 17).
2. 'Telecentres are a way of aiding communities in rural parts of the developing world. Telecentres appear to have no universally accepted definition beyond a general concept of a physical centre to provide public access to long-distance communication and information services using a wide variety of techniques including telephone, fax, computers and the Internet' (Whyte, 2000 c.f. Madon, 2005, p. 401).
3. Gomez & Ospina (2001) define telecentre as 'a means to provide Internet for Development'.
4. IDRC's program for Africa, Acacia defines a telecentre as 'a location which facilitates and encourages the provision of a wide variety of public and private information-based goods and services, and which supports local economic or social development' (Proenza, Bastidas-Buch & Montero, 2001, p. 5).
5. Telecentres may be defined as 'strategically located facilities providing public access to ICT-based services and applications. While facilities and usage vary across telecentres, all reflect the intention to address the issues of access by providing technology, develop human capacity and encourage social and economic development' (Oestmann & Dymond, 2001, p. 3).
6. 'Community telecentres are a powerful tool for supporting community development through the use of digital technologies and greater digital inclusion … Community telecentres represent an experiment in using digital technologies as tools for human development within a community' (Delgadillo, Gómez & Stoll, 2002, pp. 8–9).
7. 'Rural kiosks are computer kiosks in rural areas with one or more computers, generally owned and run by independent entrepreneurs. They provide a range of services to users at low cost since privately owned computers are often not affordable for the poor' (Kuriyan, Toyama & Ray, 2005, pp. 1–2).
8. Kiri & Menon (2006) define 'a rural kiosk as one or more computer(s), with Internet connectivity, offering ICT-enabled services aimed at providing information access, means of communication and developmental mechanisms for the rural population'.
9. Antin (2006) define 'kiosk/telecentre projects as those which provide access to information technologies and related services, and have become an important vehicle for delivering the benefits of ICTs to the developing world'.
10. 'Telecentres are tools for development across sectors' (Fillip & Foote, 2007, p. 1).
11. A telecentre is 'a community centre that offers shared access to Information and Communication Technologies (ICTs) for the purpose of community-level development and poverty reduction. Telecentres are being promoted as an answer to the problems of the digital divide, whereby large sections of society do not enjoy access to ICTs and are therefore at risk of being excluded from the socio-economic benefits that such access brings' (APDIP, 2007a, p. 1).
12. Rural kiosks are shared-access computer centres, run either as community centres or as business, that seek to deliver services to support socio-economic development of rural areas. Proponents of rural kiosks hope that these centres can be used to support health, banking, governance, agricultural and other applications that contribute to development agendas (Kuriyan & Toyama 2007).

Telecentres in rural India

A key driver of the deployment of rural telecentres was the policy concern that certain sections of society were deprived of the benefits of India's export-oriented IT industry (IIIT-B, 2005). Presence of many agencies in the sphere has led to different kinds of telecentre models and initiatives. This section examines the emergence and evolution of telecentres in rural India against the larger policy context. An attempt is made to map their similarities and differences by putting forth a typology of telecentre models in rural India and examining their key characteristics.

The policy context

India was among the first countries to formulate an IT policy in the 1970s. The focus was primarily on provision of imported hardware for would-be software exporters (Heeks, 1996, p. 42). However, in the wake of the emerging business opportunities in developed countries which were adopting IT in various sectors, there was a shift in the policy focus towards development of software industry. The state also redefined its role from that of a producer and regulator of IT goods and services to that of a facilitator of the IT industry (Evans, 1992; Heeks, 1996, p. 50). Thus, contrary to popular notion that the Indian IT industry grew only because of the entrepreneurial efforts of the private sectors (e.g. see Boas, Dunning & Bussell, 2005), the state actually played a key role in its development (Joseph, 2002).

Specifically, the recommendations put forth by the National Task Force on IT and Software Development in 1998 (http://it-taskforce.nic.in/index.html) was instrumental in harnessing India's competitive advantages like its pool of technically qualified and English-speaking workforce, low labour costs and 12-hour time difference between India and US and positioning the country as a 'software superpower'. The thrust was to develop the software sector through (a) promotion of private investments and entrepreneurship by giving tax incentives, rebates in land acquisition and facilitating linkages with financial institution, (b) investment in physical infrastructure including telecommunication backbones, industrial parks and free processing zones, roads and electricity, (c) building human capacity for the growing international software market and (d) computerization of government offices by identifying focus areas, and making budgetary allocations for buying computers and training of government employees (Mitra, 2000). In recent times, the ambit of formal IT policy has widened to include the

Information Technology Enabled Service (ITeS) and Business Process Outsourcing (BPO) sectors.

The achievements of the Indian IT industry were significant in terms of its growth, employment generation and contribution to Gross Domestic Product (GDP), but so were also the shortcomings. Often described as 'one-legged' strategy (Schware, 1992), the export-oriented IT/ITES industry had limited linkages with domestic economy and society (Contractor & Kundu, 2004; Joseph & Harilal, 2001; Thatchenkery, Kash, D. & Stough, 2004). The limited spillover effect of the Indian IT industry on the domestic economy manifested in the form of combined and uneven development whereby the accrued benefits of ICTs remained confined mainly within the sector (D'Costa, 2003).

The spectacular rate of growth of the software industry when compared to the rest of the economy placed it in a different trajectory from slow-growing agricultural and industrial sectors. The market-driven policies relating to provision of investments, manpower development and tax incentives led to a skewed kind of economic growth. Development of infrastructure like roads, captive power generation units and network connectivity was primarily confined within the sector. The increasing demand for software professionals created a short-run manpower deficit in the other sectors. It also aggravated the wage differential. The growth of the software industry also illustrated the influence of high-tech companies and service providers to influence government policies (Biswas, 2004, p. 818). Substantial tax incentives and concession given to private enterprises for setting up software firms hindered the ability of the state to generate resources for creating physical and social infrastructure for other sectors.

Another form of uneven development was reflected in the regional imbalances within the country. While the recommendations of the task force on IT[4] did provide a common framework for state-level policies, some states like Karnataka, Tamil Nadu, Maharashtra and Andhra Pradesh were able to capture the benefits of the global demand because of the availability of political support and initial pool of technical labour, educational and training institutions (Mitra, 2000). However, the momentum and gains were spread in and around a few 'centres of excellence' like Bengaluru, Gurgaon, Pune, Noida etc., indicating other forms of imbalances and socio-economic divides (Parthasarthy c.f. Vijaybhasakar, 2001).

Even in the early adopter states like Andhra Pradesh and Maharashtra there were differences in the penetration of IT between the rural and urban areas. Telecommunications and other forms of connectivity

yield economics of scale and increasing profitability only in densely populated regions where demands are high. The rural hinterlands are typically sparsely populated and widely spread out, which do not provide enough incentives for the market forces to operate in the area. Even though application of IT for rural development was an objective in earlier IT policies, the focus had been primarily on international, national, statewide and urban dimensions (Mitra, 2000, p. 195). Only in case of some states like Kerala, Pondicherry and Rajasthan developmental priorities relating to the delivery of health, education and other government services to the rural areas were incorporated in the IT policies. In May 2000, Government of India constituted the Working Group on Information Technology for Masses with the purpose of formulating policies to broad base both the applications and impact of ICTs across sectors.[5] Consequently in 2001, a National IT Mission was constituted to implement the recommendations of the Working Group. It was against the backdrop of such policy environment that telecentres emerged as a way to take ICTs to rural India.

Emergence

The telecentre movement in India can be broadly divided into three overlapping phases on the basis of the key agencies involved and their scale of operations. The first phase began in early 90s, but actually took shape only around 1998. In 1992, an interdisciplinary dialogue on 'Information Technology: Reaching the Unreached', was organized by the M. S. Swaminathan Research Foundation (MSSRF) at Chennai (World Bank, 2003c). The workshop deliberated on the role of ICTs in promoting sustainable agriculture and rural development in the developing countries and mooted the use of ICTs for providing access to knowledge. In 1998, MSSRF with funding from International Development Research Centre (IDRC) initiated the Information Village Research Project in two villages of Pondicherry in South India. Around the same time, in the western state of Maharashtra, the Warana Wired Village Project was piloted in 70 villages of Kohlapur and Sangli (Bobde, Deb & Rane, 2002). The project was initiated on the recommendation of the prime minister's task force on IT to demonstrate the use of new technologies for integrated rural development.

In the following years of 1999–2000, numerous telecentre projects were piloted in different parts of the country including Gyandoot in Madhya Pradesh (Prakash, 2002), SARI in Tamil Nadu (Kumar & Jhunjhunwala, 2002) and TaraHaat in Bundelkhand and Punjab (Sreekumar, 2011). The agencies involved were donors like IDRC, NGOs like MSSRF and

Development alternatives, foreign academic institutions, government departments and individual IAS officers. The Gyandoot project was piloted for improving administration and increasing the outreach of the government to rural areas. With varying objectives, these celebrated pilot projects were dispersed, and unrelated to each other. Since the projects were primarily for testing the proof of concept, sustainability was not an issue; affordability, adaptation and adaptation of technologies in rural settings were the key concerns. Drawbacks of these projects included their dependence on external funders and at places on individual project champions for building partnerships, coordination and interaction. Only the ones which were getting institutionalized like Akshaya survived the initial phase of active experimentation and learning.

In the subsequent years from 2000 to 2006, there was a dramatic increase in the number of rural kiosks, spurred by the entry of private-sector organizations and growing efforts towards modernizing governments. Perceiving business opportunities in setting up rural kiosks, private-sector agencies like Drishtee and n-Logue emerged as network orchestrators (IIIT-B, 2005). Both the organizations had prior exposure in setting up such networks. Drishtee was involved with Gyandoot, while n-Logue was the technology provider for SARI project. n-Logue's objective of developing and deploying Chiraag kiosks was to spur demand for Internet access through its corDECT technology (Kumar & Jhunjhunwala, 2002).

Corporates like ITC-ABD and EID Parryware also started setting up their network of e-Choupals for procuring commodities directly from the farmers (Srinivasan, 2007; Kumar, 2005). The network of kiosks was part of their overall business strategies to become globally competitive and also tap the market at the Bottom of the Pyramid (BoP). As technology companies also adopted the BoP paradigm, telecentres were used for understanding the needs of the rural customers and prototyping products for markets characterized by infrastructural constraints and low levels of literacy (Schwittay, 2008). Hardware vendors, software developers and solution providers also played a key role as e-governance became another emerging market. Telecentres were part of IT policies aimed towards 'modernizing' government and bring 'IT to Masses'. With the entry of private-sector organizations and emphasis on application of market logic in governance, issues like entrepreneurship, sustainability of kiosks, user fees, basket of services, process and product innovations became the key concerns of kiosk design and implementation. The emphasis on telecentres also shifted from access to technology to access

to services. During this phase, the deployment of telecentres in rural India actually took the shape of a formal movement with the formation of a national alliance for Mission 2007.

Setup in 2003, the national alliance was spearheaded by MSSRF. Supported by IDRC, ISRO, One World South Asia and Tata Social Welfare Trust, Mission 2007 was a coalition of about 400 organizations including government departments, technology providers, non-governmental organizations (www.mission2007.in). The stated objective was to make every village a Knowledge Centre, by rolling out one lakh telecentres in rural India by 15 August 2007. While the success of the alliance in meeting its overall objectives can be debated, the large-scale mobilization of various agencies on a single agenda can be said to be the precursor to the next phase of the telecentre movement in India.

The next phase of the Telecentre movement in India began around September 2006 with the formal policy directive by the government of India to setup one lakh CSCs under the aegis of its National e-Governance Plan. The National e-Governance Plan (NeGP) was launched with the vision to make all Government services accessible to the common citizen in his/her locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realize the basic needs of the common person.[6] A key component of NeGP was to establish one lakh broadband enabled Common Service Centres (CSCs) in the rural areas for providing high quality and cost-effective video, voice and data content and services, in the areas of e-Governance, education, health, telemedicine, entertainment as well as other private services.[7] The CSCs as ICT-enabled kiosk were envisioned to function as the front-end delivery points for government, private and social sector services to rural India. An amount of Rs 5742 crores was earmarked for the project in addition to Rs. 3334 crores for the State Wide Area Networks for connectivity. The CSC scheme brought about a change in the nature of the telecentre movement in India. It became more centralized, with greater involvement of the government departments and private-sector organization than that of civil-society organizations. Its three-tier structure consisted of village-level entrepreneurs, service-centre agencies that build, manage and operate the village-level kiosk and a state-designated agency, often a government department for facilitating the implementation of the scheme. Almost all telecentre initiatives that were orchestrated by government agencies during the earlier phases like Akshaya, CICs and e-Gram merged with the CSC programme. This phase of telecentre movement was also characterized by the consolidation of operations by agencies like e-Choupal along

with the closing down of few big and small initiatives like n-Logue. Still others like Drishtee, one of the pioneers of the telecentre movement in India realigned its overall goals and objectives with the changing opportunities and constraints in the external environment. Thus the telecentre movement in India is marked by diversity, especially in the type of agencies involved, ownership of individual kiosks, purpose, technologies deployed and the services provided. Within the broad concept of telecentres, many 'types' or 'models'[8] have evolved in India. In the next section, an attempt is made to evolve a typology of the various types of telecentre models in rural India. of rural telecentres in India.

Typology

Some of the common criteria used in the existing literature for classifying telecentres are (a) number and type of technologies deployed (Jensen, 2001; Oestmann and Dymond, 2001, p. 1), (b) nature of the agency orchestrating the network – non-government, government and private (Sarkar, 2003; Sood, 2003), (c) ownership of individual kiosk – private enterprise or public organization, community or NGO (Proenza, 2001; Gurumurthy, Singh & Kasinathan 2005), (d) basic purpose – developmental or commercial (Proenza, 2001), (e) functional orientation – profit or non-profit (Molnár & Karvalics, 2001), (f) mode of service delivery – exclusive or partnership. Other criteria include categorization based on location – in developing or developed countries (Oestmann & Dymond, 2001, p. 3), urban vs. rural areas (Harris, 2001), service offerings ranging from narrow and thematic relating to one specific area to broad and diffused as in multiple service offerings (Harris, 2001; Sood, 2003).

The number and types of technologies housed in the telecentre determined the scale of operations and sophistication of services provided by the telecentre. Using this criteria Jensen (2001) has generically classified telecentres into four categories – micro, mini, basic and full. A micro telecentre is akin to a phone shop or a telephone booth, housing the basic communication equipments and providing just the basic or essential services like telephony or email. A full telecentre, also referred to as a multipurpose community centre (MCT) in International Telecommunication Union's parlance, was equipped with more sophisticated technologies including computers, printers, photocopiers, multimedia hardware, videoconferencing equipments, radio, high-speed telecommunication facilities, etc., and had the capacity to provide multiple services including distance learning, web hosting, telemedicine, online banking, scanning, photocopying, etc. Some of these centres also functioned as meeting places for

local business or community use (Oestmann & Dymond, 2001, p. 1). The technologies and services in mini and basic models ranged in-between that of the micro and full models. This criterion for telecentre categorization had some limitations for a country like India. Neither a census of telecentres nor an inventory of technologies housed in each was available or was feasible to prepare. Perhaps the nearest technology-based categorization that could have been done was whether the telecentre had Internet connectivity or not and if yes, the kind of technologies.

Till a few years back, telecentres initiated by international development agencies and run by local NGOs were the most common characteristics of telecentre initiatives (Oestmann & Dymond, 2001, p. 9). But as can be seen from the Indian scenario, in a few years' time, different kinds of agencies, such as non-governmental, governmental and private, referred to as network agencies by Sood (2003), took the lead in setting up telecentres. The non-government category includes international donor and other agencies like IDRC, UNESCO, ITU, etc.; Indian and foreign research institutes like Cornell University and IIT-Chennai; national-level NGOs like DHAN Foundation; and other similar organizations. Private agencies include private local entrepreneurs, private franchise and corporate. Thus, the type of agency orchestrating the network of kiosk was another emerging criterion.

Based on the ownership pattern of the individual kiosks (Colle, 2001; Proenza, 2001), a telecentre might run as a small private business, as a franchise or as a civic institution initiated by the government. The terms 'community owned' and 'entrepreneur owned' are also used in this respect. Closely related to this criterion are the next two criteria of basic purpose and functional orientation.

Basic purpose determines whether the services provided by the telecentre are for developmental purpose, for example, access to basic education, health and credit facilities or for commercial purpose as procurement, teleworking, online banking, etc. (Proenza, 2001). Functional orientation determines whether the service provided is for-profit motive or non-profit (Molnár & Karvalics, 2001). To illustrate the necessity for differentiating between the two criteria, it would be worthwhile to examine cyber cafes, and franchise-based telecentres. Cyber cafes owned and managed by private entrepreneurs are always considered to be commercial and profit-oriented. On the other hand, Franchise-based telecentres are in general profit-oriented but their primary goal is often taken to be development-oriented.

Further, it should be noted that contrary to the common way of categorizing (see Harris, 2001), the functional orientation is not determined

by the fact that a user fee or access charge is levied for the services rendered. For example, the telecentre model initiated by ITC-ABD, a business organization, does not charge any user fee from a farmer who wants to use its facility, but ITC's basic purpose is commercial and the functional orientation is for-profit. Similarly, a telecentre initiated and managed by a government department like Bhoomi in Karnataka levies user charges but its purpose is developmental with non-profit orientation. Other criteria include whether the mode of service delivery is exclusive, as in Bhoomi where a single agency is the service provider or partnership as in Drishtee or Chiraag. Further, the range of services delivered through kiosks is said to be 'narrow/thematic' if it relates to one particular sector, for example, education or agriculture extension or 'broad/diffused' when a range of services, often called as basket of services is provided through the network (Harris, 2001; Sood, 2003).

Almost all the criteria described above are one-dimensional in nature. Such criteria have the limitation that they do not group all types of telecentres found in rural India into neat categories. Further, they do not distinguish clearly between the two entities – the network orchestrator and the kiosk owner, which at times might be different type of agencies with different organizational orientation. The combination of two different kinds of agency introduces further complexities in the typology.

This study classifies telecentres in rural India as a combination of two parameters – the nature of the 'network orchestrator' and 'ownership of individual kiosk'. The network orchestrator is the agency that 'manages' the network of telecentres. It provides the organization base for the initiative and is responsible for designing, installing, operating and maintaining the service delivery system including coordinating with the people and partner agencies. The type of the agency of the network orchestrator determines to a large extent its purpose for being engaged with telecentres, service offerings and functional orientation. Ownership determines whether the kiosk is owned by an individual, a community-based organization or a particular organization. It mainly determines the agency bearing the operating costs and having a share in the profit. From the available literature, five different types of network orchestrators, broadly grouped into three domains of civil society, government and private/market agencies, can be identified: (a) International, national or local-level NGOs including bilateral and multilateral donor agencies, foreign-based non-profit foundations and foreign universities engaged in action research in this area. (b) National or local community-based organizations (CBOs) like cooperatives and Self-Help Groups, (c) Government agencies, (d) Private enterprises or Private firms and (e) Corporate business houses. A private

enterprise is distinguished from a private firm/business organization. While the former can be is a stand-alone venture or a startup, owned and managed by an individual private entrepreneurs, the corporate will have a wider organizational structure with professional managerial and technical capabilities.

Table 3.3 shows the possible combination of the two types of agencies and the resulting model. Only those combinations, for which examples can be drawn from rural India, have been named, though the evolution of the remaining possible combinations in the future cannot be ruled out. From this criterion of classifying telecentres, the other basic criteria described above can be derived. The type of the network orchestrator determines the functional orientation of the telecentre model.

Network orchestrators, public in nature are usually non-profit in their orientation whereas the ones private by nature are oriented towards profit generation. The public nature of the network orchestrator also determines the basic purpose as developmental. Except in those cases where the network orchestrator is a private enterprise, the purpose can be either commercial or developmental or both.

Although the franchise model of telecentres has evolved in response to strike a balance between developmental goals and commercial sustainability. It can be said that more public the nature of the network orchestrator, for example, government, more will be the developmental orientation of the venture. It can be also observed that when network orchestrator and ownership of telecentre is with the same type of agencies – the mode of service delivery is exclusive, otherwise it is partnership based. This mode of service delivery, along with the purpose will determine whether service offerings are narrow or broad. Table 3.4 maps the different criterion for the identified models with examples from India.

A particular shortcoming of this typology is that it appears to assume a two-tier structure for all telecentre initiatives, which was not the case for many telecentre models found in rural India. For example, n-Logue which was available in many different forms often assumed a three-tier structure when its local service partner (LSP) was an institution of fair repute and large presence, for example, Banas Dairy in Palanpur, Gujarat. In the field, the kiosk owner associated his/her kiosk more with the local institution than the one at Chennai. The combination of a private company, a CBO and a private entrepreneur raise some unique operational and managerial issues. Such formations can also be seen in the Common Service Centres setup under the National e-Governance Programme of the Government of India; the implications of which needs to be studied further. Also, the typology does not include access

Table 3.3 A typology of telecentres in rural India

		Domains	Ownership of the kiosk				
			Civil society		Government	Private/market	
Domains ↓		Type of agencies	NGO (non-profit)	CBO (for-profit/ non-profit)	GO (non-profit)	Private enterprise (for profit)	Private firm or corporate (for profit)
Network orchestrators	Civil society	NGO (non-profit)	NGO model (DHAN, MSSRF)	–	–	–	–
		CBO (for-profit/ non-profit)	–	–	–	–	–
	Government	Government (GO) (non-profit)	GO-NGO model (MahilaSpurthi)	GO-CBO model (Warana, Manage)	GO model (Bhoomi)	GO-Franchise model (Akshaya)	–
	Private/market	Private enterprise (for profit)	–	–	–	Individual Entrepreneurial Model (Cyber café)	–
		Private firm or corporate (for profit)		–	–	Private Franchise model (Drishtee, Chiraag)	Private Corporate model (e-Choupal)

Table 3.4 Mapping of different criteria for classifying telecentres

		Particulars	Ownership of individual kiosk	Broad purpose	Functional orientation	Service delivery
Network orchestrators	Civil society	**NGO model**	NGO	People-oriented Development	Non-Profit	Mixed
	Government	**GO model**	GO	People-oriented Development	Non-Profit	Narrow
		GO-NGO model	NGO	People-oriented Development	Non-Profit	Mixed
		GO-CBO model	CBO	People-oriented Development	Non-Profit	Mixed
	Private/Market	**GO-Franchise model**	Private Entrepreneur	Mixed	For-Profit	Broad
		Individual entrepreneur model	Private Entrepreneur	Commercial	For-Profit	Narrow
		Private franchise model	Private Entrepreneur	Mixed	For-Profit	Broad
		Private corporate model	Corporate	Commercial	For-Profit	Narrow

centres that have evolved as computer-training centres like those from All India Society for Electronics and Computer Technology (AISECT); also it does not consider the ones located in the urban areas as in Datamation, or as citizen facilitation centres like SETU in Maharashtra. Acknowledging that emerging models or types require further study, this two-dimensional typology is used as a tentative framework for this particular research.

Key characteristics of the telecentre models

The main characteristics of different telecentre models can be broadly grouped according to the type of agency acting as the network orchestrator (see Table 3.5). This section gives an overview of the main characteristics of the different telecentre models.

NGO as a network orchestrator

Mostly established as pilot projects, the main purpose of NGO-led projects was to carry out action research for demonstrating the potential of ICTs towards socio-economic development, establishing proof-of-concept and/or influence policy decisions. NGO-led telecentre models had two variants; difference was mainly on the basic purpose in setting them up, and their operations.

A donor-driven model was primarily initiated by international developmental organizations, either independently or in partnership with other international agencies, and implemented by a local partner NGO having the presence and organizational base in the project area. Donor agencies were international and regional organizations – ITU, UNDP, WB, FAO, IDRC, CIDA, USAID, SIDA, DANIDA etc. and educational and cultural institutions like UNESCO, British Council, etc. (Oestmann and Dymond 2001, p. 7). Limited number of telecentres were established, often not more than five to 10. Usually designed and executed in a participatory mode, the telecentres were managed by volunteers. The main drawback of such models was their short-term objectives of demonstrating a concept which was often not geared towards providing solutions that can be scaled up. They lacked financial and operational viability. Once the donor agency stopped funding, these projects withered away. Common example in India is the MSSRF project in Pondicherry and the FOOD project in Chennai initiated and funded by IDRC, Nabbana in West Bengal funded by UNESCO and the demonstration project TANUVAS by the Cornell University.

In its other variant, the NGO model was also funded primarily by international organizations or national governments. However, telecentres were deployed by the local NGO as part of their overall strategies for

Table 3.5 Main characteristics of different telecentre models

Model	Primary purpose	Features	Drawbacks
NGO model	• Demonstration of proof-of-concept (PoC) • Research • Influencing policy • ICT-enabled resource centre	• Pilot projects • Limited installations • Participatory • Managed by volunteers/paid employees • Autonomy in management of funds	• Short-term objective • Not designed for scaling-up or achieving financial sustainability • Lack of technical and managerial capacities • Limited drive/capability to generate business and revenue
GO model	• e-Governance, specific services • One-stop facilitation centre	• Managed by the government department • Salaried government officials	• Constrained by lack of Re-engineering of backend processes • Inter-department co-ordination
GO-NGO/ GO-CBO model	• Demonstration of PoC • Delivery of specific services	• Volunteers or paid employees of the NGO • NGO as an outreach arm, coordinating agency	• Same as above
GO-franchisee model	• e-Governance, e-literacy	• Popular, PPP mode • Government as facilitator, content and service provider • Owned and managed by private entrepreneur • Designed for replication/scaling	• Lack of Re-engineering of backend processes • Lack of institutionalization, often driven by individuals • Requires high degree of control, co-ordination and involvement

Individual entrepreneur model	• Information and communication services	• Market-driven • Urban and peri-urban areas	• Primarily profit-oriented
Private franchise model	• Enabling efficient delivery of services to rural areas	• Popular, low-cost • Combines financial and social goals • Driven by central coordinating agency • Private entrepreneurs own and manage individual kiosks • Designed for replication/scaling	• Financial viability has still not been proven • Highly vulnerable to responsiveness and support of district administration
Private corporate model	• Consolidate value/supply chain, development as spillover effect	• Fully funded by private investments • Rapid scaling-up possible	• Developmental benefits confined to some sections of the society

development programmes. As post-pilot, full-fledged programmes, such telecentres typically functioned as an ICT-enabled resource centres or community centres (Gurumurthy, Singh & Kasinathan 2005).Often managed by local people, on the payrolls of the NGO, the objective of such telecentres was to foster and facilitate specific development activities. Services are localized and catered towards the needs of the community or the organization. Since the initial investments are made by the NGOs and it also bore the recurring costs, telecentre sustainability was less of a concern (see Gurumurthy, Singh & Kasinathan 2005 for details).

However, since such agencies were not driven by the objective to make a commercial success of their centres, their capacity to generate business and revenue at times were also limited (Oestmann & Dymond, 2001, p. 10). An example from rural India is the community centres set up by DHAN foundation.

Government as a network orchestrator

This category includes four different types of telecentre models: Government, Government-NGO, Government-CBO and Government-Franchise model. These telecentres were among the first ones to be piloted by various government departments. They were/are part of the e-Governance initiatives directed towards enhancing the interface between government-to-citizen (G2C), citizen-to-government (C2G), government to business (G2B) and government to government (G2G). As exemplified by Gyandoot in Madhya Pradesh or Mahiti Shakti in Gujarat, such projects are often initiated by zealous administrative officers and/or with political support as in Andhra Pradesh, Karnataka and Kerala. The models – Government, Government-NGO, Government-CBO and Government-Franchise – differ with respect to their implementing partner and this has a significant bearing on the kinds of services, operations and management of the telecentres.

Bhoomi in Karnataka or VOICE in Andhra Pradesh are examples of the government model where the government is both the initiator and implementer of the initiatives. Exclusive and public by nature, such telecentres act primarily as citizen facilitation centres, managed by the department itself. In Government-NGO, Government-CBO and Government-Franchise models, the implementing agencies are NGOs, community-based organizations and private entrepreneurs respectively. A Government-NGO model differs from an NGO model funded by the government. In NGO model, the initiative is implemented by the NGO and government is just another source of financial support, whereas in Government-NGO model, the NGO, because of its presence and

organizational reach, acts as an outreach arm for delivering government services like health and education.

By far, the Government-Franchise model has emerged as the most popular one among all the government-driven initiatives. In this model the partnership is between the government as the network orchestrator and a private entrepreneur. The government acts as a facilitator, helping in garnering investments, arranging loans for the private entrepreneur and as a provider of technical support and designing content and services. However, some variations can be seen in the degree of control the government body has on the private entrepreneur, from being very strong as in the case of Akshaya in Kerala to diffuse as in the case of Mahiti Shakti in Gujarat. This degree of control was closely related to how the project had been conceived, to what extent the processes were institutionalized, the level of involvement and support of all the departments within the government and the degree of political support.

Private or market-based organizations as network orchestrators

This section introduces three types of telecentre models in which a private organization acts as a network orchestrator.

Cyber cafés. Cyber cafés are usually private, profit-oriented business enterprises located in urban or peri-urban areas. They provide a basket of services that are primarily determined and driven by market demand. While a telecentre in urban or rural areas can provide services similar to those provided by the cyber cafés, but the telecentre is supposed to have a 'social dimension', that is, provide for 'social and economic development which is over and above the direct benefit associated with using the new technology' (Proenza, 2001, p. 5).

Private franchise model. This particular type of model was actively promoted by many agencies. In this model, the network orchestrator is usually a private enterprise that provides all the technical, organizational, managerial and logistic support to the telecentres owned and managed by individual entrepreneurs in the villages. The entrepreneur makes the full investments for setting up of the kiosk; often on the basis of a loan facilitated by the network orchestrator. The network orchestrator usually develops a basket of services in collaboration with the government and other private organizations, which are then adapted and modified as the needs of the particular regions. Financial sustainability being a key concern, these models charged user/service fee for services availed through the kiosks. The fees for some of these services are shared between the network orchestrator

and the kiosk owner. These models aimed to combine commercial interests with development objects. Drishtee, TaraHaat and Chiraag are some examples from the early phase of the telecentre movement, while the CSCs under NeGP are recent examples of this type of model.

Corporate model. The Corporate model has evolved as a distinct category of telecentre only in India. Primarily initiated as a strategy to consolidate the supply chain, such telecentres nonetheless are perceived to be beneficial to rural farmers. Fully funded through private investments, the kiosks are set up primarily by the business houses to tackle the challenges posed by certain features of Indian agriculture, such as fragmented farms, a weak infrastructure, and the involvement of numerous intermediaries (World Bank, 2003b, p. 1). ITC's e-Choupal is one of the most prominent example of this type of model. Although the primary objective of the project is to bring efficiency to ITC's procurement process, an important by-product is said to be the increased empowerment of rural farmers where e-Choupal has been established (World Bank, 2003b, p. 1). Development impact is generated as a spillover effect of the economic efficiency gained through reduction in the transaction cost, aggregation of demands for farm inputs and greater bargaining power for the farmers. The main drawback for this model is that its scalability and viability is limited to those areas that have significant economic activity. Thus, the model actually becomes nonviable for almost 75 per cent of the Indian villages.

Review of the literature to understand changes that have been brought about by telecentres in the village shows that evaluation and research studies have focussed primarily on various processes and aspects related to telecentre deployment, diffusion of telecentre use, sustainability and assessment of service delivery through kiosks; studies specifically examining impact are few. Most authors have indicated that the socio-economic impact of telecentres at any particular location has not been significant (Dossani, Jhaveri & Misra, 2005; Pal, 2007; Tiwari, 2008). Such observations and conjectures are primarily based on insights from the studies whose objectives were to investigate particular aspects related to deployment. As the studies indicate, there are methodological issues in establishing the causal linkage between provision of information/technology via telecentres and specific development outcomes or impact. Thus, while the literature on telecentre and development evolves towards maturity, the evidence on the developmental impact of telecentres is still primarily anecdotal and descriptive. A general observation is that it is difficult to establish the causal link between provision of technology, information and services to specific socio-economic indicators.

4
Conceptual Framework and Methodology

This chapter presents the conceptual framework, methodology, research design and details of the fieldwork. The study followed the interactive process of qualitative research design as put forth by Maxwell (2005, pp. 2–3). Some aspects of the design were developed prior to the framing of the actual research questions and many others were kept flexible and emergent to the needs of the field. The methodology was shaped by the expected contribution to the area of rural management. The related implications were: (a) the study would have a rural focus, and (b) the researcher would spend a significant amount of time in the actual field settings in close contact with the people, situation and phenomenon under study. Thus, not only the review of literature and framing of the conceptual framework was guided by this expected contribution, but also an important design decision that the study would be essentially field-based was made prior to the actual articulation of specific research questions. Specific design aspects like the choice of case study as the research strategy, data collection methods and tools were subsequently taken.

Decision to follow a qualitative approach was informed by the newness of the phenomenon at the time of the study. The deployment of telecentres in rural India started only in 1998. Around 2003–4, Sustainability and impact were the two key research concerns with regard to telecentres. Emerging studies focused generally on the former, while in-depth studies investigating the socio-economic impact of telecentres were limited. However, as pointed out by Hudson (2001a), the voluminous literature was sufficient enough to generate a conceptual framework and put forth some tentative propositions for assessing the change brought about by telecentres within a village. Informed by exposure visits to telecentres, a preliminary conceptual framework was

derived from this set of literature and used for conducting the pilot study. It was subsequently modified based on the insights from the field and from the emerging set of empirical and evaluation studies. Furthermore, based on other contingencies, the researcher went back and forth between various components of research design. The multiple iterations of the conceptual framework reflect the interactive process of qualitative research design as put forth by Maxwell (2005, pp. 2–3) and followed by this study. The research design and details about the fieldwork are presented together in this chapter to highlight the changes.

Conceptual framework

While the literature on telecentres in rural India contributed towards identifying the key components of the conceptual framework and focussing on the topic of research, select literature from other disciplines and area of studies like rural sociology, diffusion of innovation, village-level studies on media and technology adoption, and digital divide were also referred (for example, Desai, 1978; Hartmann, Patil & Dighe, 1989; Johnson, 2000; Rogers, 1995). The framework thus is a generic one, not situated in a particular discipline or adheres to a particular theoretical framework. This decision was also informed by the exploratory nature of the endeavour and of the newness of the phenomenon. While the study on new ICTs can be placed within the broad framework of communication and media studies, differences in terms of technologies deployed, and in the context, methods, and processes of deployment necessitated a different approach. The study does adopts a development perspective for exploring the linkages between ICTs and development, relating the macro-meso-micro contexts of the interventions, examining the rhetoric on ICT-D through empirical investigations and in general, draw developmental implications of ICT-D and telecentres.

The conceptual framework (see Figure 4.1) puts forth that the telecentre deployed in the village is embedded in multiple contexts—global, national and sub-national, organizational and village—as indicated by the multiplicity of agencies shaping the discourse. Together they define the 'developmental' or the 'rural' context of telecentre deployment. Specifically, for the purpose of this study, the multiple contexts have been grouped into three: (a) the micro or the context immediate to the telecentre, i.e. the village. It is also referred to as the local context; (b) the meso level or the organizational context defines the main characteristics of telecentre model and the particular telecentre initiative; and (c) the macro-policy environment at the global, national and sub-national levels. While the

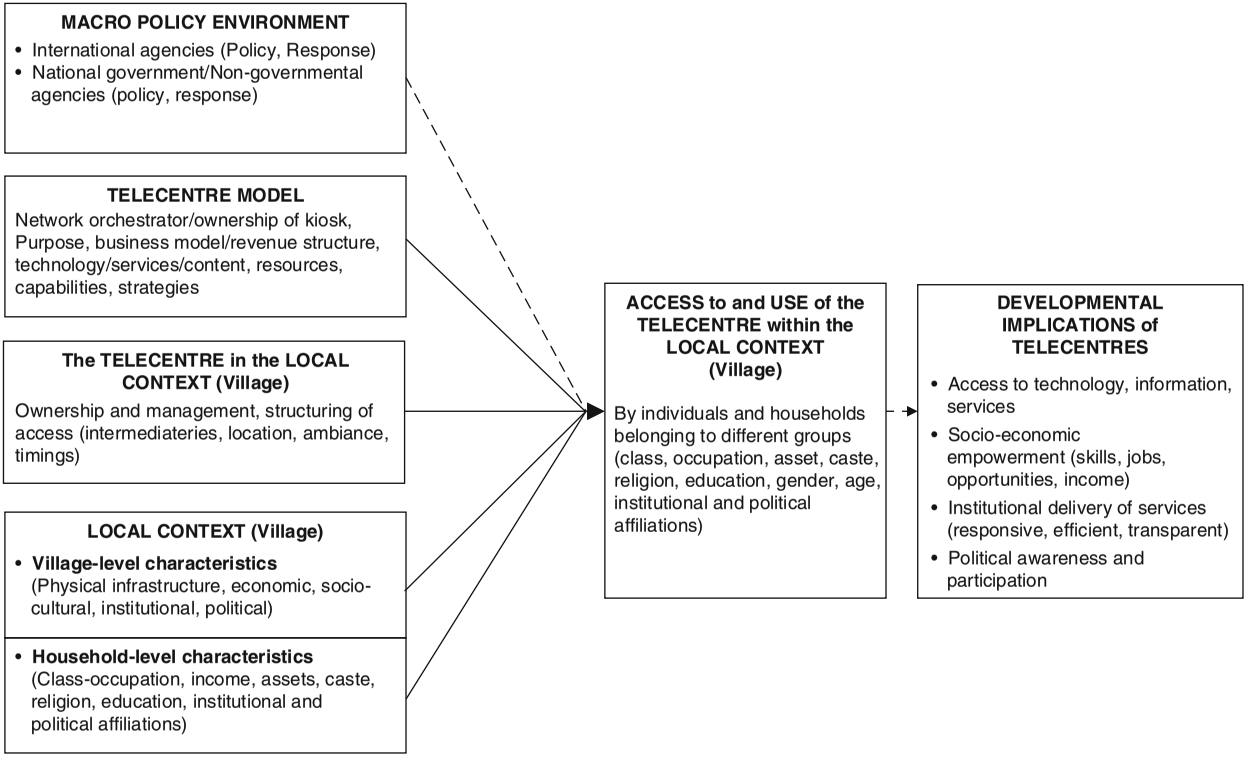

Figure 4.1 Conceptual framework

context at each level could have been described by many parameters, the framework delineates specific features that were observable, if not measurable during the field visits. This was to overcome two common limitations of such endeavours. First, although contextual characteristics are often described in detail, the linkages between them are not clearly articulated. Second, detailed descriptions as in ethnographies and many case studies, offer limited scope for generalizations. Delineation of the specific dimensions and parameters enabled generation of some tentative propositions with regard to linkages between telecentres, contextual features and outcomes. They also enable cross-comparison of cases and putting forth tentative generalizations, albeit with limitations.

Macro-policy environment

The most popular notion of telecentres is as facilities that provide shared and mediated access to technologies for socio-economic development. Facilitated by continuous innovations in technology, organizations of all kinds mainstreamed deployment of telecentres as part of their overall business or development strategies. While for some agencies, telecentres are means for delivering services in the area of health, education, e-governance, for many others like technology providers, telecentres are the ends. The underlying logic driving the telecentre movement is to popularize technology as a step towards developing new markets for IT products and services. Their deployment in rural areas are embedded in the larger trends like globalization, privatization and liberalization, at the global, national and state levels and shaped by the policies and plans of both government and non-government agencies (both for-profit and non-profit). Broadly, policies set the directions of the developmental programmes, influence issues like research and development of technology, provision of funds, etc. The response to the policies, especially in terms of allocated resources, programmes/projects initiated and other support influence the way telecentres are deployed in rural areas. For example in Kerala, the role played by the government agency during the initial phase and the also thru continuous involvement of the local bodies gave due legitimacy to the Akshaya programme and helped in building trust between kiosk entrepreneurs and citizens. On the other hand, as the case study on n-Logue illustrates, the policies and response might also hinder development of technologies and solutions appropriate for particular contexts (Gurumurthy & Kasinathan, 2005). These policies can be broadly divided into two groups. The first set of policies is directly related to ICTs and Telecentres. For example, Deployment of common service centres in rural India is part of the national e-governance programme

(NeGP). The second set of policies is related to other areas like agriculture, education, livelihoods etc. that might shape access and use in the local context. For example, at the Chiraag-Banas kiosk in Kanodar, tuitions for computer classes formed an important service because the local schools had introduced computers as a subject in school. The scope of the study is limited to understanding state level polices from secondary sources. And examining the trends in the macro policy environment that led to the setting up of the telecentre in the village and whether any policies facilitate or hinder its functioning at the local level.

The telecentre model and initiative

Table 4.1 gives the key parameters for describing the organizational context of a telecentre deployed in the village. The telecentre model, characteristics of the particular telecentre initiative and its instance located in the village together constitute the meso-level or the organizational context. The telecentre model is determined by the type of agency carrying the responsibility of orchestrating the network and the ownership of individual kiosks. Within each model or category, different telecentre initiatives differ from each other in terms of their organizational purpose and strategies for deploying telecentres. These in turn determines the business model/revenue structure, investment required, technology deployed and services and their delivery structure including user fee and commission for the telecentre entrepreneur. The type of agency also determines the managerial capability of the organization to handle bottlenecks like infrastructure, content availability, replication and scaling-up in different geographic locations, and in general the capability to take risk. While there are limited evidences about model characteristics and nature or developmental impact, existing literature does provide some insights about sustainability.

Sustainability of telecentres set up by a corporate (for example, ITC-ABD's e-Choupal) is often considered to be high because the network

Table 4.1 Parameters describing the telecentre model/initiative

No.	Parameters
1	Network orchestrator (Type of agency, ownership of kiosk, purpose, structure, processes)
2	Business model/revenue structure
3	Services and technology (hardware, software, connectivity, electricity/power)
4	Resources, capabilities and strategies of the network orchestrator

orchestrator pays for the complete installation and annual maintenance costs; the entrepreneur only pays for the operating cost. Further, since the services provided by the e-Choupal is linked to overall business processes of ITC, the kiosk entrepreneur earns a fixed amount per year as commission on commodities procured by ITC thru his kiosk. In contrast, sustainability of the franchise based models are often considered to be bit. The kiosk entrepreneur has to make full investments (often by taking a loan) in setting up the kiosk and also has to bear the operating costs. Services and their delivery structure vary, and so does the amount of revenue generated. For example, n-Logue deployed the Chirag kiosks as frontend for accessing to its CorDECT technology. Services were essentially web-based to spur the demand for technology. Since the demand for Internet based services was almost absent, the services did not pick up. In contrast, the basket of services offered by other franchise based models like Drishtee or Akshaya had both online and offline services customized as per the needs of the village. Further, services like driving licence, etc., were only one time transaction and did not generate repeated revenues unlike collection of monthly bills. Sustainability of NGO led models depended on the continued support of the donor agencies and the extent to which they were institutionalized in their local context (Gurumurthy, Singh & Kasinathan, 2005).

The telecentre in the village

While the characteristics of the model and telecentre initiative largely determine the main features of the telecentre located in the village, it also has some local contextual characteristics like the socio-economic profile and educational qualifications of the kiosk owner/entrepreneur, location of the kiosk, its ambience and time of operation, localized services etc. Table 4.2 gives the parameters for describing the telecentre in the village.

Local context

The local context is the external environment immediate to where the telecentre is located.

Table 4.2 Parameters describing the telecentre in the village

No.	Parameters
1	Ownership and Management (kiosk owner, staff and volunteers)
2	Services provides (as per model characteristics and other localized services)
3	Structuring of Access (intermediation, location, ambience, timings)

Along with the characteristics of the particular telecentre, the local context determines the short-term impact and the long-term developmental implications of the telecentre. In this conceptual framework, the local context is described in terms of the village and household characteristics. Village characteristics are examined along six interrelated dimensions: infrastructure, economic, social, cultural, institutional and political (see Table 4.3). The dimensions and associated parameters are not independent of each other, but have been categorized for conceptualization and data collection.

Physical infrastructure refers to the availability of telecommunication infrastructure, connectivity and computers, and the presence of supporting infrastructure like electricity, road and transport. As the pilot projects demonstrated, contrary to the notion that ICTs with their potential to overcome the constraints of time, distance or absence of the physical infrastructure, the availability of adequate quantity and quality of physical infrastructure is an imperative for the effective deployment of the ICTs. ICTs can deliver potentially valuable information to end-users like market prices to poor rural farmers and medical advice to rural healthcare workers. However, market information is useless if there are no roads to transport goods, and medical advice is meaningless if there is no money to purchase medicines. The supporting infrastructures enhance the capabilities of the people to take action based on the accessed information (Bobde, Deb & Rane, 2002, p. 39; Kothari, 2002; Prakash, 2002, p. 39).

The socio-economic characteristics of a village, are primarily related to the occupational characteristics, which in turn determines the relative socio-economic status (SES) of the households in the village. The rural economy in India has been primarily agrarian with the occupation(s)

Table 4.3 Parameters describing the local context (village characteristics)

No.	Dimension	Parameters
1	Infrastructure	Physical infrastructure (electricity, roads and transport, telecommunication facilities)
2	Economic	Occupational pattern, income and assets, class structure
3	Social	Caste hierarchy, literacy level/educational status (gender and age)
4	Cultural	Norms (governing interactions between groups), practices (social, religious, cultural)
5	Institutional	Formal and informal institutions in the village
6	Political	Representation of the village in elected bodies.

of households closely revolving around land and their cultivation. Landlords, tenants, and agriculture labours along with artisans and servicing groups together constitute the class system in a traditional village society (Beteille, 1996, p. 103).[1] The class system frequently overlapped with caste structure with people belonging to particular castes pursuing specific occupation(s).[2] Further, there is often a strong interdependence between the various groups with prevalence of various forms of patron-client relationships like landlord-tenant, master-servant, creditor-debtor, etc. However, in recent times, triggered by a complex interplay of various demographic, socio-economic, institutional, political, and technological factors, the decisive influence of both agriculture and caste is said to be on the wane (Beteille, 2007; Gupta, 2005; Rao & Nair, 2003). And, the class system can no longer be defined solely on the basis of ownership of land and other productive assets (Beteille, 2007). Occupation, income and education also play a role in differentiating economic standing of various classes in the village (ibid.).[3] Culture is examined in terms of norms governing interactions between various groups along with the socio-cultural and religious practices. Both play a role in initiating the telecentre venture, making them viable, enabling access and at times shaping the impact.

Preliminary anecdotal studies on telecentres highlight both the facets of the debate on digital divide. One set of studies acknowledge that caste, class and gender play an important role in accessing telecentres and their services. But given that the projects are designed and executed with care, the access to technology becomes more inclusive and at places brings about positive change. For example, participation by women is increased when a women intermediary is engaged at the telecentre. On the other hand, the other set of literature put forth that services of such telecentres are often more oriented towards the needs of the village elites, thus reinforcing the existing caste-class relations (Kaushik & Singh, 2004).

Household characteristics

Village level characteristics are also reflected in the characteristics of the households, where both users and non-users of any telecentre belong (see Table 4.4) The socio-economic status/class of the household is examined in terms of the occupational pattern of the different members of the household, their monthly or annual income and expenditure, and in terms of assets like land, possession of household items like television, washing machine, etc. The socio-economic status often linked to the caste, political and institutional affiliations of the households

Table 4.4 Dimensions and parameters describing household characteristics

No.	Dimension	Parameters
1	Economic	Class (occupation, income and assets)
2	Social	Caste, religion, literacy/education, gender, age
3	Institutional/ Political	Membership/affiliation

determines the capabilities of the people to access productive resources, credit, basic education and health facilities, which in can turn influence technology adoption and the outcomes.

Access and use

While the motivation of the study was to understand the changes brought about by telecentres in the village, literature review highlighted some of the methodological issues in measuring the impact of telecentres and these were also experienced during the pilot field visits. The study thus adopts an approach that has been followed by many other researchers studying the usage pattern of the telecentres and interpreting it as per the perspective or framework adopted (see Kumar & Best 2006a, 2006b; Mukhopadhyay & Nandi, 2007; Pal, 2007; Thomas, 2006; Thomas & Pariyal, 2008; Tiwari, 2008).

However, the framework does not focus only on users and non-users, it considers household as a unit of investigation. Conceptually, since telecentres provide mediated access to technologies and information,; to focus only on users overlooks this basic assumption. Also, since it is a shared resource, local level factors, specially the interlinked notions of class, caste, and gender will often determine who are able to access the telecentre. Further, the capabilities of individuals and households to act on the accessed information will depend on the resources available at their disposal. As some of the studies reveal, focussing only on individuals as users or non-users is also fraught with the methodological issues of locating them since records are often not maintained properly (Best & Maier, 2007; CEG-IIMA, 2002; Kumar & Best, 2006a, 2006b). Further, the pattern of access and use might vary according to the season.

Thus, the framework differentiates between access and use. The term access itself has multiple meanings. While it has a technological connotation since telecentres primarily provide access to new technologies, access is also a physical, social and structured. The telecentre has to be located at a place that is physically accessible to all, including women.

Further, it has to be socially accessible in that people are able to enter its premises irrespective of socio-economic status, caste, education, etc. It is structured because often the network orchestrator and the kiosk operator design it to be so. Use refers to the actual services availed by the people. Since telecentres provide shared and mediated access, use does not necessarily indicate that people have to use computers and Internet.

Developmental implications

In order to overcome the elusiveness in observing and measuring the causal link between provision of information or technologies through telecentre and development, the findings on the pattern of access and use is juxtaposed against the larger discourse on telecentres and development. Such an approach facilitates matching the reality with the rhetoric. Further it enables assessing the extent to which the particular initiative is fulfilling the roles as envisaged in the development discourse and what possible development trajectories are implied by such technology-enabled initiatives.

Research questions

The research started with two broad questions: What are the changes brought about by telecentres in rural villages, and how are the changes mediated or influenced by the macro, meso and micro contexts? These questions guided the review of literature, framing of the conceptual framework and subsequent stating of the specific research questions:

1. What is the pattern of access and use of the telecentre and its services by households belonging to different socio-economic groups (class, occupation, education, caste, and religion, institutional and political affiliation) in the village?
2. How is the pattern of access and use of telecentre and its services by households shaped by: (a) the characteristics of the local context, (b) the features of the telecentre model, and (c) the characteristics of the particular telecentre located in the village?

Case-study research

Deployment of telecentres in rural India began in mid-1990s, gained momentum around 2001–2 and was endorsed at a policy level by the government of India only in 2006. The contemporary nature of the phenomenon and the proposed line of inquiry as articulated in the research

question, formed the initial basis for selecting case study as a research strategy (Yin, 1984, p. 13). The trade-off between depth and breadth provided by the case study approach was also a reason for its selection. In-depth ethnographic study and sample surveys were the two other field-based research strategies initially considered, but were not adopted as research strategy.

An ethnographic study with long-term involvement with the field could have provided an in-depth understanding of the local context, the process of telecentre deployment and change. It could have captured the changing pattern of adoption of the telecentre by different user groups. However, observations during the pilot study and also existing literature indicated that telecentres as recent interventions were still not focal or central to village activities. Thus, a prolonged stay in the village would not have revealed any additional aspects of technology diffusion and adoption. Further, focusing on a single telecentre would have failed to capture the diversity of telecentre models. Another constraint was the time required to master fluency in local language required for conducting in-depth probes at different locations.

Methodological reasons for not adopting survey research method were the newness of the conceptual framework and the propositions, emphasis on examining the contextual linkages at the village level, lack of explicit evidence in the literature indicating causal linkages between definite and measurable outcomes, and constraints in pre-defining a sampling frame. A sample survey required a proper sampling frame including the locations of all telecentres and details on village demography and households. Obtaining the required data was difficult because of the unwillingness of the network orchestrator in sharing the data and the logistical issues in collecting them independently. In any case, survey required exploratory studies for finalizing the conceptual framework and design instruments.

The main drawback of case study approach was that it limits generalization of the findings to populations or universe since each case study is not a representative 'sample'. However, following Yin (1984, p. 21), an attempt is made for analytic generalizations. The study consists of independent case studies. Each case is on a particular telecentre located in the chosen village. The selection of the telecentre model was guided by the typology evolved in the last chapter. The typology and the conceptual framework were treated as a tentative theory for investigating the socio-economic impact of telecentres in the village. They were also used for interpreting results and making cross-case comparisons by matching patterns (Campbell, 1975, c.f. Yin, 1984, p. 33).

Selection of cases

At the time of the study, there were around 50 different telecentre-based initiatives with over fifty thousand installations (see Annexure I). The typology of telecentre models presented in Chapter 3 grouped these telecentre initiatives into seven different categories or models. Within each particular telecentre model (for example, private-franchise) there were many telecentre initiatives (for example, Drishtee, TaraHaat, Chiraag are examples of private-franchise model), each with multiple kiosks across villages. For all possible combinations of model-initiative-location, it was impossible to generalize the findings from one study another context or model or instance. The selection of cases were done after much deliberations on (a) the unit of analysis, (b) the number of cases, (c) selection criteria for the model, (e) the section of the particular initiative within the chosen model, and (e) the selection of the particular location of the telecentre. These deliberations in turn were also contingent on permissions, logistical support, duration and schedule of the fieldwork.

Since the focus of the study was to examine the change brought about by the telecentre within a village, the unit of analysis for the case study was decided as the particular telecentre located in the village. And the research focused on examining the interlinkages between the telecentre and the local context described in terms of economic, social, cultural, political, institutional and infrastructural characteristics of the village. As per the classification of case-study research designs put forth by Yin (1984), this study follows multiple-case holistic design.

Except for Akshaya in Kerala, the exact location of the telecentres in rural India was not available in the public domain. Access to actual fieldwork location was thus possible only through the respective network orchestrator. It was also necessitated by the fact that the location had to one where the telecentre was functioning and there was atleast some perception of developmental outcomes. Initial contact and request for permission was made through emails with the short listed organizations. From the organizations that responded to the request for conducting fieldwork and gave permission, a list of tentative fieldwork locations was collected and the final selection was done in consultation with the designated person in each organization.

While the original plan was to have one case study on each of the telecentre model, only one pilot and three case studies could be conducted within the given timeframe. The selected models were Government-Franchise, Private-Franchise, and Corporate. The criteria for selection of the telecentre models included the rate at which the telecentre

model was getting popular, and the 'success' of the telecentre model as perceived in academic and non-academic writings. Since entrepreneur based models were getting popular at the policy level, the study made an attempt to focus on related models.

Each of the selected telecentre models had more than one example or initiatives. The criteria for selecting the particular initiative among many possible included: (a) Scale and scope of the operation, including geographic scope; Initiatives with multiple locations were preferred, (b) Perceived success or failure of the model; the ones functioning at the time of fieldwork were give higher preference, and (c) due permission by the respective organizations to access the field. Thus the selected telecentre initiatives were (a) Drishtee and Chiraag Banas (Private-Franchise Model), (b) Akshaya (Government-Franchise Model), (c) e-Choupal (Corporate Model). The next section describes the selection of the actual fieldwork locations.

Fieldwork locations and pilot study

The stated objective of the research was to understand the developmental implications of telecentres in rural India by examining its interaction with its context. Hence the proposed locations for fieldwork were the villages with a functional telecentre and some developmental outcomes were perceived. Thus, a primary criterion for selecting a village for fieldwork was the presence of a 'successful' kiosk, which was translated by all network orchestrators as the one which was generating revenue and was 'financially sustainable'. Since at the time of fieldwork, there were many such kiosks, additional criteria for selection of the case included: (a) the kiosks were at least one-year old, and (b) preferably located in a multi-caste, multi-class village where it would be possible to study the impact of telecentres on different sections of the population. The final choice of the location was influenced by: (a) the willingness of the kiosk owner to host a female researcher for at least fifteen days in the village; (b) availability of a safe place to stay preferably within the village[4] or at any other place from where travelling time was less; (c) availability of a safe mode of travel, even during early morning and late evening; and (d) availability of at least one person who could speak English, Hindi or Bengali.

The scheduling of the actual fieldwork was subjected to adjustments related to season (fieldwork during monsoon and harvesting were discouraged), festivals like Id and Diwali, end of the financial year and transfer and/or resignation of the contact person. The

time period between initiating contact with the network orchestrator and actual fieldwork took eight to twelve months. Thus, given constraints with regard to time, issues related to logistics, permission and access, only four field visits were undertaken between November 2005 and June 2006. The pilot study was conducted at Kanodar in Gujarat on a Chiraag-Banas kiosk and the subsequent fieldworks were done with Akshaya e-Kendra at Ariyallur in Kerala, e-Choupal at Pimpri Buti in Maharashtra and Drishtee kiosk at Kesarpur in Uttar Pradesh.

The pilot study was on a Chiraag Banas kiosk located at Kanodar in Palanpur district of Gujarat. The network orchestrator was n-Logue, but access to the field was provided by Banas Dairy, the local service provider and partner organization of n-Logue. Banas Dairy was an institution with considerable presence and reputation in the area. The entrepreneur was the winner of the MSSRF-TATA NVA fellowship for the year 2004 and was felicitated by the President of India in a convocation held in July 2005 at New Delhi. She was one of the highest and consistent revenue generators in the state of Gujarat, that too for Internet-based communication services. The researcher stayed with a relative of the entrepreneur and the house was located just four houses next to the Chirag-Banas kiosk. During fieldwork, a visit was also made to another nearby kiosk located at village Magarwada in the same district.

At the time of fieldwork, Akshaya kiosks were located only in the Malappuram district of Kerala. Permission and access to field location was easy once the initial contact was made with the KSITM officials. The selection of the particular kiosk was made in consultation with the officials at the Malappuram District Office of KSITM. Two among the five best performing kiosks were suggested. Ariyallur was located along the coast, while Kalikavu was located in the mountains. Since language was a constraint in Kerala, Ariyallur was selected since the entrepreneur's father, an ex-serviceman spoke Hindi very well.

The e-Choupal initiative was known for its pilot project in Madhya Pradesh. But the organization suggested fieldwork in Maharashtra where the response to its services was considered better. Further, ITC-ABD had also initiated the IT-enabled education initiative with IL&FS in the state. Access to the field was facilitated by ITC-ABD's branch office located at Nagpur. The entrepreneur at Pimpri Buti was adjudged one of the best *sanchalaks* for the year 2004–5. One overriding factor was that he was one of the most enthusiastic proponents of the education initiative of the e-Choupal and ILFS.

Drishtee's most successful kiosks were located in Assam, however, scheduling of fieldwork could not materialize because of overlaps with other field visits, floods during monsoon, and occasional flaring-up of insurgency in the state. Hence, the second best option, Kesarpur in Bareilly district in UP was selected. The entrepreneur was the winner of best kiosk operator for putting in the highest sale in 2005–6 and was considered to be an enterprising and consistent performer.

The pilot study at Kanodar, Gujarat

The pilot study led to the refinement of the conceptual framework and many changes in the research design. The key insight from the fieldwork was the difficulty in establishing the causal linkages between access to information or technology and socio-economic impact. While it could be observed that using a service like video chat saved communication costs, respondents found it difficult to articulate how the savings lead to well-being or betterment of quality of life. Thus, it was only possible to draw implications on the possible development trajectory by examining those who accessed and used the telecentre, and those who did not. The first change was thus inclusion of non-users as respondents. Further observations at Kanodar indicated that household characteristics (especially in terms of occupation) often influenced the pattern of access and use of the family members. Thus, the second change was to take households as a unit of analysis instead of the individual. The decision to focus on households instead of individual users was also taken because the user records maintained by the kiosk owner was often for the purpose of account keeping and was incomplete in other respects. Further, since access was often mediated, a user did not necessarily operate the computer or the Internet. Even where individuals did access both, there was much seasonality in their usage. Thus, 'access' and 'use' was conceptualized primarily as physical and social access to the telecentre, while 'use' denoted the number and type of services availed.

Data collection and analysis

Observations and interviews were the main methods for collecting both qualitative and quantitative data. The researcher was participant observer to the extent that she stayed in the village along with the entrepreneur or their relatives and was sometimes called upon as a resource person for technical reasons; otherwise observation has been mainly direct. Direct observation, though limited only for that particular season and period,[5] enabled documentation of the first hand information about the activities

and interactions between the people, primarily between the kiosk entrepreneur and others.

The kiosk entrepreneur was the key informant who gave initial access to the village and sources of information. Validity threats arising because of the kiosk entrepreneur being the key informant were eliminated by cross-verifying data and information from other respondents during household and individual interviews. In Kerala, the researcher had the opportunity to visit other Akshaya kiosks throughout Kerala by participating in a campaign for creating awareness about 'Internet for All'.

Interviews, using semi-structured interview schedules with both close and open-ended questions, formed the main source of data collection. At all locations entrepreneurs, their friends and relatives, the instructors and at times students took turns in accompanying the researcher during household interviews and acted as interpreters. The interviews were conducted with users and others visiting the telecentres, households, kiosk entrepreneurs and officials related to the initiative. Interviews enabled the researcher:

a) To collect data in spite of issues related to language. Because many of the questions were close ended, it enabled easier communication and interpretation.
b) To blend both quantitative and qualitative data. Fifteen-twenty minutes inside the house with a discerning and observing mind revealed a lot, especially related to the socio-economic status of the family.
c) To see interesting aspects of the local context and also verify other contextual-level characteristics. For example, the gender of the main respondent, the response of the female members of the household and the response of the male members to questions directed at women gave an idea of the possible nature of engagement with the telecentre initiative.

Except for Kesarpur in UP, where the spoken language was Hindi, group discussions at other places were usually informal and often spontaneous. At Kesarpur, a group discussion was also required because it was difficult to access women belonging to the Muslim community. This feature itself gave an indication of the possible pattern of availing services, but for triangulation a group discussion with a particular Self-Help Group (SHG) of Muslim women was conducted. The SHG was, recommended by the branch manager of a local bank. It focused specifically on the education and mobility aspect of the Muslim women.

Selection of the respondent households

The choice on households had been again an emergent design decision. During the exploratory fieldwork, only eighteen users coming to the telecentre were interviewed. While it provided insights about those who availed services, it gave no idea about people who did not access the telecentre and the factors enabling or hindering the access and use of telecentres by the two groups. Households were thus considered as unit of analysis.

Households were selected purposefully with the objective to cover families belonging to all socio-economic categories in the village and with differing levels of engagement with the telecentre in the village.[6] The complete list of criteria and values used for determining the socio-economic status is given in Table 4.5. At places, where a particular group appeared

Table 4.5 Attributes for determining the socio-economic status of a household

No	Attribute	Value
1	Occupation of the head of HH	Salaried (government or private), daily wage labour, etc.
2	Occupation of the children	Same as their fathers, new areas
3	Education of HH members	Education of the head of the HH and highest education in the family
4	Land/property owned	Area
5	Locality/Type of house	*Kuccha*, *Pucca*
	• Roof	Plastic, straw, tin, asbestos, brick, tiles, etc.
	• Wall	Straw, brick, wood, tiled, etc.
	• Floor	Mud, Plastered, Tiled, Marble, etc.
	• Separate kitchen	Yes/no
	• Toilets available	Yes/no; inside, outside, open, common
6	Source of drinking-water	Pipe, well, common tap, etc.
7	Electricity	Available/Not Available
8	Cooking fuel	Straw, kerosene, gas
9	Vehicle	2-wheeler, 3-wheeler, boats, etc.
10	Possession of refrigerators, washing machine, water pump, Radio, television, landline phone, mobile phone	Yes/no
11	Caste	Dominant/minority
12	Political/institutional membership	Shaped Access and Use (Yes/no)

to be engaged more actively in availing particular telecentre services, more households belonging to that particular category were selected for interview. For example, at Pimpri Buti, the initial few interviews revealed that farmers were the dominant users of the service, thus farmers belonging to different categories were selected to investigate if their experience was different or similar. Sampling was also done to the point of redundancy i.e. no new responses were coming from the households.

Choice of a purposeful sampling was also because of the decision to conduct case studies across models and geographic regions that put constraints on the time available for pre-field visits to collect preliminary data like voter list or other list that could have helped in designing a stratified random sample.

Interviews were conducted by visiting the selected households personally. The key respondent was either the head of the household or a senior member of the family, whoever was present and willing to give details. In most cases, other members of the household, especially children and women were usually present at the time of the interviews. Some interviews of both users and non-users were also conducted at the kiosk, but care was taken to visit the homes of the respondents at least once to validate the responses related to socio-economic status. Data was collected from 254 households including that of the three telecentre entrepreneurs. Details about the respondent households are given in the respective case studies.

Data collection instruments

The process of data collection has been an iterative one. A very preliminary form of the questionnaire was tested at Kanodar (Gujarat), where only the users coming to the telecentre were interviewed. In subsequent fieldwork at Ariyallur (Kerala), Pimpri Buti (Maharashtra), and Kesarpur (UP), the modifications were primarily in questions relating to the awareness, use and response towards the services provided by the telecentre. Thus, one part of the tools had fixed items, common across locations. The other section varied depending on the location and services available at the telecentre under study. The six main instruments of data collection were: (a) a checklist for the village, (b) a checklist for telecentre features, (c) an interview schedule for the kiosk owner, (d) interview schedules for households and (e) users, and (f) a schedule for collecting information about the main network orchestrator and telecentre model (see Annexure III for details).

All the tools were self-administered by the researcher. Prior to the beginning of data collection at particular locations, the instruments

were tested by conducting a mock with the kiosk owner and the interpreter(s) accompanying the researcher. The exercise helped in putting forth to the interpreter the kind of information elicited and the researcher in picking up the key words in local language for better understanding.

Data validity and reliability

Ensuring the validity and reliability of data was an ongoing process. For qualitative case study research, Maxwell (2005, p. 108) has put forth the concept of validity threats. Validity threats are described as particular events or processes that could lead to invalid conclusions and can arise from: (a) researcher's bias and (b) reactivity (influence of the researcher on the respondent and vice-versa).

To overcome the threats to validity, the study adopted the approaches proposed by Yin (1984, p. 36) and Maxwell (2005, pp. 109–13). Table 4.6 maps the tests of validity as proposed by Yin (1984, p. 36) to different stages of this research. Further, long-term and intensive involvement with the field facilitated direct and repeated observations of behaviour. Respondent feedback and validation was systematically solicited for triangulation of information. Triangulation was conducted by asking multiple respondents the same questions. Discrepant evidences and negative cases were examined to rule out validity threats by evidence. Quasi-statistics[7] has been used to enable assessing the amount of evidence in data that has a bearing on a particular conclusion or threat such as, how many discrepancies exists and how many different sources were obtained (Maxwell, 2005, p. 113). Further, at relevant sections in this chapter, detailed description has been provided to enable the reader to gauge the degree of validity threats arising out of researcher's bias and reactivity.

Data analysis

The conceptual framework and simple descriptive quasi-statistics are used for within-case and cross-case comparative analysis. Households at all locations were grouped on the same socio-economic parameters (like socio-economic status, caste, educational attainment, religion, etc.) and the pattern in terms of number of services and type of services availed at the kiosk were examined. The socio-economic status of a household at any location was with respect to the socio-economic characteristics of that location only. It is comparable across locations only in a notional sense. For example, a household belonging to the lowest socio-economic category in Kerala differred in terms of household

Table 4.6 Validity tests

Tests	Definition	Case study tactics	Stage applied
Construct validity	Establishing correct operational measures for concepts being studied	Use of multiple sources of evidence, establishing chain of evidence, feedback from key respondents and review of the draft case study report by organization's representative	Data collection and case study composition
Internal validity	Establishing a causal relationship whereby certain conditions are shown to lead to other conditions as distinguished from spurious relationships	Pattern matching and attempt towards explanation building	Data analysis and writing
External validity	Establishing the domain to which study's findings can be generalized	Use replication logic in multiple case studies	Conceptual framework, data collection and analysis
Reliability	Demonstrating that the operations of a study – such as data collection procedures – can be repeated with the same results	Using case study protocol, and documenting the methods and procedures adopted at every stage	Data collection and writing

amenities and assets from households belonging to same category in Maharashtra or UP. Thus, a household categorized as low-middle in Kerala might be middle at other two locations. Socio-economic status or class of a household is usually derived on the basis of income or expenditure criteria, ownership of land, etc. However, for this study, the SES of a household was determined on the basis of the occupations of the head of the household and other members of the household and key assets like land, household amenities and items.

Household occupation refers to primary and secondary occupation(s) of the head of the household and other earning members of the family. The number of earning members and their means of earning determine the resources available to the household to lead a better quality of life and their capacity to generate assets. Primary occupation was the one

specified by the head of the household as his/her main work and source of household income. Secondary occupation was the one that supplemented the income generated through primary occupation. Secondary occupation becomes important when the primary occupation is not a constant source of income.

Further, inherited occupation versus acquired or adapted occupation indicated shifts in the socio-economic status across generations. Acquisition or adoption of new occupation can be both positive (for example, acquisition of newer skills and transition to a better job or profession) and negative (for example, becoming a small farmer or agriculture labour because of partitioning of father's land). Thus, acquisition or adoption of a different occupation, especially across generations, can lead both towards enhancement of the socio-economic class or at times lowers the socio-economic status.

Income was related to two aspects of access and use—as an indicator of socio-economic status (examining in terms of need for telecentre services/ability to use technology) and also as an indicator for the ability to pay for and avail a service at the telecentre. Since in most cases, validity of the response was not verified, information with regards to the monthly household expenditure was also solicited. But, again there was much variation in responses of the people belonging to the same socio-economic group. Thus, an 'asset index' was considered as another key indicator of the socio-economic status. Table 4.7 lists the parameters for constructing the asset index.

Lastly, the analysis compared both, (a) the number of services availed by households belonging to different socio-economic status, and

Table 4.7 Parameters and values for constructing the asset index

Sl. No.	Particular	Attribute values
1	Type of house	*Kuccha* (0), Mixed (1), *Pucca* (2)
2	Availability of closed toilet	No (0), Yes (1)
3	Cooking fuel	Coal/wood (0), mixed/kerosene (1), gas/gobar gas (2)
4	Electricity available	No (0), yes (1)
5	Possess landline telephone	No (0), yes (1)
6	Possess mobile connection	No (0), yes (1)
7	Possess radio	No (0), yes (1)
8	Possess television	No (0), yes (1)
9	Possess refrigerator	No (0), yes (1)
10	Possess washing machine	No (0), yes (1)

(b) the variation in the type of services availed by households belonging to different socio-economic status.

The next three chapters are case studies on telecentres located at Ariyallur, Pimpri Buti and Kesarpur respectively. All of them follow the same structure with starting the description of the macro policy environment of the particular state, the organizational context of the telecentre initiative, the local context, the telecentre located within the village, and profile of the households followed by an analysis of the pattern of access and use of the telecentre by different socio-economic groups in the selected village. Although findings of the individual case studies on telecentres located in particular villages cannot be generalized to any other context, some insights can be derived on the pattern of access and use across different contexts from the comparative analysis of the case studies based on the common conceptual framework.

5
Akshaya, Kerala

Akshaya is the telecentre-based e-Governance project in Kerala. It is well known as an ICTD initiative for bridging the digital divide by simultaneously addressing the issues of access, skills and content (www.akshaya.net). Launched in November 2002, Akshaya began as a pilot project with 630 kiosks in the Malappuram district of Kerala (Madon, 2009) and was subsequently rolled out in other districts. The network is coordinated by a state-level government agency called the Kerala State Information Technology Mission (KSITM). Private entrepreneurs own and manage the individual Akshaya e-Kendras. This case study is based on the Akshaya e-Kendra located at Ariyallur Junction in Vallikkunnu *panchayat* of Malappuram district, Kerala.

Kerala

With an area of 38,863 square kms and population of 31,838, 619 the southern state of Kerala is the most densely populated states of India (Government of India, 2001). The overall sex ratio of 1058 female per thousand males is also one of the highest in the country. Further, as compared to other states of India, Kerala has a fairly large concentration of Christians and Muslims constituting around 19 per cent and 24 per cent of the population respectively (Government of Kerala, 2006, p. 8). The state is well known for its achievements in social and human development, especially high levels of literacy, good health related outcomes and low levels of rural-urban, inter-districts and gender-related disparities. The percentage of literates to total population is around 91 per cent, which is significantly higher than the national average of 65.2 per cent (ibid.). The literacy rate for the age group between 10–14 years was near universal at 98.6 per cent and is almost equal for male and

female (ibid.). In 1993–97, longevity for male and female are 70.4 and 75.9 years respectively, much higher than the corresponding figures for India at 60.4 and 61.8 years respectively (ibid.). The infant mortality rate (IMR) in the year 2000 was as low as 14 per 1000 live births, 34 less than that of Maharashtra, the state with the second lowest IMR (Government of Kerala, 2006, p. 25).

Such development outcomes have been attributed to the particular approach followed by the state since its formation in 1956. Often put forth as an alternate to the dominant growth-led trickle-down approach to development (ibid., p. 208), the Kerala Model was characterised by high-levels of social development despite low economic growth and achieved within a short time-span of one generation (Government of Kerala, 2006, p. 9). Public action as exemplified by the policies and action of a welfare state, work of Christian missionaries in expanding health and education facilities, caste based socio-political movements and the influence of the communist ideology have been some of the contextual level factors shaping the Kerala model of Development (Ramachandran, 1997). The low level of disparity between the rural and urban areas is also because of the unique rural-urban continuum or 'rurban' characteristics of the state (ibid.). These characteristics have emerged from the particular form of dispersed, non-clustered settlement pattern, the presence of a good network of motorable roads, and the growth of retail trade, construction and other economic activities in rural areas, generally spurred by Gulf remittances (ibid.).

However, the main drawback of the Kerala Model of Development was the relatively poor performance of its economy. The competitiveness and productivity of both the primary and the secondary sectors either stagnated or declined. Reasons ranged from increasing cost of cultivation, non-availability of labour, lack of technological inputs to price fluctuations of rubber, spices and other commodities in international markets. Acute agriculture distress in the form of farmers' suicides, socio-economic marginalization of tribal and fishermen living in remote areas and increasing unemployment among the educated continue to be some of the persistent development concerns. Such issues, often posited as second-generation development challenges are considered more complex than providing access to primary education and basic health. And it was against the backdrop of such development context, that the successive IT policies of Kerala were framed and implemented. Along with other sunrise sectors like biotechnology, traditional medicine and tourism, much optimism was placed on the IT industry to

solve the second generation developmental issues related to economic growth, employment generation and human development.

The first IT policy of Kerala was released in 1998.[1] Apart from the IT policy of Goa, it was the only other state level IT policy mentioning explicitly the use of new technologies in sectors like education and health. With the change in government, the second IT policy was released in 2001 and its thrust was more towards promotion of IT and ITES industry within the state. It was to act on the general perception that Kerala with the largest number of literates and good infrastructure lagged behind other southern states like Andhra Pradesh and Tamil Nadu in becoming a favoured destination for IT industry. The government identified e-Governance as a thrust area where explicit interventions and investments by the state could spur demand with spill over effects on employment and economy. The state adopted a twin approach of re-engineering the back-end along with the deployment of highly visible People Oriented Projects (POPs) like the Fast Reliable Instant Efficient Network for Disbursement of Services (FRIENDS) and Akshaya. As a POP, it was hoped that Akshaya would demonstrate usefulness of IT, garner support and reduce scepticism towards IT-based development interventions in Kerala. The government plays a key role in almost all aspects of technology deployment and diffusion.

Akshaya

The pilot phase of the Akshaya in Malappuram aimed towards making at least one person in each of the 6.5 million families in the district e-literate or familiar with the basic functionalities of computers and Internet. The stated objective of Akshaya was to bridge the digital divide in Kerala by simultaneously addressing the issues of access, skills and content. Akshaya was conceptualized, piloted and orchestrated by Kerala State IT Mission (KSITM), a state level autonomous project management agency under the Department of Information Technology (DIT), Government of Kerala. As a nodal agency, KSITM was involved in almost all matters of IT policies and their execution, including interface with the industry, potential investors, and other government departments. Major responsibilities of KSITM were: strengthening of the IT/ITES industries, undertaking promotional activities to attract new investors and companies, development of human resources, and taking steps to bridge the digital divide.

The origin and hence the location of the pilot project was largely a political decision (Kiran, 2005). The project originated in a proposal

put forth by Malappuram District *panchayat* in April 2002 for imparting state-sponsored basic computer literacy. In the Muslim dominated Malappuram district with the highest number of emigrants in Gulf countries, there was a general perception that basic functional computer-based skills would enable people to use Internet-based communication, facilitate online transfer of remittances and enhance employability in India and Gulf countries. The then minister of industry and IT belonged to this district. He played a decisive role in framing the proposal and its implementation. Further, even though the key development indicators of Malapurram were much higher than rest of India, within Kerala, Malappuram was considered a backward district. Selecting it for piloting Akshaya had a novelty and hence value for the political leaders. A state level pride was associated for becoming the first e-literate district.

The original project proposal put forth by Malappuram District *panchayat* for district-wide 100 per cent computer literacy was converted by KSITM to a telecentre-based e-Governance project. It became a part of ADB-funded Modernization Government Programme (MGP). The Akshaya e-Kendras were envisaged as decentralized service delivery points with spillovers like entrepreneurship and employment for the educated youths in the rural areas. Akshaya was deployed in a public-private partnership (PPP) mode where KSITM acted as the network orchestrator and individuals or private entrepreneurs owned the ICT-enabled kiosks. Prior to deployment of the Akshaya e-Kendras, a study was conducted by a team within KSITM to look at similar initiatives implemented across the country and draw lessons. The team identified access, skills and content as the three key issues central to the design of the project.

Access referred to the physical access of the Akshaya e-Kendras, especially by women. Like delivery points of health and education services in Kerala, one Akshaya kiosk was planned per 1000 households and located within five kms radius of each household. The department of town planning identified 800 such convenient, safe and approachable locations of which 630 were selected for establishing Akshaya e-Kendras. The proliferation of Akshaya e-Kendras, wireless towers and blue signboards were familiar part of the rurban landscape of the district.

KSITM followed a 'campaign' mode of implementation involving the local self-governments in selecting the individual entrepreneurs, monitoring their activities, etc. Social animators were engaged for mobilizing people and generating awareness. While deploying Akshaya e-Kendras in a Muslim dominated, slightly conservative area, care was taken to facilitate or structure the social access, especially for the women. All the selected locations were in public places with atleast one female

instructor. To discourage potential pornographic viewing by the young people all computer monitors inside the kiosk were placed in a manner so that the screen was visible to the kiosk managers and others. Due publicity and promotion was done to project it as a safe place for all. To overcome the contextual constraints of low awareness and requisite skills, the e-literacy programme was planned. For one member of each household in the district, the state sponsored the cost of training. The member had to pay only Rs. 20/- for a 15 day course and the remaining Rs 120 was borne by the local government. A total of around 7 crores were spent by the local *panchayat* for the e-literacy programme. The state government also took steps to generate content.

Ariyallur

Ariyallur was located along the coast in the Vallikkunnu *panchayat* in north Kerala's Malappuram district. It belonged to the erstwhile state of Malabar under Madras presidency. The catching-up of Malabar region with the rest of the state is considered as an achievement of targeted public policies and actions including programmes like the Kudumshree, the literacy campaign and the most ambitious Peoples' Campaign for democratic decentralization. The district is also known for the highest proportion of emigrants staying in the Gulf countries with the highest amount of remittance per household. The impact of remittance can was visible in the rapid proliferations of huge *manzils* (tall buildings) and *mahals* (palaces). Demographically, emigration had led to decrease in fertility rate and population (Zachariah, Mathew & Rajan, 2000).

The village Ariyallur had an area of 11.89 square kms with a population of 18,987 in 3,536 households (Government of India, 2001). The gender ratio of the village was 1072. Like many other parts of Kerala, very few households in Ariyallur were engaged in traditional occupations like farming or fishing. People worked as unskilled labours, skilled masons, electricians, carpenters and painters. Others earned their living as petty traders, tailors, hawkers and vegetable vendors. The profile of those working in Gulf countries varied from unskilled labour, to technicians and even professionals. There appeared to be a preference for salaried jobs in government and private sector, emigration to Gulf countries, services and business in construction and transport sectors. Secondary occupation of the head of the household was almost absent. Only a fisherman mentioned cooking during marriages and festivals as an alternate source of income. The district was dominated by people belonging to Other Backward Castes (OBCs) category. *Thiyyas* or the

Ereva were the dominant caste among Hindus, while it was the *Mapilla* community among Muslims. Upper-caste categories included *Nairs* and *Nambiars,* while Scheduled Castes (SCs) consisted of *Chiruman* and *Nayadi*. SCs and Muslims generally had lower socio-economic status than others.

The settlement pattern was dispersed, similar to the rest of the state. However, it was difficult to categorise households into different socio-economic categories on basis of the type of house, its amenities and facilities. Traditional houses in Kerala have tiled roofs. Also whenever, a property is divided, the member who did not inherit the main house, often made a makeshift temporary house of palm leaves on his/her land. On the other hand, government schemes enabled people living below poverty line, especially the fishermen to have proper houses. Further, all households had access to source of clean drinking water and closed toilets. Common toilet and wells for drinking water were constructed by the local *panchayat* for the very poor living along the coast. Wells attached with pumps, pipes and overhead tanks were the main source of drinking water. Most houses had their own private wells. Few shared their wells with relatives and neighbours. In Kerala, the State provided electricity only up to the main road. Households bought their own poles and paid for the labour to extend the connection upto their doorstep. It was observed that electricity was not available in two types of house, rich houses that were located in fairly remote location within the village, and poor households because they did not have the capability to acquire on their own.

Akshaya e-Kendra at Ariyallur Junction

The Akshaya e-Kendra at Ariyallur was located on the first floor of a shopping complex in the main market. The market had developed around a very busy junction point and was easily accessible by bus, jeep and other modes of transport from all nearby locations. Apart from two bus stands, there was a bank, a small departmental store, a cinema hall, and as many as thirty big and small shops- including two music shops, 3–4 public telephone booths, and one photo studio.

The Akshaya e-Kendra was registered on 31 August 2001 in the name of its 28-year-old female entrepreneur. It was one of the pre-existing computer centres that got converted into Akshaya e-Kendra. Hence, it was more commonly known as Akshaya-Infonet, Infonet was its original name. The entrepreneur was a graduate in history. She also held a Post-Graduate Diploma in Computer Applications (PGDCA) from Indian Technical

Institute (ITI). Apart from managing her Akshaya e-Kendra, she also worked as a teacher in a private school. Her immediate family included her parents, two sisters and one younger brother. The father was an ex-serviceman and helped her in managing the telecentre. The elder sister was married and the younger one was pursuing post-graduation from the University of Calicut. Her brother had completed his training in computer science from the local polytechnic and worked as a computer operator in another city. Whenever he came home, he also managed the centre and taught students.

The Akshaya e-Kendra was housed in a big room, partitioned into two. One part had the reception area along with four computers, a photocopying machine, inverters and batteries. All the computer monitors were arranged as specified by KSITM. Chairs and stools of all shapes and sizes were either stacked at a corner or dispersed. The smaller partition had two computers, but was primarily used as classroom. The telecentre opened for around 12–14 hours per day and for all seven days of the week. The entrepreneur's father managed it along with three other paid staff. Whenever there was more work, mostly data entry jobs, students and friends of the entrepreneur also pitched in. Services at this particular Akshaya e-Kendra included IT training, Internet-based communication, job-work, data entry and utility services like bill-payment and photocopy. Some services were designed, deployed, or orchestrated by the network orchestrator or one of its partners. Others were provided by the entrepreneur independently. The entrepreneur classified people availing services at the e-Kendra as either students or customers. Students were those enrolled for one of the computer courses. Customers came to the telecentre for services other than computer education and training.

Pattern of access and use

Around 89 per cent of the respondent households had availed one or more services at the Akshaya e-Kendra. The three most popular services at Akshaya e-Kendra were e-literacy, computer education, and bill payment availed by around 61 per cent, 50 per cent and 27 per cent of respondent households respectively (see Table 5.1). While e-Literacy was a one-time computer literacy programme and was discontinued once all the households in its jurisdiction were covered. The other two were available on regular basis. Examining further, 79 per cent of the households with low socio-economic status (SES) availed at least one service at the kiosk. The percentage of user households among those belonging to low-middle, middle and high is comparable at 88 per cent,

Table 5.1 Distribution of households by socio-economic status, number and type of services

Particular	**Socio-economic status of households**				
No of services	**Low (N=24)**	**Low-Middle (N=26)**	**Middle (N=42)**	**High (N=15)**	**Total (N=107)**
0	5	3	–	4	12
	(21)	(12)		(27)	(11)
1	9	11	16	5	41
	(38)	(42)	(38)	(33)	(38)
2	9	8	13	–	30
	(38)	(31)	(31)		(28)
>2	1	4	13	6	24
	(4)	(4)	(31)	(40)	(22)
%User household	79%	88%	100%	73%	89%
Service availed	**Low (N=24)**	**Low-Middle (N=26)**	**Middle (N=42)**	**High (N=15)**	**Total (N=107)**
e-Literacy	17	15	28	5	65
	(71)	(58)	(67)	(33)	(61)
Computer education	4	16	26	7	53
	(17)	(62)	(62)	(47)	(50)
Bill pay	0	4	19	5	28
		(15)	(45)	(33)	(26)
Browsing	0	1	11	5	17
		(4)	(26)	(33)	(16)
Photostat	0	4	9	4	17
		(15)	(21)	(27)	(16)
Others	9	2	9	1	21
	(38)	(8)	(21)	(7)	(20)

Note: (a) User per cent indicates the percentage of households within a socio-economic category who have availed at least one service at the telecentre. (b) Figure in parentheses is percentage of respective column.

100 per cent and 73 per cent respectively. However the percentage of user households within different socio-economic classes decreases if e-Literacy is considered separately. Members from 18 households visited the Akshaya e-Kendra only when the e-Literacy programme was going on. They subsequently did not avail any other services.

Among the 24 households with low SES, members from 17 households (constituting around 71 per cent) participated in the e-Literacy course. However, only four households subsequently sent members for advance computer training, that too after getting some monetary support from the local *panchayat*. None of them availed services like bill payment,

photocopy or Internet browsing. This pattern of access and use indicates that state supported programmes like e-Literacy enabled households to overcome the initial barriers to access, but subsequent use by the same households was contingent on other factors including availability of sponsorship for enrolment in advance computer training courses.

Comparatively, the participation of households belonging to the three higher socio-economic categories in the e-literacy programmes was less. However, the number and type of services availed by these three categories was higher. In particular, members from around 60 per cent of households with low-middle and middle SES came for learning about computers. The use of services was linked. Students coming for a computer course, also paid bills, browsed the Internet and sometimes got their photocopies done at the Akshaya e-Kendra.

Examining further, the pattern of access and use by the primary occupation of the head of the household indicates that all those headed by government employees constituted the majority, both in terms of number and types of services availed (see Table 5.2). Households with occupations normally associated with lower SES like daily wage labour, fishermen, and petty trade did participate in e-Literacy programme, but subsequently availed less number and type of services than others. Of particular note was that members belonging to households headed by emigrants in Gulf countries were not as active users of services as expected. Issues related to convenience and privacy often discouraged them from using the online or video chat for communicating with their family members living abroad.

While the percentage of user households among those with asset index ranging from 6–8 is slightly higher than others, on the whole no particular pattern of access and use can be discerned (see Table 5.3). This can be partially explained by the fact that respondent households in Kerala did not differ much in terms of access to basic amenities although possession of some items like refrigerators, washing machine and land-line telephone connection did indicate the difference in their SES.

Ninety-two per cent of the 76 respondent households belonging to Hindus and 81 per cent of the 31 households belonging to Muslims availed atleast one service at the Akshaya e-Kendra (see Table 5.4). When e-Literacy was excluded, the percentage of user household decreased to 76 per cent for Hindus and 61 per cent for Muslims. Within Hindus, the amount of decrease was not same for all caste categories. It was much more for those belonging to the SC category than for others. This indicates that while households belonging to Muslims and SCs did participate in the e-Literacy programme, many subsequently did not avail any service at the kiosk. 79 per cent of households from SC category and 61 per cent from Muslim community had either Low or Low-Middle SES. Further, as compared to

Table 5.2 Distribution of households by primary occupation of the head of the household, number and type of services

Particular	Primary occupation of the head of the household							
No of services	Daily wage (N = 20)	Fisherman (N = 10)	Gulf emigrant (N = 8)	Housewife & others (N = 17)	Salaried/ professionals (N = 8)	Government employee (N = 23)	Self-employed/ petty trade (N = 21)	Total (N = 107)
0	4	2	2	2	1	0	1	12
	(20)	(20)	(25)	(12)	(13)	(0)	(5)	(11)
1	8	2	4	7	1	7	12	41
	(40)	(20)	(50)	(41)	(13)	(30)	(57)	(38)
2	4	5	1	5	1	8	6	30
	(20)	(50)	(13)	(29)	(13)	(35)	(29)	(28)
>2	4	1	1	3	5	8	2	24
	(20)	(10)	(13)	(18)	(63)	(35)	(95)	(22)
%User household	80%	80%	75%	88%	88%	100%	95%	89%
%User household (without e-Literacy)	55%	60%	50%	65%	88%	91%	81%	72%

Service availed	Daily wage (N = 20)	Fisherman (N = 10)	Gulf emigrant (N = 8)	Housewife & others (N = 17)	Salaried/ professionals (N = 8)	Government employee (N = 23)	Self-employed/ petty trade (N = 21)	Total (N = 107)
e-Literacy	13	8	4	11	6	14	9	65
	(65)	(80)	(50)	(65)	(75)	(61)	(43)	(61)
Computer	9	1	2	6	6	16	13	53
Education	(45)	(10)	(25)	(35)	(75)	(70)	(62)	(50)
Bill Pay	3	–	1	3	3	12	6	28
	(15)		(13)	(18)	(38)	(52)	(29)	(26)
Browsing	2	–	1	4	2	6	2	17
	(10)		(13)	(24)	(25)	(26)	(10)	(16)
Photostat	3	1	–	4	3	6	0	17
	(15)	(10)		(24)	(38)	(26)		(16)
Others	3	6	1	6	3	2	0	21
	(15)	(60)	(13)	(35)	(38)	(9)		(20)

Note: See Table 5.1.

Table 5.3 Distribution of households by asset index, number and type of services

Particular	Asset index					
No of services	**0–2 (N=10)**	**3–5 (N=23)**	**6–8 (N=40)**	**9–11 (N=17)**	**NA (N=17)**	**Total (N=107)**
0	1	5	3	3	0	12
	(10)	(22)	(8)	(18)	(0)	(11)
1	2	9	18	7	5	41
	(20)	(39)	(45)	(41)	(29)	(38)
2	6	7	9	3	5	30
	(60)	(30)	(23)	(18)	(29)	(28)
>2	1	2	10	4	7	24
	(10)	(9)	(25)	(24)	(41)	(22)
%User household	90%	78%	93%	82%	100%	89%
%User households (without e-Literacy)	80%	57%	75%	53%	100%	72%
Service availed	**0–2 (N=10)**	**3–5 (N=23)**	**6–8 (N=40)**	**9–11 (N=17)**	**NA (N=17)**	**Total (N=107)**
e-Literacy	7	14	23	12	9	65
	(70)	(61)	(58)	(71)	(53)	(61)
Computer education	3	8	23	4	15	53
	(30)	(35)	(58)	(24)	(88)	(50)
Bill pay	2	–	12	6	8	28
	(20)		(30)	(35)	(47)	(26)
Browsing	2	–	9	2	4	17
	(20)		(23)	(12)	(24)	(16)
Photostat	1	1	9	1	5	17
	(10)	(4)	(23)	(6)	(29)	(16)
Others	6	7	5	3	0	21
	(60)	(30)	(13)	(18)		(20)

Note: See Table 5.1.

Hindus, members from very few Muslims households visited Akshaya for services like computer education, online browsing and communication. Thus, while households belonging to both the communities did access the kiosk, there was apparent difference in their pattern of use.

Distribution of respondent households on the basis of the education of the head of the household and highest education in the family reflected the achievements of Kerala in the education sector (see Tables 5.5 and 5.6). Successive generations within a family had better access to educational facilities and were more educated. While only in 11 households the head of the household did not have any formal

Table 5.4 Distribution of households by religion, caste category, number and type of services

Particular	**Caste, category and religion**				
		Hindu		**Muslim**	
No of services	**General (N1 = 14)**	**OBC (N2 = 48)**	**SC (N3 = 14)**	**OBC (N4 = 31)**	**Total (N = 107)**
0	0	4	2	6	12
		(8)	(14)	(19)	(11)
1	2	20	7	12	41
	(14)	(42)	(50)	(39)	(38)
2	1	16	2	11	30
	(7)	(33)	(14)	(35)	(28)
>2	11	8	3	2	24
	(79)	(17)	(21)	(6)	(22)
%User household	100%	92%	86%	81%	89%
% User household (without e-Literacy)	92%	79%	50%	61%	72%
Service availed	**General (N1 = 14)**	**OBC (N2 = 48)**	**SC (N3 = 14)**	**OBC (N4 = 31)**	**Total (N = 107)**
e-Literacy	9	28	9	19	65
	(64)	(58)	(64)	(61)	(61)
Computer education	12	28	7	6	53
	(86)	(58)	(50)	(19)	(50)
Bill pay	10	15	2	1	28
	(71)	(31)	(14)	(3)	(26)
Browsing	8	5	2	2	17
	(57)	(10)	(14)	(6)	(16)
Photostat	9	5	3	0	17
	(64)	(10)	(21)		(16)
Others	3	3	3	12	21
	(21)	(6)	(21)	(39)	(20)

Note: See Table 5.1.

schooling, in as many as 43 households had a member who was either a graduate or post graduate. Households where the head of the household or any other member did not have more than eight years of formal schooling participated for e-Literacy but subsequently did not avail any other services. On the other hand, service like computer education was availed by households having graduates and post-graduate members.

Education was also examined with regard to another dimension, that is, awareness about Akshaya and specifically the e-literacy programme. This particular programme was launched in a campaign mode. Entrepreneur

Table 5.5 Distribution of households by education of the head of the household, number and type of services availed

Particular	**Education of head of the household**							
No of services	**Illiterate (N1=11)**	**Primary (1–5) (N2=21)**	**UP (6–8) (N3=16)**	**Sec (9–10) (N4=32)**	**HS (11–12) (N5=6)**	**Graduate & above (N6=14)**	**NA (N7=7)**	**Total (N=107)**
0	1	4	1	3	1	1	1	12
	(9)	(19)	(6)	(9)	(17)	(7)	(14)	(11)
1	3	10	6	12	4	4	2	41
	(27)	(48)	(38)	(38)	(67)	(29)	(29)	(38)
2	7	5	5	9	1	3	0	30
	(63)	(24)	(31)	(28)	(17)	(21)		(28)
>2	0	2	4	8	0	6	4	24
		(9)	(25)	(25)		(43)	(57)	(22)
%User household	90%	81%	94%	91%	83%	93%	86%	89%
% User household (without e-Literacy)	72%	48%	81%	75%	67%	93%	86%	72
Service availed	**Illiterate (N1=11)**	**Primary (1–5) (N2=21)**	**UP (6v8) (N3=16)**	**Sec (9–10) (N4=32)**	**HS (11–12) (N5=6)**	**Graduate & Above (N6=14)**	**NA (N7=7)**	**Total (N=107)**
e-Literacy	9	14	9	20	2	8	3	65
	(82)	(67)	(56)	(63)	(33)	(57)	(43)	(61)
Computer education	1	4	11	19	3	10	5	53
	(9)	(19)	(69)	(59)	(50)	(71)	(71)	(50)
Bill pay	–	1	5	11	1	7	3	28
		(5)	(31)	(34)	(17)	(50)	(43)	(26)
Browsing	–	2	2	5	–	5	3	17
		(9)	(13)	(16)		(38)	(43)	(16)
Photostat	1	2	1	6	–	5	3	17
	(9)	(9)	(6)	(19)		(36)	(43)	(16)
Others	6	5	1	4	–	3	2	21
	(55)	(24)	(6)	(13)		(21)	(29)	(20)

Note: See Table 5.1.

Table 5.6 Distribution of households by highest education, number and type of services availed

Particular	**Highest education**							
No of services	**Illiterate**	**Primary (1–5) (N1 = 1)**	**UP (6–8) (N2 = 9)**	**Sec (9–10) (N3 = 31)**	**HS (11–12) (N4 = 21)**	**Graduate & above (N5 = 43)**	**NA (N6 = 2)**	**Total (N = 107)**
0	–	–	4	5	1	2	–	12
			(44)	(16)	(5)	(5)		(11)
1	–	–	2	13	13	12	1	41
			(22)	(81)	(62)	(28)	(50)	(38)
2	–	1	3	10	4	11	1	30
		(100)	(33)	(32)	(19)	(26)	(50)	(28)
>2	–	–	–	3	3	18	–	24
				(10)	(14)	(42)		(22)
%User household	–	100%	55%	83%	95%	95%	100%	89%
%User household (without e-Literacy)	–	100%	33%	52%	71%	88%	100%	72%
Service availed	**Illiterate**	**Primary (1–5) (N1 = 1)**	**UP (6–8) (N2 = 9)**	**Sec (9–10) (N3 = 31)**	**HS (11–12) (N4 = 21)**	**Graduate & above (N5 = 43)**	**NA (N6 = 2)**	**Total (N = 107)**
e-Literacy	–	1	5	21	10	27	1	65
		(100)	(56)	(68)	(48)	(63)	(50)	(61)
Computer education	–	–	–	6	16	30	1	53
				(19)	(76)	(70)	(50)	(50)
Bill pay	–	–	–	5	4	19	–	28
				(16)	(19)	(44)		(26)
Browsing	–	–	–	2	1	13	1	17
				(6)	(5)	(30)	(50)	(16)
Photostat	–	–	–	1	2	14	–	17
				(3)	(10)	(33)		(16)
Others	–	1	3	7	1	8	1	21
		(100)	(33)	(23)	(5)	(19)	(50)	(20)

Note: See Table 5.1.

and the social animators had personally visited all households and urged them to participate. While as many as 96 households (90 per cent) were aware of the e-literacy programme, only 65 households (61 per cent) actually participated by sending at least one member for the 15-day training. Around 17 households (16 per cent) were aware of the programme but did not send their members for training for reasons varying from lack of interest, time or resources. The pattern also indicates that people otherwise accessing services at the Akshaya e-Kendras did not necessarily do so after attending the e-literacy programme.

The Malappuram district is known for the presence and efficacy of the Kudumshree network. In around 50 per cent of respondent households, women were members of the Kudumshree self-help groups. This institutional affiliation played a role in spreading awareness. Both the Akshaya e-Kendras and the local *panchayat*s used their network to send information about any new programme or campaign. As many as 20 respondent households came for state sponsored advance computer training programme through Kudumshree network.

Discussion

One of the primary objective of the Akshaya project in Kerala was to make at least one member in each of the 64 lakh families e-literate i.e. familiar with the scope of IT and equipped with the basic skills to operate a computer and/or use the Internet. A key finding from this case study is that households belonging to low-middle and middle socio-economic categories appeared to be more active users, both in terms of the number of households and number of services availed. This kind of confirms with other existing studies on Akshaya (Kuriyan & Kitner, 2007; Pal, 2007). Further, members from households headed by the salaried employee availed more number and type of services. Aspirational factors like better job opportunities seemed to be the key motivation for the middle class to learn about computers. Facilitated by sponsorship schemes of the state, households from all caste and religion availed services at the Akshaya e-Kendra. However households bypassed (e.g., those headed by fishermen) by Kerala Model of Development were not active users. They attended the e-Literacy programme but subsequently did not use any other services. Also, contrary to expectation, households with one or members in Gulf countries did not use Internet based communication much.

No specific pattern in access and use could be discerned with regards to the educational status. Since in Kerala, households belonging to

all socio-economic categories had access to education, except for few households, educational status, measured in terms of the number of years of formal schooling of the head of the household and highest level of education in the family was between eight and ten. Further, while caste and religion did play a role in issues like marriage, they did not appear to play any role in the social access to the telecentre. Access to the telecentre was not denied to individuals or groups because they belonged to a particular caste or religion. Two contextual characteristics appeared to be influencing this pattern. Unlike other parts of the country, difference in the socio-economic status of the household was not very clearly reflected by the position in the caste hierarchy. In Kerala, this phenomenon has been a resultant of caste-based and other socio-political movements. The Akshaya e-Kendra itself was located in a public place, and functioned as a private business entity with social goals, it did not discriminate as to who would be allowed to enter or not enter the premises. Further the Akshaya e-Kendra was also an economic entity and the objective of the entrepreneur was to earn money, hence like any other business he/she served all the possible customers and will not discourage someone because of their caste, religion, gender, etc. Access by women to the kiosk was facilitated by many factors including specific state sponsored training programme, presence of female intermediaries and physical location of the kiosk. While Akshaya did succeed to a very large extent in providing citizens exposure to scope and potential of computers, the main benefits to the regular users were mainly in terms of access to computer training and convenience of paying bills at the Akshaya e-Kendras. At the time of the study, Internet based services and communication had still not picked up.

The Akshaya telecentre initiative demonstrates the role played by aid agencies and state in deployment of telecentres in rural India. The project was started as part of ADB funded Modernization Government Programme and part of the policy of spurring IT industry within the state by making e-Governance a thrust area. Being Kerala, the state played an active role in conceptualizing and later orchestrating the network. The local self-governments were also actively involved in selection and day to day activities of the kiosk. Involvement of the state lent legitimacy, credibility and sustainability to the programme. The network orchestrator did not have the pressure to break even although the tension between social and development goals was visible at the kiosk level (Kuriyan, Toyama & Ray, 2005). The involvement of a nodal agency also enabled streamlining the processes by which Akshaya kiosks are now kind of embedded within the institutional context of the villages.

6
e-Choupal, Maharashtra

Introduction

e-Choupal is the telecentre-based initiative of the agribusiness division of Indian Tobacco Company (ITC-ABD).[1] It is well known as a 'Bottom of the Pyramid' venture that demonstrated a 'win-win' proposition for both the company and the farmer (Prahalad, 2004). E-Choupals are information kiosks located in the villages. They provide access to agriculture related information and services. And also claim to connect farmers to large firms, current agriculture research and global markets (Upton & Fuller, 2003). This case study is on the e-Choupal located at Pimpri Buti in Yavatmal district of Maharashtra, India.

Maharashtra

Located in the western part of India, the state of Maharashtra has an area of 307,577 square kilometres and a population of 96.8 million (Government of India, 2001). Within the country, it ranks third in terms of area and second in terms of population. With 43 out of every 100 people staying in town and cities, the state has the country's second largest urban population (Government of Maharashtra, 2002, p. 2). The sex ratio is 922 and literacy rate is 86.3 (ibid.). It is ranked third among 17 States in 1991 with Human Development Index of 0.532 (ibid., p. 5). As a state, Maharashtra is known for high economic growth but comparatively poor achievements in human development. Key concerns include large-scale in-migration, persistence of poverty, and significant levels of intra-state and inter-district disparities (ibid.).

Maharashtra was one of the first states in India to enact an IT policy. Its first IT policy was released on August 15, 1998 with 'empowerment

through connectivity' as its mission statement. The policy espoused the objective of ensuring 'Anytime, Anywhere, Anyhow, Services'. The policy was subsequently revised in 2003 and enacted as IT/ITES policy. Both the policies were primarily pro-industry, with the aim of consolidating, strengthening and making the IT/ITES industry globally competitive by concentrating on four key areas of (a) human resource development, (b) development of infrastructure like IT parks, SEZ, Knowledge Corridors, MSWAN etc., (c) fiscal and non-fiscal incentives to software industries and (d) enabling a government to citizen interface. The policy of 2003 aimed at positioning the state as the most favoured destination for investments in IT and ITES.

While the IT/ITES policies of Maharashtra did not have any explicit directives for ICT4D initiatives, organizations and institutions in the state played a key role in propagating ICT4D and shaping the telecentre movement in India. The first national level telecentre-based project focusing on 'IT to the Masses,' was implemented in the Warana region of the state. The project was undertaken by the National Informatics Centre (NIC), Government of Maharashtra and Warana Cooperative Society to demonstrate the possible applications of new technologies in facilitating integrated rural development. Institutions like CDAC, and IIT-Mumbai, quasi-governmental organizations like IL&FS, Media Lab Asia (MLA)-Mumbai, NASSCOM Foundation, etc. have been at the forefront in related areas of technology development and deployment. The series of conferences known as Baramati initiatives[2] were co-hosted by the Vidhya Pratishthan's Institute of Information Technology (VIIT-Baramati) and the World Bank to showcase and propagate ICT4D initiatives in India. They provided seed funding and mentorship to some of the early telecentre initiatives including Drishtee and n-Logue.

e-Choupal

e-Choupal is the telecentre-based initiative conceived and implemented in rural India by ITC-ABD. Established in 1931, ITC is a private sector company with presence in diversified business segments including hotels, Fast Moving Consumer Goods (FMCG), agribusiness, paper, paperboards and packaging. ITC-ABD was set up in 1990 with the purpose of offering the world the best of India's produce.[3] It trades agriculture commodities and aqua-food to customers located all across the world (see Table 6.1). e-Choupal is popularly described as a Bottom of the Pyramid venture that has demonstrated an approach for using IT to reduce the inefficiencies of the traditional Indian agricultural system

Table 6.1 Main commodities and location of major clients of ITC-ABD

Category	Commodity	Location of select customers
Feed ingredients	Soya meal, rapeseed meal	UAE, Singapore
Food grains	Rice (basmati & non basmati), Wheat & wheat products, pulses	Dubai, Indonesia, Jordan, London, Sri Lanka, Thailand, Vietnam
Coffee and spices	Black pepper	Germany, Milan, Russia, Singapore, Switzerland, USA
Edible nuts	Sesame seeds, groundnuts, castor oil	Australia, Egypt, Germany, Japan, Mexico, Taiwan, UK, USA
Marine products	Shrimps and prawns	Japan, Singapore
Processed fruits	Mango, papaya and guava products	

Source: http://www.itcibd.com, accessed on 15 October 2008.

and for creating a win-win situation for both the farmers and ITC-ABD (Annamalai & Rao, 2003; Prahalad, 2004). Farmers are 'empowered' by the access to latest market information, and an alternate channel for selling their produce directly to ITC-ABD. The company benefits from having a better control over the quality and price of the agriculture commodities it procures from the farmers.

e-Choupal as a concept emerged during a series of deliberations among senior managers of ITC-ABD for a better, and a low-cost structure which would enable the organization to compete in a globalizing commodity market. During the late 1990s, following the liberalization of the Indian economy, ABD faced of stiff competition from other trading companies in the international commodity markets. Trading in the international commodity market was a high-risk, low-margin venture characterized by frequent price fluctuations. The competitors of ITC-ABD were able to manage risk and arbitrage better because they had integrated structures. Horizontally and/or vertically integrated structures also enabled them to source commodities directly from the producer and maintain quality.

In contrast, ITC-ABD being a private sector organization in India could not buy any of the commodities directly from the producers. It had to procure commodities only from government-regulated wholesale markets or *mandi* and that also through brokers. These brokers, also known as commission agents or middlemen, were traders having

licences to bid and buy on behalf of companies from the *mandis*. As a result, ITC-ABD often had no control over distortions in either quality or the price. At the *mandi*, the produce of the farmers was sold via open auction. The procurement price of the crop was determined by visual inspection of its quality. Middlemen buying from multiple farmers at different price often mixed their produce having varying quality and sold them to ITC-ABD at a single price. The mixed commodity fetched less value both in terms of quantity of oil extracted and quality of the oil cake. E-Choupal was conceptualized as an approach to buy commodities directly from the producer.

Aided by the changes in the APMC act whereby private organizations were allowed to procure directly from the farmers, and guided by the organizational philosophy of corporate social responsibility, ITC-ABD made use of the concepts of meta-market to design e-Choupals (Kaplan & Sawhney, 2000). The organization used IT as a means to re-engineer the relationships between the key stakeholders. Recognizing that the middlemen performed some very important functions in the supply chain, especially with regard to aggregation of demands and logistics, ITC-ABD redefined their roles within the supply chain but neutralized their control over quality and price. Considering the importance of Soyabean for its oil and cake for ITC-ABD, the e-Choupal initiative was first piloted with this commodity in the Dewas district of Madhya Pradesh. The concept was also piloted as Aqua-Choupal in Andhra Pradesh for shrimps and prawn; and as Planter's Net for coffee in Karnataka. Since then, e-Choupal has diversified into other commodities like wheat and has presence in areas growing commodities that ITC-ABD either trades in or requires as raw material for the production of food and agro-based products sold under its brand.

e-Choupal refers to the telecentre set up by the company within the village. It is the epithelized derivation of the Hindi word *choupal* meaning a common gathering place. In a typical village setup, the *choupal* was a place for people to gather for formal and informal meetings. The *choupal* served as a point for information dissemination and exchange. On similar lines, the e-Choupal was conceptualized as a virtual meeting place for dissemination and exchange of information. Facilitated by the Internet, this exchange was envisaged not be only at the local level, but also at a global level. Apart from the core service of providing market information regarding the sale and procurement of soya, e-Choupal services include agriculture extension, retailing of FMCG goods, insurance and though in pilot stage, it is extending itself towards provision of health and education services.

A typical e-Choupal consists of a multimedia computer with standard configuration, a dot-matrix printer, and an UPS. Connectivity was provided via VSAT links and at places dial-up telephone connections were also used. Each e-Choupal was also equipped with a set of solar panels and rechargeable batteries. Depending on the remoteness of the village and the availability of other infrastructure, setting up of e-Choupal costs between Rs 70,000 to Rs 1.5 lakhs. ITC-ABD made all the investments in setting-up of the telecentre. However, the operating costs of electricity, stationary and phone bills were borne by the *sanchalaks*.

The *sanchalak* was a middle range farmer from the village. He was selected by ITC-ABD as their representative and coordinator of all e-Choupal activities for a cluster of villages. The *sanchalak* was educated, socially acceptable and neither very rich nor very poor. Locating the e-Choupal in the house of the *sanchalak* eliminated the need for building a separate infrastructure in the village and it also fixed the responsibility for maintenance of the physical system. Further, it was envisaged to be proximate and familiar to its intended users. The primary earning of the *sanchalak* from the e-Choupal was the commission he earned on the amount of soya procured by ITC-ABD from his kiosk.

Pimpri Buti

Pimpri Buti with an area of 569 square kilometres was a small agrarian village located around 22 kilometers from the district town of Yavatmal (Government of India, 2001). The total population was 1345 with 702 males and 641 females living in 292 households (ibid.). The houses were clustered together at one location and bounded by agricultural fields on all sides. The village was connected by a motorable road to nearby big and small markets. Buses, auto rickshaws and jeeps were common modes of transportation. But their frequency was less and timings irregular. Motorcycles and scooters were common in households that could afford them.

The village was electrified in 1973 and around 80 per cent of the households had electric connections. The remaining 20 per cent were new settlements near the periphery of the village and had no electric poles. But like other parts of Vidharba region in Maharashtra, the village reeled under acute power crisis. Scheduled power-cuts were common. Each day of 24 hours was divided into four slots of six hours each. The first slot started at 5 am. For three days in a week there would be no electricity supply during the first and the third slot; and in the next three days there was no supply during the second and fourth slots. Thus,

every third day depending on the schedule the village would either have or would not have electricity for 12 hours straight. The day-to-day activities of the people, like water supply for drinking and irrigation changed as per schedule.

Drinking water in the village was provided by a village-level water cooperative. The water cooperative was formed after an individual donated two lakh rupees for laying the pipeline and buying the water pump. A well-to-do farmer from the village donated his well. Households had to pay Rs 20 per month for independent water connections. Taps were also provided at some common locations. The *sanchalak* of the village e-Choupal was the secretary of this water cooperative. The daily operations of scheduling and releasing water according to the availability of electricity were looked after by an employee of the water cooperative. He was paid Rs 1200 per month as salary.

Around 25 houses in Pimpri Buti had landline telephone connections. The only one public telephone was usually under lock and key at the *panchayat* office. Being at a remote location, there were no mobile towers or mobile phone connections. Televisions were common, but only programmes broadcast by the state-owned Doordarshan were available. Four to five houses had direct-to-home satellite TV connections. In comparison FM radio was easily available. A small kit with FM radio and torch bundled together was immensely popular. The kit served more than one purpose during night vigils in the fields. Moreover, even when electricity was not available, people were able to listen to radio. The computer and Internet connection at e-Choupal were the first and only one within the village. Another youth from the village had set up a small computer centre but it was located at Akola Bazar, the nearby market place

All other formal institutions including banks and other credit institutions were located at Akola Baazar and mostly in Yavatmal. Farmers borrowed money from various types of sources including nationalized banks credit societies and *grameen* banks that gave credit on Kissan Credit Card (KCC). The rate of interest varied between six to ten percent. For defaulters in case of KCC, the interest was around 12 per cent. Because of the agrarian distress in the region, the interest component was waived off for the last season. Although banned and people refused to acknowledge openly, informal lending with interest rate of around 25 per cent per year was a common practice in the village. Lenders claimed that they adjusted the interest rate and terms of payment as per the convenience of the borrower. People borrowing from informal sources were either landless or share-croppers, or did not have land

formally registered in their name. Further, those who cultivated land on behalf of their relatives could not take loan from formal sources. Nationalized banks and the agricultural department initiated some efforts to form SHGs, but there was hardly any activity. Only a couple of women SHGs were regularly engaged in collecting and borrowing at an informal level. A farmer's library, located in the house of the *upsarpanch* was set up by the agricultural department. There also, only two people had issued one book each since it began. The village had one primary school with classes up to VII standards and 130 students. However, none of the teachers stayed in the village. The *aganwadi* with around 40 children was located within the school premises. Further, on the outskirts of the village, there were two private schools for senior classes. The institutions for higher education were located in nearby towns.

Households in Pimpri Buti were primarily engaged in agriculture and allied activities. Farmers were mostly self-cultivators, but the practice of sharecropping as in *batai* and *makhta* was very common. In *batai,* landless cultivators and farmers with less than ten acres of land but having the capacity to invest in inputs and put in labour, often took land from a middle or large farmer on lease. Both the landlord and the tenant farmers equally shared the input costs and also the final produce. The landowners were usually farmers who no longer stayed in the village, or could physically engage themselves or their family members in farming. In *makhta*, the landlord rents out his land on lease and the cultivator bore the complete cost of cultivation. In both cases, the terms of agreement between the two parties were almost always informal and verbal. Large and very large farmers who stayed in the village did not give their land for sharecropping. They employed and actively supervised a large number of labourers either on contractual terms or on daily wage labour.

Agricultural labours were booked on contract by large farmers to ensure against the shortage of working hands during the season. According to the norms, the agricultural labourer received Rs 10,000 and 50 kgs of *jowari* for a year. But he had to work only in his landlord's field throughout the year. The yearly contract was executed only with men. With women, it was usually for a season. For men, the daily wages ranged Rs 40 to 50 per day depending on age and nature of work. For women it was only about Rs 20–5 per day. However, instances of 'forced' *batai* could also be observed in the village. Landless agricultural labourers, who worked on contract with particular farmers were given around four acres of land and a pair of bullocks by their landlord for cultivation. For the landlord it was a way to get his land cultivated, animals looked

after and also an assurance that a loan (if taken) or part of it is returned either in cash or kind. Landless workers and farmers with less than 10 acres of land supplemented their income by working as agriculture labourers. For around four months they worked on their own field and during the rest of the year on other farmers' fields. Women belonging to middle and high socio-economic groups worked only in their own field. Elderly people, both male and female, though not active as cultivators or labourers gave vigil during nights when the crop was standing or being harvested.

Apart from farmers and agricultural labourers, the village had two blacksmiths who had diversified into welding and construction related activities, one mason or carpenter, one electrician and a cobbler. There were seven to eight grocery stores, though they were not standalone ventures of their owner. Except the postmaster and the *aganwadi* worker, almost all the government officials belonged to and stayed at Yavatmal. The village had a police *patel*, a person who liaison with the main police station if and when there was some trouble within the village. Short-term migration by youths to big cities in Maharashtra and Gujarat had begun but there was no regular pattern.

While the farmers traditionally cultivated cotton, cultivation of soya was also common. As compared to soya, the input costs for cotton were high, so were the returns if agricultural conditions were favourable. A quintal of soya fetched something around Rs 1100 whereas for cotton it was as high as Rs 2200. Other crops cultivated in the village included *jowari*, and pulses like *tuvar*, *urad* and *moong*. Cultivation was dependent on monsoon. Farmers who had alternate means of cultivation also grew wheat and groundnut during winters. Except for the largest farmer who used a tractor to plough his 135 acres of land all others employed bullocks for ploughing their fields. Traditional means of cultivation were used. Farmers were concerned about the steady decrease in the fertility and sharp decline in productivity of land, which had almost halved in the last 30 years. At Pimpri Buti, the farmers appeared to be more vocal and early adopters of traditional farming practices-seeds from home, use of cow-dung as manure and minimal use of fertilizer and pesticides. They believed that because of 'competition', they closely observed the best practices adopted by other farmers and hence at a collective level produced more than the neighbouring villages. The farmers regularly visited the *Krishi Vigyan* e-Kendra at Akola and also attended farmer camps organized by the nearest Agriculture University.

The socio-economic status of the households in Pimpri Buti was closely linked to the caste and community. Households belonging

to upper caste categories like *Rajput, Marwari, and Maratha* usually had higher socio-economic status. They constituted a sizable percentage of 'outsiders' who came from Rajasthan, UP and MP generations ago and settled in the village. Almost all were middle to large farmers and they also owned small or big general provision/*kirana* store in their houses. The largest and possibly the oldest provision store belonged to a *Marwari*, who also held the licence for public distribution. In terms of number of households/population OBCs consisting of *Kunbhi, Lohars, Mali, Bhoi,* etc. were dominant. The OBCs were the original inhabitants of the village and the traditional owners and cultivators of land. They were distributed across all class categories. A majority of these households had land between three and ten acres. One of the reasons for this clustering was successive partitioning of land between brothers.

Comparatively, the tribals or *Adivasis* and *Banjaras* like *Gond, Gawari, Pradan and Halbi* belonged primarily to low or low-middle categories with a couple of exceptions. These nomadic groups came and settled down in the village. Their settlements, almost entirely of thatched roofs and mud walls were located on the boundaries of the village. These areas had no electricity and the source of drinking water was either a common tap or a common well. Except for few tribal families who received 3–4 acres of land as part of government land reform programme, almost all were landless and worked throughout the year as agricultural labour. There was only one tribal household that owned around 60 acres of land. The family was once the caretaker of the land, but got the land rights as part of the land reforms programme of the state. However, because of financial constraints, he was never able to cultivate more than 20 acres. There was only one scheduled caste family in the village headed by a cobbler cobbler. Comparatively, the proportion of landless was more among those belonging to scheduled and notified tribes. Relationship between different castes and communities were peaceful and amicable. Inter-caste and inter-community marriages were rare. Dowry system was prevalent. The amount and type of dowry depended on the spending capacity and social status within the village. The average age of marriage for girls was 21–3 years and for boys it was slightly higher at 25–6 years.

e-Choupal at Pimpri Buti

The e-Choupal at Pimpri Buti was located in the house of its 54-year-old male *sanchalak*. The *sanchalak* had formally studied upto seventh standard and belonged to the dominant *Teli* community. He owned 28 acres of land, part of which he cultivated on his own and the rest he gave for

share cropping. He stayed in the village with his parents and wife. His three children stayed in Yavatmal. The eldest son was around 30 years old and worked in a hospital. His daughter was enrolled in her final year of graduation before she got married. The youngest son was studying in XI and stayed with his elder brother at Yavatmal.

Compared to other e-Choupal entrepreneurs of the region and also as per ITC-ABD's norms (25–35 years), the *sanchalak* was slightly older and stayed in a nuclear family. However, he satisfied the criteria of being a well-respected and approachable middle-level farmer. The *sanchalak* was well known for his inclination towards social work and willingness to take responsibilities. He actively propagated awareness about health, hygiene and education. When the primary school of the village felt short of teachers, he had volunteered and taught the children. He was especially popular with a group of youths who found him to be very approachable. The *sanchalak* was also the secretary of the village water cooperative. And among his regular duty was to move about in the village to check the water pipes and connections. While he claimed to be politically disinclined, his mother was a former *sarpanch* of the village. Other factors that might have been in his favour were that his house was probably the first *pucca* house on the main approach road to the village and that he had a telephone connection.

The *sanchalak* first heard about e-Choupal only when representatives from ITC-ABD visited his home to gauge his inclination to setup a kiosk at his place. The decision to venture into the new endeavour was taken entirely on his own. The prospect of doing business linked to agriculture got him interested. He informed his parents and wife, who were largely non-committal. The sons were more enthusiastic, especially at the prospect of having a computer with Internet connection at home. His close friends were very supportive and actively involved in the venture. Most of his fellow farmers were introduced to the concept in a meeting organized by ITC-ABD to generate awareness and conduct the public swearing-in ceremony of the *sanchalak*. Others became aware when the VSAT dish was installed on his rooftop and one side wall of his house was painted with the advertisement of e-Choupal.

Physically, the e-Choupal was actually located in the living room of his house. The computer system and all peripherals were located at one corner of the room. An adjoining room, facing the main road served as a place for storing all the retail products for sale and distribution. The two-storied house was fairly spacious with two floors having five rooms, a kitchen, a storeroom and a courtyard. It was one of the few houses in the village that had both a toilet and closed bathing space. A room

on the first floor was very big and served as a classroom for students coming to the e-Choupal. The *sanchalak* did not have to spend any money on for setting up of the e-Choupal. However, he did pay for the monthly electricity and telephone bills.

The e-Choupal at Pimpri Buti started functioning around April 2004 and over time ITC-ABD had introduced all the services that were available through the network. Procurement of soya at the e-Choupal hub in Yavatmal usually began around end of October/mid-November and continued till late January or early February. The procurement price at nearby *mandis* and the one offered by ITC-ABD was communicated either by email or telephone, twice in a day, once early in the morning and again during late evening. The *sanchalak* was able to get updates as and when required by logging onto the Intranet or calling the procurement hub. The price that ITC-ABD offered to the farmer on any particular day for a particular quality of soya was called the fair quality price. The *sanchalak* either took a printout and pasted it on a wall outside or wrote the prices on a blackboard placed just outside the e-Choupal. Once the price was displayed, it became public information. People were able to see them when crossing the e-Choupal, often spreading it by word of mouth. On any particular day, if a farmer wanted to sell his produce at ITC's hub, he came and took a gate-pass from the *sanchalak*. During peak seasons, in order to avoid congestion at the hub, ITC-ABD allowed booking over the telephone.

In November 2006, the e-Choupal at Pimpri Buti was one among the 11 kiosks selected in the Maharashtra for piloting computer-based education for children studying in schools. The *sanchalak* and another educated youth from the village were given a seven-day training by ITC-ABD on basic computing and teaching skills. The service became immensely popular in Pimpri Buti as indicated by the number of students enrolled for regular and summer classes. The success in mobilizing parents, children and keeping them interested was mainly due to the presence of three young instructors in the age-group of 18–25. Two of them were brothers from one of the highly educated and influential family in the village. Rajputs by caste, they originally belonged to Rajasthan, but were settled in Pimpri Buti for nearly four generations. The elder brother was Masters in Physics and wanted to join the army. His younger brother had completed his Diploma in Education and was also enrolled for graduation in commerce. Unlike his elder brother, he was interested in looking after his family's cultivation and was inclined to stay back in the village. He had a natural flair for teaching, especially school-going children. The third teacher at the e-Choupal was enrolled

in a college for graduation. He had worked for some time as a shop attendant at Yavatmal and was taking a break from city life. All three were engaged in teaching primary and secondary school children in nearby private schools or as tutors when the *sanchalak* roped them in for the education initiative. Together, the three had the capabilities to attract students from nearby villages also.

Pattern of access and use

At Pimpri Buti, 65 households constituting around 80 per cent of the sample availed at least one service at the e-Choupal (see Table 6.2). The

Table 6.2 Distribution of households by socio-economic status, number and type of services

Particular	**Socio-economic status of households**				
No of services	**Low (N=18)**	**Low–middle (N=26)**	**Middle (N=26)**	**High (N=11)**	**Total (N=81)**
0	6	5	4	1	16
	(33)	(19)	(15)	(9)	(20)
1	6	6	6	2	20
	(33)	(23)	(23)	(18)	(25)
2	5	8	6	4	23
	(28)	(31)	(23)	(36)	(28)
>2	1	7	10	4	22
	(5)	(27)	(38)	(36)	(27)
%User household	67%	81%	85%	91%	80%
Service availed	**Low (N=18)**	**Low–middle (N=26)**	**Middle (N=26)**	**High (N=11)**	**Total (N=81)**
Price	7	18	19	9	53
	(39)	(69)	(73)	(82)	(65)
Sold soya	5	11	13	6	35
	(28)	(42)	(50)	(55)	(43)
e-Tuitions	6	11	11	4	32
	(33)	(42)	(42)	(36)	(40)
FMCG products & insurance	1	3	4	3	11
	(6)	(12)	(15)	(27)	(14)
Agriculture extension	0	0	2	2	4
			(8)	(18)	(5)

Note: (a) User per cent indicates the percentage of households within a socio-economic category who have availed at least one service at the telecentre. (b) Figure in parentheses indicates the percentage of respective column total.

three most popular services were: (a) Enquiring about procurement price of soya (b) Selling of soya at the nearest ITC-ABD hub located at Yavatmal, (c) Computer-based tuitions and summer classes for children studying in III to X.

All the three services were seasonal in nature. While 53 households enquired about the procurement price of soya, only 35 (43 per cent) actually sold their produce at the ITC-ABD hub. Children from 32 households visited the e-Choupal for e-tuitions or summer classes. Comparatively, only around 5 per cent of the respondent households availed any other agricultural related services or bought products distributed through the e-Choupal network. Twelve out of 16 (i.e., around 67 per cent) of households with low SES availed one or more services at the e-Choupal. The corresponding figures were 81 per cent, 85 per cent and 91 per cent for the low-middle, middle and high categories respectively. Further, variation can be seen also in the kind of services availed. The percentage of households availing a service like e-Tuition is comparable for all the four socio-economic categories. However, the percentage of household with low SES availing services like enquiring about the procurement price or sale of produce at the ITC hub is nearly half of the average of the other three socio-economic categories.

Pimpri Buti being a small agrarian village, the socio-economic status of the households was closely linked to the primary occupation of the head of the household and the size of their landholdings. Households without land or with landholdings less than three acres generally had low SES. The head of the household was often an agricultural labor earning not more than Rs 50 per day. Family members also worked as daily wage labourers. Those with marginal landholdings were able to cultivate for subsistence. Members from such households also worked as agricultural labour.

Households having lower-middle SES were slightly better off in terms of productive assets and resources. Landholding ranged between 3 to 10 acres. The head of the household was a farmer, but household income was supplemented by share-cropping, or working as agricultural labourers or engaging in some secondary occupation as masons, tailors, drivers etc. If surplus labour was available (especially a young son), households with low-middle SES category often had the capacity to garner financial resources to cultivate additional land on sharecropping basis. Households with SES as middle had landholding ranging from 10 to 30 acres. The head of the household was either a self-cultivator or a landlord. They leased out their land to others for cultivation. Some members of the household were engaged in other occupations also. Households with landholdings more than ten acres usually had high SES.

e-Choupal was essentially an IT-enabled procurement channel for an agribusiness firm and hence it was no surprise that 90 per cent of the respondent households headed by farmers availed some service at e-Choupal (see Table 6.3). Specifically, of the 53 households that enquired about the procurement price at e-Choupal, 50 households were headed by farmers and in the remaining three, farming was a secondary occupation for the head of the household. Of the 20 households headed by non-farmers, eight sent their children for e-tuitions at the telecentre, one sold his produce at ITC-ABD hub and another bought products for re-selling from their small grocery store.

Examining further, sixty-seven households, constituting almost 83 per cent of the sample, owned some amount of land. The percentage of user households among landless was much lower at 43 per cent when

Table 6.3 Distribution of households by primary occupation, number and type of services

Particular	**Primary occupation of the head of the household**				
No of services	**Daily wage (N=9)**	**Petty trade (N=7)**	**Farmers (N=61)**	**Others (N=4)**	**Total (N=81)**
0	4	5	6	1	16
	(45)	(71)	(10)	(25)	(20)
1	4	1	13	2	20
	(45)	(14)	(21)	(50)	(25)
2	1	0	21	1	23
	(11)		(34)	(25)	(28)
>2	–	1	21	–	22
		(14)	(34)		(27)
%User household	56%	29%	90%	75%	80%
Service availed	**Daily wage (N=9)**	**Petty trade (N=7)**	**Farmers (N=61)**	**Others (N=4)**	**Total (N=81)**
Price	1	1	50	1	53
	(11)	(14)	(82)	(25)	(65)
Sold soya	–	–	35	–	35
			(57)		(43)
e-Tuitions	5	1	24	2	32
	(55)	(14)	(39)	(50)	(40)
FMCG products & insurance	–	2	8	1	11
		(29)	(13)	(25)	(14)
Agriculture extension	–	–	4	–	4
			(7)		(5)

Note: See Table 6.2.

compared to the average of 76 per cent for all households with land (see Table 6.4). The engagement of the six households without land with e-Choupal was mainly for e-Tuitions. The head of only one household without land kept a tab on the procurement price of soya via e-Choupal. This particular household cultivated land on sharecropping basis and the head was also a member of the local *panchayat*. A service like soil testing was availed only by two middle and two large farmers, apparently on the insistence of *sanchalak*.

At Pimpri Buti, around 70 per cent of the houses were either *pucca* or mixed type. For a sizable portion of these households, the kitchen or a

Table 6.4 Distribution of households by landholding, number and type of services

Particular	**Landholding**					
No of services	**0 (N=14)**	**0<X <=3 (N=9)**	**3<X <=10 (N=27)**	**10<X <=30 (N=22)**	**X>30 (N=9)**	**Total (N=81)**
0	8	2	1	4	1	16
	(57)	(22)	(4)	(18)	(11)	(20)
1	5	3	6	5	1	20
	(36)	(33)	(22)	(23)	(11)	(25)
2	1	4	11	3	4	23
	(7)	(44)	(41)	(14)	(44)	(28)
>2	0	0	9	10	3	22
			(33)	(45)	(33)	(27)
%User household	43%	78%	96%	82%	89%	80%
Service availed	**0 (N=14)**	**0<X <=3 (N=9)**	**3<X <=10 (N=27)**	**10<X <=30 (N=22)**	**X>30 (N=9)**	**Total (N=81)**
Price	1	5	24	15	8	53
	(7)	(56)	(89)	(68)	(89)	(65)
Sold soya	0	4	15	11	5	35
		(44)	(56)	(50)	(56)	(43)
e-Tuitions	6	1	13	9	3	32
	(43)	(11)	(48)	(41)	(33)	(40)
FMCG products & insurance	0	1	3	5	2	11
		(11)	(11)	(23)	(22)	(14)
Agriculture extension	0	0	0	2	2	4
				(9)	(22)	(5)

Note: See Table 6.2.

cooking space was combined with the dwelling space and they mainly used wood as fuel for cooking. Well-to-do households use mix of fuels like wood, kerosene and gas. Some households with livestock had also installed *gobar* gas. The presence of the water cooperative facilitated most households to have piped water supply. Very rich households had private drinking water pipelines from their personal well. Sixty-six out of 81 households had electricity at home. Of the remaining 15 households without electric connection, 11 belonged to the lowest socio-economic category and lived primarily on the fringes of the village where there were no electric poles. As much as 53 per cent of the households, even those belonging to middle class, did not have a toilet in their homes. People generally defecated in the open. Thus apart from the very poor, households in Pimpri Buti had similar household assets and amenities. The difference manifest when size of landholding and possession of any vehicle like bicycle or motorcycle is considered. Households with asset index ranging from six to eight were the dominant users for most of the services, while percentage of user households among those with asset index 9–11 was much comparatively less (see Table 6.5).

All households belonging to the general category availed at least one service (see Table 6.6). Since all had some amount of land, they at least enquired about the price. As many had *kirana* stores, they sometime bought their stock from the e-Choupal, and a couple of them sent their kids for tuitions. Of the ten households belonging to ST/NT category that had availed some service at e-Choupal, six enquired about the price at e-Choupal during the season, and four also sold soya at the hub. These households owned some amount of land. Among them one also got the soil from his field tested at the e-Choupal hub. He owned 22 acres of land, and was neighbour and friend of the *sanchalak*. Among the remaining four 'user' households, three were landless and sent their children for tuitions. The fourth one was again a regular visitor to the kiosk. He had a small amount of uncultivable land, but he sometimes bought biscuit, matchboxes and oil from e-Choupal.

Of the seven households belonging to ST/NT category and not accessing any service at the kiosk, five did not own any land and neither had they any school going children who would go for tuitions at the e-Choupal. The head of a 'non-user' household had around 12 acres of land and was a very old farmer, who usually was unwell. All his children were grown-ups and were no longer interested in cultivating farms. Their yield of soya on four acres of land was as low as two quintal, stored for future use. Another farmer was the caretaker and cultivator of 15 acres of land, which actually was in his brother's name, who stayed at Wardha.

Table 6.5 Distribution of households by asset index, number and type of services

Particular	**Asset index**				
No of services	**0–2 (N1 = 26)**	**3–5 (N2 = 31)**	**6–8 (N3 = 13)**	**9–11 (N4 = 11)**	**Total (N = 81)**
0	7	5	0	4	16
	(27)	(16)		(36)	(20)
1	11	5	3	1	20
	(42)	(16)	(23)	(9)	(25)
2	6	12	3	2	23
	(23)	(39)	(23)	(18)	(28)
>2	2	9	7	4	22
	(8)	(29)	(54)	(36)	(27)
%User Household	73%	84%	100%	63%	80%
Service availed	**0–2 (N1 = 26)**	**3–5 (N2 = 31)**	**6–8 (N3 = 13)**	**9–11 (N4 = 11)**	**Total (N = 81)**
Price	12	24	11	6	53
	(46)	(77)	(85)	(55)	(65)
Sold soya	8	15	8	4	35
	(31)	(48)	(62)	(36)	(43)
e-Tuitions	7	14	9	2	32
	(27)	(45)	(69)	(18)	(40)
FMCG products & insurance	2 (8)	2 (6)	2 (17)	5 (45)	11 (14)
Agriculture extension	0	1 (3)	1 (7)	2 (18)	4 (5)

Note: See Table 6.2.

He sold his soya to the local village level trader. He had two children, but both were staying outside the village for the purpose of education.

Thus, it can be observed that more than the caste, it is the need of the household that determined their pattern of access and use. The need for availing a particular service might come because of occupational or asset characteristics. For example, families cultivating soya would keep a tab on the price displayed at the e-Choupal. The need to avail education service was also because of the family composition; families with school-going children would be more inclined to send them for tuitions at the e-Choupal. Caste was linked to the pattern of access and use to the extent it defined the existing socio-economic characteristics. Households belonging to ST/NT category in Pimpri Buti were general economically depressed than others; and hence the number of households of this particular group availing e-Choupal services was less.

Table 6.6 Distribution of households by religion, caste category, number and type of services

Particular	**Caste and religion of households**			
No of services	**General (N=9)**	**OBC (N=55)**	**ST/NT (N=17)**	**Total (N=81)**
0	0	9	7	16
		(16)	(41)	(20)
1	2	12	6	20
	(22)	(22)	(35)	(25)
2	3	17	3	23
	(33)	(31)	(18)	(28)
>2	4	17	1	22
	(44)	(31)	(6)	(27)
%User household	100%	85%	58%	80%
Service availed	**General (N=9)**	**OBC (N=55)**	**ST/NT (N=17)**	**Total (N=81)**
Price	7	40	6	53
	(78)	(73)	(35)	(65)
Sold soya	4	27	4	35
	(44)	(49)	(24)	(43)
e-Tuitions	5	24	3	32
	(56)	(44)	(18)	(40)
FMCG products & insurance	3	7	1	11
	(33)	(13)	(6)	(14)
Agriculture extension	1	2	1	4
	(11)	(4)	(6)	(5)

Note: See Table 6.2.

Pattern of access and use of the e-Choupal services was also examined from another angle with regard to caste, that is, whether physical access to the e-Choupal was denied to some people because they belonged to particular castes like dalits. At Pimpri Buti, the e-Choupal appeared to be accessible to all caste categories. Firstly, the *sanchalak* was the secretary of the local water cooperative and people from all sections visited him once in a while to give the cess or make complaints/suggestions. Sometimes they sat in the drawing room while the secretary made the entry in the register. Secondly, from the neighbouring village of Hatgoan, a group of young girls, primarily belonging to the dalit community came to the e-Choupal for summer classes. They sat, studied and in general spent at least around two hours at the e-Choupal. There was no restriction on their movement inside the house or drinking water from the common *matka* (earthen pot). Thus, it can be said that physical access and use of the telecentre was not denied because a person belongs to a particular caste or religion.

Table 6.7 Distribution of households by education of the head of the household, number and type of services

Particular	Education of the head of the household							
No of services	**Illiterate (N=13)**	**Primary (N=20)**	**Upper primary (N=19)**	**Secondary (N=18)**	**Higher secondary (N=5)**	**Graduate and above (N=1)**	**NA (N=5)**	**Total (N=81)**
0	7	3	2	2	1	–	1	16
	(54)	(15)	(11)	(11)	(20)		(20)	(20)
1	2	9	2	4	1	–	2	20
	(15)	(45)	(11)	(22)	(20)		(40)	(25)
2	4	4	6	6	2	1	0	23
	(31)	(20)	(32)	(33)	(40)	(100)		(28)
>2	–	4	9	6	1	–	2	22
		(20)	(47)	(33)	(20)		(40)	(27)
%User Household	46%	85%	89%	89%	80%	100%	80%	80%
Service availed	**Illiterate (N=13)**	**Primary (N=20)**	**Upper primary (N=19)**	**Secondary (N=18)**	**Higher secondary (N=5)**	**Graduate and above (N=1)**	**NA (N=5)**	**Total (N=81)**
Price	5	11	15	14	4	1	3	53
	(38)	(55)	(79)	(78)	(80)	(100)	(60)	(65)
Sold soya	4	7	9	8	3	1	3	35
	(31)	(35)	(47)	(44)	(60)	(100)	(60)	(43)
e-Tuitions	–	10	12	8	1	–	1	32
		(50)	(63)	(44)	(20)		(20)	(40)
FMCG products & insurance	1	1	4	4	–	–	1	11
	(8)	(5)	(21)	(22)			(20)	(14)
Agriculture extension	–	1	2	1	–	–	–	4
		(5)	(11)	(6)				(5)

Note: See Table 6.2.

Table 6.8 Distribution of households by highest education, number and type of services

Particular	**Highest level of education in the household**								
No of services	**Illiterate (N=3)**	**Primary (N=3)**	**Upper primary (N=11)**	**Secondary (N=32)**	**Higher secondary (N=16)**	**Graduate (N=6)**	**Post-graduate (N=5)**	**NA (N=5)**	**Total (N=81)**
0	2	1	3	6	1	1	1	1	16
	(67)	(33)	(27)	(19)	(6)	(17)	(20)	(20)	(20)
1	1	1	2	8	5	1	0	2	20
	(33)	(33)	(18)	(25)	(31)	(17)		(40)	(25)
2	0	1	4	10	5	2	1	0	23
		(33)	(36)	(31)	(31)	(33)	(20)		(28)
>2	0	0	2	8	5	2	3	2	22
			(18)	(25)	(31)	(33)	(60)	(40)	(27)
%User household	33%	67%	73%	81%	94%	83%	80%	80%	80%
Service availed	**Illiterate (N=3)**	**Primary (N=3)**	**Upper primary (N=11)**	**Secondary (N=32)**	**Higher secondary (N=16)**	**Graduate (N=6)**	**Post-graduate (N=5)**	**NA (N=5)**	**Total (N=81)**
Price	0	2	6	20	13	5	4	3	53
		(67)	(55)	(63)	(81)	(83)	(80)	(60)	(65)
Sold soya	0	1	5	14	6	2	4	3	35
		(33)	(45)	(44)	(38)	(33)	(80)	(60)	(43)
e-Tuitions	0	0	5	16	7	2	1	1	32
			(45)	(50)	(44)	(33)	(20)	(20)	(40)
FMCG products &	1	0	0	3	3	1	2	1	11
insurance	(33)			(9)	(19)	(17)	(40)	(20)	(14)
Agriculture	0	0	0	0	1	0	3	0	4
extension					(6)		(60)		(5)

Note: See Table 6.2.

With regard to the educational status of the households, in as many as 13 households, the head of the family had no formal education. There were actually only three households where none of the members were educated (see Tables 6.7 and 6.8). However, in all the three houses; the age of the head of the household was between 50 to 60 years. And their younger ones had shifted and settled down elsewhere. Majority of households had some members who had studied at least up to class V. This pattern was similar for both males and females. The level of education and near equity in access to education across gender can be attributed to the presence of the primary school within the village. For service like education, the largest number of users is that of school going children coming for e-tuitions to the kiosk. Otherwise no specific pattern could be discerned, primarily because most of the services were either mediated or did not require computing skills.

As such the e-Choupal at Pimpri Buti was not associated formally with any local level institutions like *panchayat*, the representatives of the formal institutions were neither consulted during its installation nor did it cater to any of their services. However, the telecentre had linkages with a couple of them in an indirect sense. Computer-based tuitions at the e-Choupal complemented the lessons taught at the school. So to that extent, households with children were one set of households accessing this particular service at the telecentre. The huge response to the education initiative at Pimpri Buti can be contrasted with the village where the education initiative had not picked up because the village-level school was only up to class IV and the kiosk operator was unable to attract children or their parents. The water cooperative was another local level institution that had indirect links with the e-Choupal since the *sanchalak* was the secretary. The *sanchalak* held a position of responsibility, which made him approachable for everyone and vice-versa. It was easier for him also to tell the people about the services or any e-Choupal related information when they came to meet him or when he took a round of the village. In sum, institutional or political affiliation of members of the household that bestows some power or privilege on the household so that they have reasons to access and use telecentre more than others, was not an observed phenomenon at Pimpri Buti.

Discussion

e-Choupal was the telecentre-based initiative of an agribusiness firm with the objective to consolidate its procurement channel for specific commodities like soya, and wheat. Hence the dominant users of its

services were mainly farmers cultivating these crops. However existing views differ on the type of farmers benefiting from such IT based corporate intervention for procuring commodities directly from the farmers. While the BoP narrative on e-Choupal (Annamalai & Rao, 2003) portray the subsistence farmers with small and marginal landholdings to be the key beneficiaries; critiques hold that farmers with large landholdings to be main users of the service (Mehta, 2005). A key finding of this particular case study is that all types of farmers engaged, albeit with difference in the pattern of access and use.

At Pimpri Buti, 56 per cent, 89 per cent, 68 per cent, and 89 per cent of farmers among marginal, small, middle and large respectively kept track of the procurement price of soya at the e-Choupal but only 44 per cent, 56 per cent, 50 per cent, and 56 per cent respectively sold their produce at the nearest ITC-ABD hub. Among the factors that shaped their decision to sell were the quality of soya, and the trade off between the transportation cost and the price quoted at the ITC-ABD hub. Apart from ITC-ABD's hub and the main market yard at Yavatmal, other channels were available to farmers for selling their produce. Farmers in Pimri Buti sold their produce to local traders who came at their doorstep, to the local shopkeepers within the village and/or the moneylender, and at a small market yard in a nearby village. The decision often depended on the quality of soya, the time of sale, the yield, and the trade off between transportation cost and the extra money he might earn by selling at the ITC-ABD hub. The price displayed at the e-Choupal helped them to negotiate for price with the local traders, etc.

The yield of marginal and small farmer was around five quintals. If the farmer was a sharecropper, he often had to sell the produce to the landlord or in some cases to the village trader or other middlemen from whom he might have taken a loan. The small and marginal farmers who sold at the e-Choupal, mainly did so by combining their produce with others and sharing the transportation cost. Such arrangements worked with close family members or friends or neighbors with matching cropping and harvesting schedules. While the number of middle farmers selling their produce at ITC-ABD hub was more than others, these farmers were more calculative about whom to sell. At the time of this study, the e-choupal in the village had seen two soya seasons. There were few middle farmers who had sold their produce during the first season but consciously avoided the hub during the next. One of the reasons was that the farmers were aware that ITC-ABD paid the quoted price only for particular quality of soya. They knew that selling soya at the ITC-ABD hub was profitable only when the quality of the produce was very good.

Thus if they felt that they will get better price thru open auction at the market yard, they took their produce there. Further, if the quality of soya was poor because of rains or any other factors, selling the produce at the *mandi* gave them at least the government stipulated minimum support price (MSP); ITC-ABD often refused to take such produce.

On the other hand, large farmers typically had large quantity of soya and not all of same quality. Some separated the different qualities of soya and sold the better ones at e-Choupal and the low quality at *mandi* or to private traders from home. For others, if the labour cost to separate the two qualities was comparatively high, they found it more convenient to sell the produce from home or mix and sell at *mandi*. At the *mandi* they may not get the best price, but at least the average price was assured. For them a difference of Rs 5–10 rupees on the whole did not make much of a difference, especially when the quality of soya was not good.

Households headed by non-farmers, tribals and dalits got engaged more actively only when the education initiative was started on a pilot basis at the kiosk. For the education initiative it was felt that children were able to retain their lessons better and spent their long summer days on something useful rather than just playing out in the sun. For other types of agriculture extension services like expert advice, ITC-ABD collaborated with nearby agriculture colleges for solutions to the online queries. This required a series of interactions between the kiosk owner, network orchestrators and solution providers resulting in substantial transaction cost in terms of coordination time and time required to provide a solution. There were issues related to transportation of sample if required. Even if the solution to a particular problem was provided on time, there were questions with regard to its availability at an affordable cost to the farmer, and adoption of proper procedures. Further, while oil, biscuits and matchboxes were the three main products sold thru the e-Choupal, it was too early to judge the success of e-Choupal as a rural retail channel.

Farmers perceived the benefits of e-Choupal mainly in terms of less hassles in selling the commodities. Small farmers with less yield found it more convenient and profitable to sell from their doorstep to the local trader as it saved on the transportation cost.

However, there were some observable change in the behaviour and attitude of the other traders towards the farmers. The prior information about the price from the e-Choupal kind of empowered the farmers to negotiate better. Further, in order to woo the farmers, the local traders made attempt to adopt some of the ITC-ABD practices like use of electronic scales, giving gunny backs on rent, and not charging for

weighing and packaging. However, tangible changes in the overall SES of households because of additional income were not observable. Dalit girls from neighbouring villages coming for summer classes may bring about social change in the future, but at the time of fieldwork the long term sustainability of the education initiative looked doubtful. It was totally driven by the motivation of the kiosk entrepreneur and the para teachers.

ITC-ABD as a procuring agency did remove some of the ills associated with middlemen, and farmers articulated the benefits as appropriate price for produce, less harassment, and better bargaining power vis-à-vis private traders. But the benefits in Pimpri Buti came with a rider that the quality of soya had to be good. Further, ITC-ABD procured only one crop, that is, soya and only for four months during the season and only up to a limit. It highlights a limitation of e-Choupal as an agriculture intervention. The farmers wanting to sell before the procurement session started or after the season had to go to the *mandi* or private traders. Thus, middle farmers who had the capacity to store soya and sell it later when the prices of commodities increased, had no other option apart from *mandis*. Thus, the competitive advantage the company gets from hedging prices does not necessarily translate into competitive advantage for the farmer. Further, at places, where e-Choupal bought only one commodity, farmers had to interact with traditional institutions like *mandi* for other crops. From the corporate point of view, setting the procurement price as per quality is a rational objective for achieving overall efficiency. However, the quality of soya is often determined by multiple factors like rain, which are beyond the control of the farmer or the company. Under such situations, *mandi* provides the scope and space for farmers to sell their produce and at least get an average price even when the crop quality was not optimum.

7
Drishtee, Uttar Pradesh

Introduction

The beginning and the evolution of Drishtee both as an organization and a telecentre initiative is closely linked to the evolution of telecentres in India. In 1999, Drishtee, as a small software development firm, made the website for Gyandoot.[1] It subsequently positioned itself as a network orchestrator of entrepreneur-owned information kiosks providing products and services catering to the demand in rural areas. Drishtee is often credited for pioneering and successfully demonstrating a financially sustainable and replicable model of ICT-enabled, fee-based private service delivery channel (World Bank, 2003a). This case study is on the Drishtee *Soochna Kendra* (Information Kiosk) located at Kesarpur in Bareilly district, Uttar Pradesh (UP), India.

Uttar Pradesh

The northern state of Uttar Pradesh with its population of 166,052,859 and an area of 240,928.3 sq. kms.is the largest state in India with regard to population and fifth in terms of area (Government of India, 2001). However it lags behind in terms of both economic growth and social development. The overall sex ratio is 898 females per thousand males. The literacy rate is 57.4 per cent with sharp difference between urban and rural areas. Around 78 per cent of the people are engaged in agriculture. The agricultural sector is the major source of income for the state and in 2000–1, UP was the largest producer of cereals, sugarcane, potato and oil seeds. The western part of the state is agriculturally more developed because of better irrigation facilities. Wheat and rice are the

two major crops. The main industries include cement, textile, handicrafts, leather, etc.

The state has formally released two IT policies till date. The first policy was released in 1999 against the backdrop of the recommendations of the National IT Task Force (1998). The policy was subsequently revised and released in 2004. Content wise, both the policies are similar, except that in the latter, the term IT industry has been broadened to include IT enabled services like medical transcription, BPO, call centre services, etc. Both the policies put forth the use of IT as a vehicle for the economic development of the state and for creating a 'high-tech society with high quality of life'. While the 1999 policy aspired to put the state on the global IT map as a new Silicon Valley of India, the subsequent policy laid more emphasis on supporting and encouraging the growth of IT/ITES industry by spurring domestic demand and facilitating IT industries to become globally competitive.

Like other IT policies formulated on the recommendations of the 1998 taskforce, emphasis in both the policies was mostly on the provision of infrastructure, preferential land allocation, uninterrupted power supply, exemption from power-cuts, manpower development, fiscal incentives and tax exceptions, relaxation in labour, environment and other related laws, facilitation procedures like single window clearance, escort system and green cards. Infrastructure development has been proposed by making available Internet connectivity, high speed telecom links, earth station, two gateways for international connectivity for e-commerce and electronic data exchange, rural telephony in villages, two IT cities at places nearest to the capital city of Delhi, eight IT parks and one cyber city.

Compared to the IT policies of other states, policies in UP have significantly focused on IT education. The thrust has been on incorporating IT education in the existing educational framework. The state has a number of institutes and universities of higher learning that are recognized both nationally and internationally. These institutes have the capacity to train the manpower required for the IT industry. Thus, the policy envisaged all the technical schools and engineering institutions to play a role in the development of the IT industry. IIT-Kanpur was designated as a nodal agency for strategic and technical guidance.

e-Governance projects have been primarily directed towards smart governance by training employees, linking promotion to proficiency achieved with IT, computerization of departments, and linking of all government offices at distict, *tehsil*, and block levels. Each government

department was mandated to earmark around 5 per cent of its budget for IT, of which 50 per cent had to be spent on software development and training. Current e-Governance initiatives are directed by the national e-Governance plan.

The policy of 1999 mentions about taking IT to the masses by making it useful, affordable and accessible to the common man, but predictably the policy directives are less detailed for this area as in case of the other two. It mentions establishment of multi-purpose kiosks and use of Geographic Information Systems (GIS). Except for *Lokvani Soochana* and *Shikayat Kendra*-the telecentre based public grievance and redressal system piloted in the Sitapur district and scaled-up across the state, most ICT-D related initiatives have been by either private companies or civil society organizations. Some of the main telecentre-based projects in the state include e-Choupal, Drishtee, TaraHaat, TERI, etc. These projects do not have any explicit linkages with the state's macro-policy environment related to ICT-D.

Drishtee

Since its inception in 2000, Drishtee as an organization and a telecentre model has undergone much change. Its origin and evolution closely reflects the various phases of telecentre movement in India. In 1999, when numerous ICT-D projects were being piloted across the country, Drishtee was a small firm located at Bhopal, Madhya Pradesh and was engaged in software development and IT training. It was then invited by the District Administration of Dhar to develop a website for Gyandoot, possibly the first telecentre-based e-governance project in rural India. Apart from designing and maintaining its website, it also became the hardware and software vendor for some time. Drishtee remained associated with Gyandoot for about nine months till the Gyandoot *samitis* took over the operation of the network.[2] Identifying that there could be a market for ICT-enabled kiosks in rural India, Drishtee shifted its base to Delhi and was formally registered as a company in 2000.

Subsequent to Dhar, Drishtee was engaged by the district collector of Sirsa in Haryana to set up a e-Governance network. While there were contextual level differences between Dhar and Sirsa, Drishtee's experience was similar. At both the places, after a certain time period, the kiosks were not able to generate sufficient income. The common factors have been lack of readiness within government departments. The government departments were not computerized, the employees were still not ready to accept the new way of delivering service. Further, the

efficacy of the network depended on the personal interest and involvement of individuals, in both cases the district collector. Once they were transferred, the operations of the kiosks and the network decreased rapidly indicating the absence of an institutional approach. However, the key learnings from Dhar and Sirsa telecentres for Drishtee were to reduce the dependence on e-Governance services as the main source of income generation for kiosks.

In their next venture at Jaipur, the organization experimented with delivery of some private services through the Drishtee kiosk. By the time Drishtee started its operations in Assam in 2003, it had developed a basket of services, primarily provided by private service providers. Generic in nature, these services aimed at fulfilling needs that were common across different contexts. Thus, by reducing its focus on e-Governance, the organization also built in its model an element of replicability. The basic services of Drishtee could be deployed in any context and as and when arrangements work out with the government or some of its departments, e-Governance services were added to the existing basket of services. Drishtee also designed its services in a manner that eliminated the prerequisite of Internet connectivity. It was a way of dealing with the issues of poor connectivity in rural areas. Through its work in Assam, Drishtee was also able to evolve into a provider of a networked platform that could be leveraged by other private companies to reach rural areas. The success of the operations in Assam helped Drishtee fine tune its services for replication across the country. As on 2006, there were 1132 Drishtee kiosks in 24 districts in 12 states.

In 2006, Drishtee had positioned itself as a network orchestrator with a mission to create and implement a sustainable, scalable platform for entrepreneurship to enable the development of rural economy and society through the use of ICTs.[3] The organization sought to build and provide an ICT-enabled platform, which could be used by public and private service providers, for delivering various kinds of fee-based services to the rural population. The services are broadly classified under the heads of e-Governance, Education, Health, Insurance and local services. Not only have private service providers been roped in, the kiosk operator is also encouraged to identify the service requirement needs of the people living in the village and provide services accordingly. Drishtee envisages that the services through its network would benefit the people in three ways: (a) by increasing the per capita income of a village though ventures like e-commerce, BPO and micro-finance, (b) by reducing the unit cost of service versus its conventional delivery system as in e-Governance, computer education and health, thus, inducing

savings and (c) by providing an avenue to better utilize disposable income as in buying insurance. Table 7.1 lists the various organizations that have partnered with Drishtee to deliver services to the rural areas. The three organizations-Drishtee Foundation, CyberEdge and Quiver are organizations spinned-off from Drishtee.[4]

Table 7.1 Partner organizations of Drishtee

Sl. no.	Name of the partner organization	Nature of partnership
1	Drishtee Foundation	Provides support including baseline survey, impact assessment, operation Chetna
2	Cyber Edge	Computer education including certification
3	Quiver	Development of private services
4	Escorts Heart Institute and Research Centre	Escorts Rural Health Care; referrals, consultations and appointments *www.ehirc.com/rural*
5	Rural Naukri	Employment exchange for rural areas *www.ruralnaukri.com*
6	PustakMahal	Online buying of books *www.pustakmahal.com*
7	Microsoft India Limited	Technology provider, content provider (education), collaboration for research on rural PC kiosk and tablet PC, also for the 'unlimited potential' programme of Microsoft
8	HCL	Technology provider of PCs, digital camera
9	HP Digital Photoshop Project	Technology provider, digital camera, printers, etc.
10	ALLIANCE	Service provider – Life and non-life insurance
11	ICICI Bank	Provides financial services including insurance, both life and non-life. Also provides loan for setting up of the kiosk
12	District Administrator	Provider of e-Governance service
13	Ministry of Panchayat Raj	E-governance services and other localized services
14	University of Manchester UK	Study and training material on women entrepreneurship
15	GoI (NIC, IGNOU, MoIT)	Segmentation of GPs – ICT readiness with a GP/District

Structurally, the Drishtee Model consists of two tiers: Drishtee and Village Level Kiosks. Drishtee includes the head office at Noida, and branch offices at state level. The organization has a middle tier called the Vistaar Block Channel Partner (VBCP). Vistaar is the name by which Drishtee expands its network in the rural areas. A VBCP belongs to the area in which Drishtee operates and is expected to have a better understanding of the local dynamics. This channel partner provides logistics and other organizational support to the Drishtee officials in identifying potential entrepreneurs, undertaking marketing and sales related activities, etc. However, in practice, often a local kiosk entrepreneur also dons the role of a VBCP or in the reverse, the VBCP also operates a Drishtee kiosk. In both the cases, the number of layers is two for Drishtee.

The Drishtee kiosk at the village level were owned by individual entrepreneurs and often managed with the help of family, friends and paid staff. It took around Rs 60,000 to start a kiosk consisting of a computer, a multi-functional printer, digital camera, and a UPS. Drishtee had tie-up with a leading financial institution to provide loans to the entrepreneurs. All the equipments excluding connectivity are provided by the organizations. Drishtee had left it to the kiosk entrepreneur to chose the technology for Internet connectivity as per availability and requirement.

A Drishtee kiosk is typically located in a village that has a population of around 5000 or more. The exact location of the kiosk was often dependent on the selected kiosk owner, but the preferred places were market places and other natural gathering places. The possible villages and village level entrepreneurs were usually identified and short listed by the field level official of the organization. Drishtee's process of selecting a kiosk owner included calling a *gramsabha*, explaining the concept and seeking applications from possible candidates. However, the process varied in practice. At places, the field officer identified some possible candidates by informally meeting people associated with the communication channels of the village such as, the owners of fertilizer shops, teachers, tuition masters, PCO operators, etc. At other places, meetings are organized with the help of other kiosk operators or VBCP and applications were invited potential candidates. At times advertisement were also placed in the newspapers seeking applicants.

An individual was considered eligible to be an entrepreneur if he/she had ten years of formal education, a working knowledge of English and preferably computers. Drishtee also emphasized marketing skills of the kiosk owner. As it was often difficult to judge this particular ability beforehand, Drishtee has evolved the system of selling subscriptions. Subscription meant preliminary membership to the Drishtee kiosks

along with discount coupons for various services. Short-listed or interested kiosk entrepreneurs were given a targets for selling subscriptions. If there were more than one candidates in the village, the one who sold more subscription was selected as the kiosk entrepreneur. Apart from testing marketing skills of the potential kiosk entrepreneur, the concept of subscription also served another important functions. It enabled the kiosk operator to initiate contact with potential customers, generate awareness about the Drishtee kiosk and thru subscriptions be assured of some customers. The selected kiosk owner was provided training at the nearest district office in the areas of technology and marketing. The training was usually conducted in batches. They also provided opportunities to the kiosk owners belonging to the same district to know each other and forge links. Services were deployed at a kiosk in a staggered manner, starting with the ones that generated immediate revenue for the kiosk owner. Others were deployed as and when the kiosk operator considered it appropriate.

Kesarpur

Drishtee Kiosk at Kesarpur in Bithri Chainpur taluka was located 22 kilometers from the district town of Bareilly in the northern state of Uttar Pradesh, India. It had an area of 90.25 sq kms and population of 3771 in 586 households (Government of India, 2001). The sex ratio was 874. Kesarpur was a fairly large village as compared to its neighbouring 20–5 villages and acted as a junction point for the cluster of villages. It was well connected by road and various modes of transport with neighbouring villages and big towns like Bareilly, Rithura, etc. and hence attracted people from nearby rural and urban areas.

On the outskirts of Kesarpur was a settlement of migrants from neighbouring smaller villages. They earned their living by doing petty jobs in the village or by travelling to and fro to neighbouring big towns like Bareilly, Bhuta and Rithaura. Kesarpur had a thriving market place in and around the bus *adda* or the bus stop of the village. The market had as many as 300 big and small shops – catering to all types of requirement – from agriculture inputs to medicine to jewellery etc. Many shops belonged to medical practioners, cloth merchants and other smaller traders from Bareilly. They commuted on a daily basis from Bareilly to Kesarpur, taking advantage of the good connectivity, low establishment costs and high volume of regular customers. On Thursdays and Sundays their business used to be specially brisk as people congregated at the weekly *haat* held on the ground just next to this marketplace. Located in the market place

was also an open-air cinema hall, branches of two leading nationalized banks with linkages to more than 100 Self-Help Groups (SHGs), a small BSNL telephone exchange with around 100 connections, and 12–15 public telephone booths or PCOs. While the village had no cellular service providers, but being proximate to big towns, signal was available at most places and hence mobile phones were fairly common.

The village was electrified in 1976 and around 80 per cent of the houses had electricity connections. However, as with the rest of the state, Kesarpur during the summer of 2006 was reeling under acute power crisis. Apart from the technical issues related to generation and distribution of electricity, the availability and quality of power supply was erratic.[5] Households in Kesarpur, irrespective of their socio-economic status spent around rupees ten per day to charge car batteries for watching television and movies on DVD after sunset. Educational facilities within the village included one government school having only primary section and four private schools with classes from nursery to standard VII. The only high school in the village was a private one and not yet recognized by the government. Those could afford or had relatives sent their children to Bareilly. The village also had three *balwadis/aganwadi* although they functioned in limited capacity, a post-office and a credit society for farmers.

Economic activities within Kesarpur were diversified and closely reflected the social structure of the village. Hindus and Muslims constituted the two dominant communities with almost equal number of households. Within Muslims, almost all belonged to the *Ansari* community under other backward caste (OBC) category and were engaged in *Zari*-related work in various capacities ranging from owners of large '*Zari* house' to big/small bidders to tailors/designers/embroiderers. Prior to the introduction of *Karchobi* or *Zari* embroidery within the community, around 10–12 years ago, Muslim men were primarily engaged as agricultural labours. Except for the few, who had their own business, for most households, the income generated from this source was highly seasonal and depended on the trends and demands of the fashion industry in Delhi and other big places. During peak season in many households, almost all members including small children were engaged in embroidering. Some Muslim families had shops in the market place while others had diversified into construction work.

Comparatively, Hindus were more segregated in terms of caste and occupation. Around fifteen households belonged to forward castes consisting of *Brahmins* or *Pandits* and *Baniyas*. Although small in numbers, the households were fairly influential because of their higher socio-economic

status. They owned number of small and big businesses including gold shops, mills etc. and were often engaged in informal lending. *Kurmis* or *Patels*, belonging to OBC category were the other dominant group. They were the traditional landowners and cultivators. Rice, wheat and sugarcane were the main crops grown in the area. Cultivation was done using modern agriculture implements and methods as popularized during the green revolution. However, many households belonging to this group gave their land to sharecroppers for cultivation. The change can be attributed firstly to the availability and capability of such households to take up government and private sector jobs. Secondly many households had diversified into self-employment in the form of petty trade, business to small enterprises as in brick kilns, flour mills etc. Sharecroppers and tenants primarily belonged to the SC category and included *Jatav* and *Bhurji*. The other group consisted of Sikhs who migrated from Punjab or migrate for some time during the season. Known for their hard work and superior knowledge about agricultural practices, the Sikh farmers undertook contract farming, mainly for landlords with large landholdings. Some Sikh families had acquired land and were permanently settled in Kesarpur. However, they did not stay inside the village; instead they built small houses in their fields and stayed there with their families. Still lower in the caste hierarchy were *Teli, Nai, Mochi, Prajapati* and *Valimiki*. They worked as agriculture labours on daily wage basis. Of late, some households were also engaged in *Zari* related work, which otherwise was dominated by Muslims.

At Kesarpur, households belonging to the same religion or caste community were clustered at one place and, each cluster was separated from the other by *kuccha* brick-laid lanes. In general, social interactions between middle- and upper-class families of both the religious communities were very limited. Thus, for distribution and collection of work and payment, boys and men from both the communities visited the households of the other community. The children and women hesitated to move around freely in the area dominated by other communities. Most women especially those belonging to Muslim communities, rarely ventured out of the boundaries of their own immediate communities. Although the practice of untouchability was no longer prevalent, caste and religion subtly influence the social interactions. People from lower castes and also Muslims confirmed acceptability with their guests from other community and caste before offering water, tea or food. And the village had dedicated workers and ardent supporters of each political party. Elections for the *panchayat*, state and national assemblies were fought mainly on religious and caste lines. All parties generally wooed

those belonging to the lower caste. Although economically weaker, their votes played a decisive role.

The status of women in terms of their education and mobility differed within the two communities and across caste hierarchies. Within Hindus, women belonging to households with high socio-economic status were educated and worked, often in government jobs as *aganwadi* workers and as *shikshamitrs*. They did not work in the fields but provided full support from the home including cooking afternoon meals for all the agriculture labourers working in their fields. Women from households with low socio-economic status worked as agricultural labour, mainly at time time of transplantation of rice saplings. Women from Muslim households were commonly engaged as embroiderers.

Purdah system in Kesarpur also had a religious connotation. Hindu women covered their faces with a *ghoonghat* (veil) after marriage when interacting with elders in the family and strangers, especially males. Women wore the *ghoonghat* even when they travelled outside or were in the market. Within Muslims, the *purdah* system was more strict. The women had limited mobility and even when they went out, they were accompanied by men and/or covered their heads and faces completely. *Purdah* and restrictions on movement had implications on the level of literacy among Muslim women. The literacy rate among Muslim women and young girls was very low and was related to the socio-economic status of the household. Women and young girls from low and low-middle households rarely ventured out of their houses. Well versed in Arabic, they were able to read the Koran, none have had any formal education or could read or write English/Hindi. However, the situation appeared to be changing, especially after opening of a primary school that catered exclusively to Muslims. Households, especially those belonging to the middle class did mention about sending their children to school. Girls from households with high socio-economic status were educated; some were even pursuing graduation through correspondence.

Drishtee Soochna Kendra

The kiosk was formally registered in December 2004 in the name of a thirty-year-old, graduate, male entrepreneur; belonging to the dominant *Kurmi* community. Farmer by occupation, he owned around sixteen acres of land. As a member of a prominent Hindu organization, the entrepreneur was fairly active politically. He was also a member of the governing council of a local school. The entrepreneur was well known in the village for his ability to mix with people and take business risks.

Prior to his involvement with Drishtee both as an entrepreneur and *VBCP*, he had dabbled in couple of ventures including farming capsicum and tomato. His immediate family consisted of his mother, two younger brothers, wife and two children. He managed the daily operations of the kiosks with the help of his two younger brothers.

The *Patel Drishtee Soochna Kendra* was located in a rented shop at the market and was adjacent to the telephone exchange, and the two bank branches. The kiosk actually consisted of three small adjacent shops. The main shop housed the computer and other equipment. The generator was kept inside the shop on the left. The shop on the right was the small classroom for the 'theory' classes. Other shops in the lane included a tailor shop, the welder and iron works man. A running *verandah* in front of the shops created a common space – people came and sat, waited for their turn, read newspaper and sometimes studied.

Pattern of access and use

The three most popular[6] services were digital passport photography, digital photostat and checking examination results on the Internet, availed by 61, 41 and 27 percent of households in the sample (see Table 7.2) While the first two services were available all the year round, the third one was seasonal, peaking only once or twice times in a year. Remaining services had been availed by less than 20 per cent of the households in the sample. E-Governance at Kesarpur was mainly sale of photostat copies of applications and forms of various welfare schemes. Computer education consisted of training modules provided by Drishtee and taught by a local college-going student. Soil testing was one agriculture extension service provided by private fertilizer companies seeking to expand their market reach. Internet was accessed only for obtaining examination results, otherwise even casual browsing was limited. Services under the other category include sale of inverter batteries, books, and insurance. The two popular services were offline, localized services with almost no direct contact between customers and computers or the Internet.

While the percentage of households in each class availing services like photo, photocopy and soil testing was comparable for the first three socio-economic categories, it was slightly more for the group with high socio-economic status. Households with low socio-economic status had bought forms related to schemes like old-age and widow pension; those with middle socio-economic status had bought application forms for vacancies in government like para-teachers. The rich did not avail any e-Governance

Table 7.2 Distribution of households by socio-economic status, number and type of services

Particular	**Socio-economic status of households**				
Number of services	**Low (N1 = 20)**	**Low-middle (N2 = 12)**	**Middle (N3 = 21)**	**High (N4 = 13)**	**Total (N = 66)**
0	10	4	5	1	20
	(50)	(33)	(24)	(8)	(30)
1	4	1	7	2	14
	(20)	(8)	(33)	(15)	(21)
2	2	2	0	3	7
	(10)	(17)	(0)	(23)	(11)
>2	4	5	9	7	25
	(20)	(42)	(43)	(54)	(38)
%User household	50%	67%	76%	92%	70%
Service availed	**Low (N1 = 20)**	**Low-middle (N2 = 12)**	**Middle (N3 = 21)**	**High (N4 = 13)**	**Total (N = 66)**
Digital photograph	10	8	11	11	40
	(50)	(67)	(52)	(85)	(61)
Digital photostat	6	5	7	9	27
	(30)	(42)	(33)	(69)	(41)
Examination results	0	3	10	5	18
	(0)	(25)	(48)	(38)	(27)
Government forms	4	2	6	–	12
	(20)	(17)	(29)		(18)
Soil testing	1	3	4	3	11
	(5)	(25)	(19)	(23)	(17)
Computer education	–	2	4	2	8
		(17)	(19)	(15)	(12)
Others	–	1	4	3	8
		(8)	(19)	(23)	(12)

Note: (a) per cent User household is the percentage of households in each socio-economic category who have availed at least one service at the kiosk, (b) Figure in parentheses is in percentage of the number of households in respective category.

service. Only one household with low socio-economic status had availed education related services like computer training and examination results. Thus, while households belonging to all socio-economic categories availed some services at the kiosk, the usage pattern differed across services. Of the 66 households in the sample, 46 households or around 70 per cent had availed atleast one service at the kiosk. The percentage of user households in each of the four classes – low, low-middle, middle and high socio-economic status was 50, 67, 76 and 92 respectively.

Of the 20 households that had not availed any services at the kiosk, 10 belonged to low socio-economic category. Nineteen households either did not posses any land or owned less than 2.5 acres. The percentage of user households among landless was 50 and thereafter it was 68, 83, 100 and 100 for marginal, small, middle and big farmers respectively. Examining further, the percentage of user households among those with least asset index is 38, almost half of the other groups and indicating that households with less assets access and use telecentres less than others (see Table 7.3).

Table 7.3 Distribution of households by asset index, number and type of services

Particulars	**Asset index**						
Number of services	**0–2 (N1 = 4)**	**3–5 (N2 = 13)**	**6–8 (N3 = 10)**	**9–11 (N4 = 14)**	**12–14 (N5 = 10)**	**>14 (N6 = 15)**	**Total (N = 66)**
0	2	6	4	4	2	2	20
	(50)	(46)	(40)	(29)	(20)	(13)	(30)
1	0	2	3	3	3	3	14
		(15)	(30)	(21)	(30)	(20)	(21)
2	0	2	0	3	0	2	7
		(15)		(21)		(13)	(11)
>2	2	3	3	4	5	8	25
	(50)	(23)	(30)	(29)	(50)	(53)	(37)
%User household	50%	54%	60%	71%	80%	87%	70%
Service availed	**0–2 (N1 = 4)**	**3–5 (N2 = 13)**	**6–8 (N3 = 10)**	**9–11 (N4 = 14)**	**12–14 (N5 = 10)**	**>14 (N6 = 15)**	**Total (N = 66)**
Digital photograph	2 (50)	7 (54)	5 (50)	10 (71)	5 (50)	11 (73)	40 (61)
Digital photostat	2 (50)	3 (23)	3 (30)	6 (43)	3 (30)	10 (67)	27 (41)
Examination results	0	1 (8)	1 (10)	3 (21)	7 (70)	6 (40)	18 (27)
Government forms	2 (50)	1 (8)	1 (10)	3 (21)	2 (20)	3 (20)	12 (18)
Soil testing	0	2 (15)	2 (20)	2 (14)	2 (20)	3 (20)	11 (17)
Computer education	0	2 (15)	0	1 (7)	2 (20)	3 (20)	8 (12)
Others	0	1 (8)	1 (10)	1 (7)	2 (20)	4 (27)	8 (12)

Note: See Table 7.2.

Occupation, caste and religion were the three important indicators of the socio-economic status of a household. Farmers constitute one dominant occupational group availing service at the kiosk. Soil testing, being a farmer centric service had been availed primarily by households headed by farmers or have farming as main household occupation. Except for carpenters and masons, all other occupational categories have availed some services at the kiosk (see Table 7.4). Passport photo and photostat were the most common as they were required for opening bank account, availing loans, filling forms for study, job applications, welfare schemes etc.

All the three households belonging to the forward castes had availed atleast one service at the kiosk (see Table 7.5). The percentage of user households among the other two caste categories was comparable at around 67–8 per cent. However, there was much variation between the two religious communities. Around 90 per cent of the Hindu OBC households had availed atleast one service at the kiosk, but it was only 40 per cent for the Muslim OBC households.

The pattern can be partly explained by the occupational characteristics of the two communities. Hindus were primarily farmers who availed agriculture loan from the bank or credit societies. To do so, they required passport size photo and photostat of documents; the two main services available at the Drishtee kiosk. On the other hand, Muslim households were primarily engaged in *Zari*/*Zardozi* related work. The majority of them worked as *karigars* or embroiders for the large business houses and did not necessarily avail loan from formal sources. Households headed by housewives and government employee had availed atleast one service at the kiosk.

The educational status of the households was examined in terms of both the education of the head of the household and highest education in the family. While in as many as 22 households, the head of the family was illiterate, only in eight households the highest educational status was zero. With more schools within the village and improved road connectivity to nearby senior schools and colleges, the educational statuses of households had improved through successive generations.[7] As the educational status increased, there was an increase in the percentage of user households (see Tables 7.6 and 7.7). However, education was not appear to be necessary for availing services like photo, photostat and buying application forms. Unlike computer education, where the student was directly using the computer, these services did not require the customer to actually use the computer or Internet.

Table 7.4 Distribution of households by primary occupation, number and type of services

Particulars	Occupation of the head of the household						
Number of Services	**Petty trade carpenter/mason/ driver (N1 = 11)**	**Daily wage labour (N2 = 11)**	**Businessman (N3 = 16)**	**Farmers (N4 = 20)**	**Government service (N5 = 3)**	**Others (N6 = 5)**	**Total (N = 66)**
0	8	5	5	2	0	0	20
	(73)	(45)	(31)	(10)			(30)
1	2	2	5	4	0	1	14
	(18)	(18)	(31)	(20)		(20)	(21)
2	0	1	1	4	0	1	7
		(9)	(6)	(20)		(20)	(11)
>2	1	3	5	10	3	3	25
	(9)	(27)	(31)	(50)	(100)	(60)	(37)
%User household	27%	55	69	90	100	71	70
Service availed	**Petty trade carpenter/mason/ driver (N1 = 11)**	**Daily wage labour (N2 = 11)**	**Businessman (N3 = 16)**	**Farmers (N4 = 20)**	**Government service (N5 = 3)**	**Others (N6 = 5)**	**Total (N = 66)**
Digital photograph	3	6	8	15	3	5	40
		(55)	(50)	(75)	(100)	(71)	(61)
Digital photostat	1	4	6	10	3	3	27
		(36)	(38)	(50)	(100)	(43)	(41)
Examination results	1	–	6	8	2	1	27
			(38)	(40)	(67)	(14)	(41)
Government forms	0	2	3	3	1	3	12
		(18)	(19)	(15)	(33)	(43)	(18)
Soil testing	0	0	0	9	0	2	11
							(17)
Computer education	0	1	2	3	1	1	8
		(9)	(13)	(15)	(33)	(33)	(12)
Others	–	–	1	6	1	–	8
			(6)	(30)	(33)		(12)

Note: See Table 7.2.

Table 7.5 Distribution of households by religion, caste category, number and type of services

Particulars	**Religion and caste category**				
		Hindus (NA = 44)		**Muslims (NB = 22)**	
Number of services	**General (N1 = 3)**	**OBC (N2 = 29)**	**SC (N3 = 12)**	**OBC (N4 = 22)**	**Total (N=66)**
0	–	3	4	13	20
		(10)	(33)	(49)	(30)
1	–	4	4	6	14
		(14)	(33)	(27)	(21)
2	1	3	2	1	7
	(33)	(10)	(17)	(5)	(11)
>2	2	19	2	2	25
	(67)	(66)	(17)	(9)	(37)
%User household	100%	90%	67%	41%	70%
Service availed	**General (N1 = 3)**	**OBC (N2 = 29)**	**SC (N3 = 12)**	**OBC (N4 = 22)**	**Total (N=66)**
Digital photograph	3	23	8	6	40
	(100)	(79)	(67)	(27)	(61)
Digital photostat	3	18	4	2	27
	(100)	(62)	(33)	(9)	(41)
Examination results	1	14	–	3	27
	(33)	(48)		(17)	(41)
Government forms	–	10	2	–	12
		(34)	(17)		(18)
Soil testing	–	11	–	–	11
		(38)			(17)
Computer education	–	5	–	3	8
		(17)		(17)	(12)
Others	1	6	–	1	8
	(33)	(21)		(5)	(12)

Note: See Table 7.2.

In sum, at the Drishtee kiosk at Kesarpur, photo and photography were the two services availed by households belonging to all socio-economic categories. e-Governance services were availed primarily by households belonging to low and middle class, albeit for different purpose. The poor had primarily brought forms for applying in welfare schemes, while the other groups for job applications. As expected, service like soil testing was primarily availed by households with main occupation related to

agriculture. An eclectic group of students from varied socio-economic backgrounds availed computer education. The only common factor was that the member availing computer education was a graduate or post-graduate. Otherwise, the educational status of the household did not appear to not play much role in access and use of services, since they were either mediated or offline.

Further, physical access to the telecentre was not denied because a person belongs to a particular caste or religion category. While individuals accessing the kiosk belong to all age groups, women users were very less. Women belonging to both the communities usually visited the kiosk when it is absolutely necessary for them e.g. to have a photograph for becoming a member of an SHG. For services like education, that requires the individual to spend some time at the telecentre, only two girls related to the kiosk owner had enrolled as students.

Discussion

At Kesarpur, households belonging to all socio-economic categories had availed services at the kiosk. However, there was some variation in number and type of services availed by different groups. Households belonging to all class categories had availed generic services like digital photo and photocopy. It is also because the Drishtee kiosk was the only shop in and around the village providing these two services. People belonging to all socio-economic categories need photographs to open bank account, avail loans, fill forms for study, job applications, apply for ration card, scholarships etc. Similarly for photocopy, the presence of banks in the vicinity, the propensity of the local people to form self-help groups and start borrowing-lending etc. were some of the contextual level characteristics generating the demand for these two services. While services like e-governance had been availed primarily by the poor, those with higher socio-economic status had availed services like computer education, insurance and examination results on the web. The percentage of user households in the low socio-economic category was comparatively less than the other higher categories.

At Kesarpur, while caste and religion did play a strong role in the socio-economic, cultural and political interactions within the village, social access to the telecentre was not denied to because he/she belonged to a particular caste or religion.[8] Households belonging to all castes accessed the telecentre and its services, though the percentage of user households among scheduled castes, and dalits was comparatively

Table 7.6 Distribution of household by education of the head of household and services

No of services	Education of head of the household							
	0 (N1 = 22)	**1–5 (N2 = 8)**	**6–8 (N3 = 13)**	**9–10 (N4 = 9)**	**11–12 (N4 = 6)**	**Graduate (N5 = 4)**	**PG& Other (N6 = 4)**	**Total (N = 66)**
0	11	2	3	3	1	0	0	20
	(50)	(25)	(23)	(33)	(17)			(30)
1	4	3	1	2	2	0	2	14
	(18)	(38)	(8)	(22)	(33)		(50)	(21)
2	1	1	2	1	1	0	1	7
	(5)	(13)	(15)	(11)	(17)		(25)	(11)
>2	6	2	7	3	2	4	1	25
	(27)	(25)	(54)	(33)	(33)	(100)	(25)	(37)
%User HH	50%	75%	78%	67%	83%	100%	100%	20
								(30)
Service availed	**0 (N1 = 22)**	**1–5 (N2 = 8)**	**6–8 (N3 = 13)**	**9–10 (N4 = 9)**	**11–12 (N4 = 6)**	**Graduate (N5 = 4)**	**PG& Other (N6 = 4)**	**Total (N = 66)**
Digital photograph	9	5	9	5	5	4	3	40
	(41)	(63)	(69)	(56)	(83)	(100)	(75)	(61)
Digital photostat	5	3	8	3	3	4	1	27
	(23)	(38)	(62)	(33)	(50)	(100)	(25)	(41)
Examination results	3	0	7	2	1	3	2	27
	(17)		(54)	(22)	(17)	(75)	(50)	(41)
Government forms	5	0	3	2	0	2	0	12
	(23)		(23)	(22)		(50)		(18)
Soil testing	3	1	3	1	0	2	1	11
	(17)	(13)	(23)	(11)		(50)	(25)	(17)
Computer education	2	1	2	0	0	3	0	8
	(9)	(13)	(15)			(75)		(12)
Others	–	2	1	1	1	2	1	8
		(25)	(8)	(11)	(17)	(50)	(25)	(12)

Note: See Table 7.2.

Table 7.7 Distribution of household by highest education and services

No of services	Highest education							
	0 (N1=8)	**1–5 (N2=7)**	**6–8 (N3=8)**	**9–10 (N3=10)**	**11–12 (N4=10)**	**Graduate (N5=12)**	**PG (N6=11)**	**Total (N6=66)**
0	5	5	4	3	2	0	1	20
	(63)	(71)	(50)	(30)	(20)		(9)	(30)
1	1	1	2	2	4	0	4	14
	(13)	(14)	(25)	(20)	(40)		(36)	(21)
2	0	1	0	2	2	1	1	7
		(14)		(20)	(20)	(8)	(9)	(11)
>2	2	0	2	3	2	11	5	25
	(25)		(25)	(30)	(20)	(92)	(45)	(37)
%User households	38%	29%	50%	70%	80%	100	91%	70
Service availed	**0 (N1=8)**	**1–5 (N2=7)**	**6–8 (N3=8)**	**9–10 (N3=10)**	**11–12 (N4=10)**	**Graduate (N5=12)**	**PG (N6=11)**	**Total (N6=66)**
Digital photograph	3	2	4	6	6	12	7	40
	(38)	(29)	(50)	(60)	(60)	(100)	(64)	(61)
Digital photostat	2	1	2	4	4	9	5	27
	(25)	(14)	(25)	(40)	(40)	(75)	(45)	(41)
Examination results	0	0	1	1	3	7	6	18
			(13)	(10)	(30)	(58)	(55)	(41)
Government forms	2	0	2	1	1	5	1	12
	(25)		(25)	(10)	(10)	(42)	(9)	(18)
Soil testing	–	–	1	4	5	1	–	11
			(13)	(40)	(50)	(8)		(17)
Computer education	–	–		–	–	6	2	8
						(50)	(18)	(12)
Others	–	–		1	1	4	2	8
				(10)	(10)	(33)	(18)	(12)

Note: See Table 7.2.

less than the OBCs and General. And the percentage of Muslim households availing services at the kiosk was comparatively less than Hindu households. This study disagrees with the findings of the existing literature indicating that caste and religion acts as a social barrier. Neither did the kiosk owner discriminate against people belonging to some castes, nor did people belonging to particular caste communities self-excluded themselves or felt hesitant to access a kiosk located in an area occupied by other caste communities. This can be attributed to the entrepreneurial nature of the kiosk, its location in the village and the type of services available at the telecentre.

The Drishtee kiosk at Kesarpur was an entrepreneur-based, for-profit entity that functioned just like any other business venture in the market place. In order to remain financially sustainable, it needs to earn revenues by catering to as many clients as possible. Hence, it catered to all its customers irrespective of their socio-economic backgrounds. Further, the kiosk was located in a busy market place, next to public spaces like nationalized banks and it focussed on services like photo and photocopy. The socio-economic status, occupation, caste, religion, institutional and political affiliations, gender, age and educational status of the kiosk entrepreneur and other intermediateries did not appear to play any role in the pattern of access and use by the households staying in Kesarpur because these services did not require prolonged interaction with the kiosk operator and spending much time inside the telecentre. Most activities related to the kiosk happened on the common corridor in front of the kiosk – it was the waiting space for the customers, it served as a studio for taking photographs. At Kesarpur, caste and religion was linked to the household occupation and the socio-economic status of the household and thus determining the need for particular services.

At the time of the study, Drishtee's aim was to *create and implement a sustainable, scalable platform of entrepreneurship for enabling the development of rural economy and society through the use of Information and Communications Technologies*. It envisaged that the ICT-enabled platform would be used by both public and private service providers for delivering various kinds of fee-based services to the rural population. The Drishtee model was thus oriented more towards provision of services than enabling communication or giving access to information via the Internet. The services popular at the Kesarpur kiosks were more localized, driven by the demand perceived by the kiosk entrepreneur within the village. The benefits of the Drishtee kiosk was primarily in terms of convenience and reduction in transaction cost provided by its services

like digital photo, photostat and checking of results on the Internet. No other shop provided these services in near vicinity or with reduced costs. People from within the village and nearby locations did not have to travel to the city to avail these services. However, it is difficult to ascertain the extent to which the reduction in travel time and other transaction/opportunity cost translated to savings to have a significant impact on the overall household income and consequently the well-being of the family. But it did generate some additional income and forms of engagement for the kiosk entrepreneur. Although Drishtee did pilot its initiatives in the areas of e-Health, e-Commerce, Agriculture Services and Computer Education, it met with little success in mainstreaming them.

The Drishtee kiosk at Kesarpur was one of the many information channels available in the village. In the village, television and radio were primarily used as source of entertainment whereas landline, mobile phone or public telephone booths were used for communication with relatives, friends and business associates. There was also a craze for reading newspapers. Few people actually bought the newspaper, but it was a fairly common practice to borrow and read, sometimes a day old newspaper also. Regarding computers and Internet, apart from the Drishtee kiosk, there was just one more house that had both. At the institutional level, there were computers in only one school and one bank. The *panchayat* was not yet computerized and none of the related officials were aware of any possibility in the near future.

While there was no big hospital in the village, health facilities at Kesarpur were fairly adequate. There was a primary health centre within the village that also catered to the nearby villages. The village had around seven-trained midwives in the village. Further, medical practioners of modern and alternate medicine had shops in the village since the establishment costs were low. Quacks, especially dentists also had makeshift shops in the marketplace. People with money and easy facility of travel usually preferred to consult their doctor in Bareilly for big and small health related issues. Thus, Drishtee's telemedicine project using tablet PCs did not become very popular because of the presence of multiple alternatives providing face-to-face consultations and lack of incentives for the various stakeholders like doctors, midwives, Kiosk entrepreneur and network orchestrator.

Similar lack of institutional linkage was also observed in case of the e-Commerce and agriculture extension. The telecentre was not part of the existing and established value chain, or other institutions related to the *Zari* business. It thus made it difficult for the network orchestrator to

source patterns and designs that were often intellectual property of the business and fashion houses located in big cities. Further, there were no mechanisms that ensured that when the customer selects a design over the Internet, the corresponding embroiderer would get work. Moreover, landline and mobile phones were the common and preferred mode of one-to-one communication between businessmen and their clients.

About agriculture-related services also, the kiosk did not procure or sell. It just acted as a facilitator for other private companies dealing with agricultural equipments and fertilizers. These companies availed the platform provided by the network orchestrator to conduct meetings in the village. Some farmers felt it was a positive outcome of having the kiosk in the village. They were able to know about particular products and more importantly, such meetings became an occasion for the farmers to come together and exchange notes. Thus, information was exchanged though not by surfing the Internet. However, the farmers were sceptical about the motives of the private firms in making particular recommendations.

For some services like education, the inclination and constraints of the kiosk owner determine their popularity. Computer education was conducted only for two batches, although students came from very eclectic background in terms of class, caste, community, and occupation. The only common factor was that all of them were at least graduates and perceived that if not at present, computers would advance their career or business in some ways in future. The other common factor was that they all personally knew the kiosk entrepreneur and could be coaxed by him to at least try out a new service. After the two batches got over, the kiosk owner himself became disinterested in the service. Compared to other kinds of services, education requires more time, effort, patience and coordination. Further, revenue had to be shared with both with the network orchestrator and the teacher, making the cost high and hence no takers in the village. Also, the unpredictability and almost non-availability of electricity forced the use of generators, at least for the "practical" classes, increasing the cost of delivery. Also because of proximity to a big town with fairly good road connectivity, students from the village preferred to commute regularly and study at bigger and more popular training centres.

Thus, on the whole the efficacy of the telecentre initiative in generating new jobs in rural areas, increasing efficiency and reach of e-Governance and other basic services, enhancing livelihoods and well-being of the people, and overcoming the rural-urban divide was limited. Further, the findings of the study indicate that although households belonging to all socio-economic categories access some service at the kiosk, the

percentage of households with asset base below a certain threshold are less frequent users. Similarly, only around 50 per cent of those without land have availed at least one service. At Kesarpur, a household which cannot access credit or loans from formal sources, has no land or ration card, cannot participate in any welfare scheme, or is not sending the children to school, has no reason to visit the kiosk even for services like photograph or photostat. Findings from the study of this micro-context indicate that when people are excluded from mainstream process of development, they in general have no need to access and use services provided at the telecentre.

8
Pattern of Access and Use

The case studies on the telecentres located at Ariyallur in Kerala, Pimpri Buti in Maharashtra, and Kesarpur in Uttar Pradesh examined the pattern of access and use of the telecentre and their services by households belonging to different socio-economic groups within the village. This chapter presents the comparative analysis of the case studies based on the conceptual framework described in Chapter 4. The purpose of the comparison is to identify the similarities and differences in the pattern of access and use of three different types of telecentres embedded in three different contexts. And thereby draw some insights about their possible developmental implications.

The macro policy environment

The macro context is taken as the policy environment related to telecentres at international, national and sub-national levels and shaped by various governmental and non-governmental agencies. Broadly, they set the directions of the developmental programmes, influence issues like research and development of technology, provision of funds, etc. The response at the national and state levels to the macro policy environment, especially in terms of allocated resources, programmes or projects and other support also influences how the telecentres are deployed in rural areas. Policies effecting the deployment and operations of telecentres in rural areas can be broadly categorized into two groups: (a) those related directly to ICT-D and telecentres, and (b) policies in areas like health, and education that indirectly shape access and use of services provided by the telecentres. Policies and plans of the various agencies with regard to ICT-D in general and telecentres in particular are often set against the backdrop of the overall developmental context of the states.

The three states of Kerala, Maharashtra and Uttar Pradesh (UP) vary in their basic demographic characteristics (see Table 8.1). Kerala is the smallest state with regard to both, area and population. But it has the highest population density. It is known for its achievements in terms of development indicators, especially near-universal literacy and a low rural-urban disparity. The developmental outcomes of the state are often attributed to the presence of rural-urban continuum, targeted state policy and action, caste-based and other people's movement, predominance of local governance, action of missionaries and other groups (Ramachandran, 1997). The state of Maharashtra is known for its achievements in the economic sphere but lags behind Kerala in social and developmental indicators. In contrast Uttar Pradesh lags behind both the states in both economic and social development.

At the time of this study, all the three states had released at least two IT policies. The IT policies of Maharashtra and UP were based on the framework proposed by the national IT policy and focused primarily on the promotion of the IT/ITeS industry. Comparatively, the IT policies of Kerala had balanced emphasis on promotion of IT/ITES industry and on application of the technology in other sectoral areas like education. eGovernance had also been a key focus area in Kerala under the assumption that deployment of the technology in the government department would generate demand and hence spur the IT/ITeS industry and also the state's economy.

Thus, of all the three telecentre initiatives, only Akshaya telecentres in Kerala had explicit linkages with the external macro-policy

Table 8.1 Demography of Kerala, Maharashtra and Uttar Pradesh

Sl. No.	Particular	Kerala	Maharashtra	Uttar Pradesh
1	Area (sq. kms)	38,863	307,577	240,928
2	Total Population	31,838,619	96,752,247	166,052,859
	Rural	23,571,484	55,732,513	131,540,230
	Urban	8,267,135	41,019,734	34,512,629
4	Population density	819	315	689
5	Sex Ratio	1058	874	879
6	Literacy rate	90.9	86.3	57.4
	Rural	90.0	70.8	70.2
	Urban	93.3	85.8	43.0
7	HDI (1991)	3	15	31
	Rural	1	16	31
	Urban	9	21	32
8	GDI (1991)	2	15	31

Source: Government of India, 2001; Government of India, 2002.

environment.[1] The Akshaya project was part of Kerala's Modernization Government Programme (MGP), and the local self-government bodies in the district played an important role in identifying the entrepreneurs, interviewing them, monitoring them during the e-literacy campaign and later putting proposals for imparting computer education to the weaker sections through the Akshaya e-Kendra.

In contrast, the deployment of e-Choupals in Maharashtra did not have any explicit linkages with any ICT-D related policies of the state. However, non-IT related policies like the Agriculture Produce Marketing and Control (APMC) act, the minimum support price (MSP) of agriculture commodities, and security permissions for setting up VSATs in remote locations were some of the ways in which state policies affected their deployment and use.

Similarly the Drishtee kiosks in UP also did not have any linkages with state policies or agencies, even though e-governance services was an important component of the basket of services provided by them. Based on their earlier experiences in working with government agencies, Drishtee followed a different strategy – they worked simultaneously on setting up kiosks in the rural areas and negotiating with the state for e-Governance services. As and when the state government or any other agency responsible for providing e-Governance service started their services, Drishtee linked to the kiosks. However, they did sensitize their kiosk entrepreneurs to the concept of e-Governance during their training. Thus at Kesarpur, the kiosk operator already had some idea about e-Governance as selling forms, and since his kiosk was frequented by potential beneficiaries of various government schemes for both digital photograph and photocopy; he sold forms for widow pension and old-age pension when the scheme was floated by the *panchayat*.

Telecentre model and initiatives

All the three initiatives were entrepreneur-oriented telecentre model, though their main characteristics differed. In the case of Akshaya and Drishtee, private entrepreneurs made all the initial investments for setting up the kiosk. But in case of e-Choupal, ITC-ABD bore the cost of equipment and installation, the village entrepreneur only had to provide for the physical space and pay for the operational expenses. Thus, technically, ITC-ABD was the owner of the kiosk but generating revenue from the kiosk depended on the enterprise of the kiosk owner. Network orchestrators for Akshaya and Drishtee were a government agency and a private limited company respectively.

The purpose of the three models was also different. ITC-ABD's e-Choupal was setup primarily to consolidate the procurement chain of agricultural commodities traded or required as raw material for ITC's other companies. Akshaya was conceptualized as a front-end delivery point for e-Governance and other services and aimed toward bridging the digital divide by addressing the issues of access and skills. At the time of the study Drishtee's objective was to create a common platform for delivery of public and private services through kiosks.

Accordingly, the technology used and the services offered through the kiosk were also different. At Pimpri Buti, ITC deployed VSAT technology and a computer along with solar power charged battery backups. While the basic information about the procurement price could be conveyed using a telephone mobile phone, lack of connectivity was a reason for selecting VSAT. The investment in such infrastructure also conveyed the seriousness of the organization for a long-term relationship with the village.

At Kesarpur, Drishtee left it to the kiosk owner to decide on the technology for connectivity. Drishtee's basket of services contained both online and offline services. The services were designed such that dependency on Internet was less. The network orchestrator however did provide the computer and other peripherals for setting up the kiosk Connectivity at Akshaya e-Kendras in Malappuram district was provided through wireless networking. However, during subsequent scaling up of the project to other district, the network orchestrator left the choice for the Internet technology to the kiosk entrepreneur. The network orchestrator also specified the number and configuration of computers that were installed in an Akshaya e-Kendra along with guidelines for their arrangement inside the kiosk.

In the case of e-Choupals, the main service was dissemination of information regarding the procurement price of soya and other commodities and the subsequent procurement of the commodities at their nearest hub. Other services included agriculture extension, product retail and at some places it facilitated computer-based tuitions. The other two models offered a basket of services-education, e-Governance, bill payment, insurance, etc. The popularity of particular service(s) at different locations depended on the local demand and the inclination of the kiosk owner to cater to that demand.

Village characteristics

Village characteristics set the immediate context within which the telecentres were located. Among the three, Ariyallur in Malappuram district of Kerala with 3536 households and population of 18,987 was

the largest village population-wise. With an area of 11.89 square kilometres, its density of population was also very high. Comparatively, the population density of Pimpri Buti in Maharashtra was very low. The village had an area of 569 square kilometres and population of 1343 in 292 households. Kesarpur in Uttar Pradesh had an area of 90.25 square kilometres and population of 3771 in 586 households. The sex-ratio in Ariyallur, Pimpri Buti and Kesarpur was 1072, 913 and 874 respectively (Government of India, 2001).

At the time of the study, the three locations had considerable variation in the availability and quality of physical infrastructure. The main approach roads to all the three villages were paved metallic roads. While the settlement pattern in Ariyallur was dispersed and non-clustered, it was clustered in both Pimpri Buti and Kesarpur. In Kesarpur, there were separate localities for different caste and religious communities. No such segregation was observed in Pimpri Buti, though tribals lived mainly on the fringes of the village. The internal lanes and by lanes at Pimpri Buti and Kesarpur were laid with bricks, stone or concrete.

Ariyallur, located on the main national highway, had good transport facilities connecting it to almost all nearby villages and towns. The nearest big town connected to the national railway network was about six kilometers away. Kesarpur and Pimpri Buti were both agrarian villages, away from the main highway. However, transportation facilities in Kesarpur were better than Pimpri Buti. Shared auto and busses to the nearest town of Bareilly, about 12 kilometres away was available with reasonable frequency. In contrast, the frequency of both public and private transport from Pimpri Buti to the nearest city of Yavatmal was very poor. At Kesarpur and Pimpri Buti, motorcycles were very popular among those who could afford. In sum, transport and communication linkages was good in Kerala, it was easily available in Kesarpur but was most constrained in the rural and remotely located Pimpri Buti.

Availability of electricity varied across the four locations. At Ariyallur the frequency of power cuts was very less, once in a week and that that too for not more than two hours. At Pimpri Buti power cuts were scheduled; there would be no electricity for 12 hours daily. At Kesarpur, electricity was available only for a day during the entire fieldwork duration. Normally, power cuts were more frequent during the summer months, but the situation improved only marginally during other months. People in Pimpri Buti and Kesarpur had adjusted their routine according to the availability of electricity.

With regard to telecommunication facilities, Pimpri Buti in Maharashtra was comparatively more disadvantaged than the other two villages.

Pimpri Buti had no telephone exchange, the number of landline connection was not more than 20, there was no cellular service available and only one public telephone was located inside the *panchayat* building that was mostly closed. In Pimri Buti, only channels broadcast by Doordarshan were available, though five–six houses had direct-to-home cable TV connections. FM radio channels were available and very popular. The only computer with Internet connection was at the village e-Choupal.

Kesarpur and Ariyallur both had a small telephone exchange within the village and the number of landline connections in Kesarpur was around 30 and there were more in Ariyallur. Public telephone booths were very common in these two villages. Both the villages did not have any cellular service provider within the village, but signals were available for some mobile services. Radio with FM channels was common, so were newspapers. Cable TV was also common in Ariyallur. Because of near non-availability of electricity in Kesarpur, every evening people watched television or movies on DVD by using inverter batteries, which were charged during the day thru generators by paying a sum starting at 10 rupees per hour. In Ariyallur, although household ownership of computers was still less, computers with Internet connection were common in schools, banks, *panchayat* and other government offices, Akshaya e-Kendras and some shops. Comparatively, in Kesarpur computers were visible only at the banks and in one school.

There was much variation in the occupational characteristics of the three villages. In Ariyallur, primary occupation of the households was in secondary and tertiary sectors. There was also a predominance of emigration, with members from both communities going abroad for employment. The number of households engaged in traditional areas of fishing and farming were decreasing. Pimpri Buti and Kesarpur were primarily agrarian villages. While soya, wheat and cotton were the main crops grown in Pimpri Buti, in Kesarpur they were wheat, rice and sugarcane. Cultivation in Pimpri Buti was done the traditional way with bullocks, etc., while use of tractors and other modern implements were quite common in Kesarpur. In Kesarpur, almost half of the population, belonging to the Muslim community was engaged in non-agriculture based occupations, specifically in *zari/zardozi* business. Further, members from all households headed by farmers were either employed in salaried jobs or engaged in some business.

Ariyallur was a heterogeneous village, with people from all castes and religious communities staying. OBCs from both Hindu and Muslim communities formed a dominant group. The differences in the socio-economic status of the households were primarily due to occupational

characteristics. Otherwise, there was not much difference among different groups with regards to general amenities and access to basic services. While caste played a role in household issues like marriages and religious festivals, caste-based interactions between individuals was not so visible in day-to-day public transactions. Interactions between both religious communities were cordial.

At Pimpri Buti, Hindus and tribals formed the two dominant groups. Among the Hindus, households belonging to all caste categories were present but there was only one household belonging to Scheduled Caste category. Households belonging to upper-caste categories were dominant because of their affluence and higher educational status. With few exceptions, the socio-economic status of tribal households was poorer than those belonging to OBCs and upper caste categories. Like Ariyallur, Kesarpur was also a heterogeneous village but households belonging to different caste and religion stayed in different clusters within the village. Social interactions between Hindus and Muslims were limited, although economic and business related transactions were common and frequent. OBCs from both the religious groups dominated by numbers, upper caste households by affluence and others like SC and dalits for their political importance.

Women's access to education, work and employment, and general mobility differed across the locations. At Ariyallur, women had almost equal access to education and in general were more educated than men, although the percentage of working women did not appear to be correspondingly high. At Pimpri Buti, girls rarely studied beyond seventh standard, the highest class available in the village primary school. They helped with the household work and also worked in the fields. At Kesarpur, the educational status of women varied across communities. While those from the Hindu community had access to education, Muslim women rarely had any formal schooling. Only few women belonging to affluent families studied through correspondence. While mobility of Muslim women was severely restricted in Kesarpur, they formed an important workforce for home-based *Zari/zardozi* embroidery units.

Institutional characteristics varied across the three locations. The presence of formal institutions like crèche, schools, colleges, health centre, post office, *panchayat*, SHGs etc. and informal institutions like clubs and associations were highest and visible in Ariyallur. Kesarpur also had large number of formal and informal institutions. While it had lot of big and small health-related facilities available, it did not have any institutions for higher education. Pimpri Buti had the least number of formal institutions located in the village. Some institutions like bank and local

mandi's were located in the nearby big village, around 5 kms away. But most formal institutions, health and educational facilities were located about 20 kilometres away in the district town of Yavatmal.

Telecentre in the village

The telecentre located in the village inherits both the characteristics of the model, especially in terms of ownership, technology and services, and also of the village. Location of the telecentre within the village often determines the ease of physical access to the kiosk and its visibility. Further, the locality of the telecentre and its neighbourhood can either facilitate or hinder access to certain groups or communities, especially women. The ambiance played a role when the service availed by the people required them to spend some time in the telecentre as in computer training and browsing. In this case, concerns of safety and privacy were also important. For services like photostat, digital photography, etc., where the customer did not have to spend time in the kiosk other than the waiting period, concerns related to structuring of access becomes secondary. Intermediaries at the telecentre include the kiosk owner/operator and others helping in managing and running the telecentre.

The Akshaya e-Kendra was located on the first floor of a shopping complex in the market place. On the ground floor was a departmental store selling a range of products including cosmetics, stationary, utensils, FMCG goods, etc. Other buildings and shops in the nearby vicinity were of assorted kind – cinema hall, banks, vegetable vendors, bakeries, cloth merchants, PCO booth, medicine shop, etc. Being on the main road very near to the bus station, and at a visible location, the centre was easily accessible by people from near and far. Because of its reputation both in terms of teachers and safety, the centre was a fairly busy one with a large number of female students. Moreover it was the only shop in the nearby vicinity that had a photocopy machine. The arrangement of computers and seats within the shop was according to what was prescribed by the Akshaya management. All computer monitors were placed in such a manner that whatever was on the screen could be seen by all and monitored by the kiosk operator. The arrangement of computers were in the form of a training centre – on both sides of the wall and adjacent to each other. Such an arrangement did not give any privacy to people who wanted to chat or communicate. There was another small room separated from the main room by a wooden screen. It was usually used as a small classroom for conducting theory classes.

The e-Choupal at Pimpri Buti was located in the drawing room of the *sanchalak*'s house on the main approach road to the village. It was a small room, with the computer located at a corner. The two most popular services viz. price discovery and selling of soya did not actually require people to enter the house. However, as a couple of farmers and even the kiosk operator admitted that being located in a house, men were usually hesitant to enter, since women would sometimes be obliged to serve water/tea, etc. They would have preferred a more official location. This was also a reason why farmers did not access web in general. Children and young boys coming for the tuitions did not feel any such hesitancy, although the *sanchalak*'s wife and father sometime scolded them for making noise and touching household items. Also, when there were too many students at the same time, some classes were conducted in a separate room located on the first floor. The Drishtee kiosk was located in a shopping complex in the busy market place. It actually consisted of three small shops. The one in its middle housed the equipment. The one on its left served as a classroom. The room was very small and rarely used. The two batches of computer classes were conducted on the long running verandah outside the shops. The third shop housed the generator. The most popular services at the kiosk were digital photography and photocopy, for which the customers were not required to enter inside the telecentre.

Intermediaries at the telecentre included the kiosk owner/operator and others helping in managing and running the telecentre. As mentioned before, while the dominant users of the kiosk at each location had socio-economic status similar to that of the kiosk owner, access to the telecentre was not denied to anyone because of class, caste or religion. Educational qualification, age and gender of the kiosk owner and other intermediaries shaped access and use of the telecentre for certain type of services.

The entrepreneurs at all the three locations belonged to the middle socio-economic category, the dominant caste category and religious community. At Pimpri, the entrepreneur was a 54-year-old farmer. He had studied up to std VIII and was involved with the water cooperative in the village. In addition, there were three instructors for the education initiative. All the three instructors were young boys around 25 years old, had studied in the city, were post-graduates and took classes in the schools in the neighbouring village. They were instrumental in convincing and coaxing parents to send their children for the classes and took the responsibility of developing the local content. Since they were known as good teachers, parents after being convinced about the benefits of the classes did not have much problem in sending their children, especially in groups.

The entrepreneur at the Ariyallur Akshaya e-Kendra was technically qualified female with wide experience in teaching. Her training in computers helped her to deliver better in classes and for that large number of students came from other parts of the *panchayat* also. Access and use of telecentre by young girls and women was often attributed to the female entrepreneur and staff. However, a greater role was played by the father of the entrepreneur who actually managed the day-to-day activities of the centre. He was well known and well regarded in the area. Guardians of the students feel assured that he would keep an eye on the activities at the telecentre. However, because of the presence of a large number of females, young men other than family friends and acquaintances did not come.[2] The number of male students and users increased when the younger brother of the entrepreneur was around.

At Kesarpur, the kiosk entrepreneur was a 31-year-old male, graduate farmer owning 16 acres of land. The younger brothers of the entrepreneur also managed the telecentre. Since the nature of service provided by the telecentre did not require prolonged interaction with the kiosk operator and spending much time inside the telecentre, age, education, gender and occupation of the intermediary did not play much role, even in access and use of telecentre by women.

Pattern of access and use by households

For the purpose of cross-case analysis, the services available at any of the three telecentres were grouped into six broad categories:

a. Education: There were three different types of education related services provided by the kiosks. The first one was e-literacy (e-Lit) provided only at Akshaya e-Kendras in Kerala. It sought to impart basic functional skills through a 15-day course to at least one member of each household living in the catchment area. The second type of service was computer education (C-Edu) that imparted training and aimed towards building basic and advanced computing/programming skills. This service was available at Ariyallur and Kesarpur. At e-Choupal, education as a service was available in the form of the use of the computer for giving tuitions (e-Tut) that complemented the school curriculum.
b. Browsing: included services like web-browsing, email, voice/video chat, etc., where the user actually browses the Internet. This category also included access to online results of classes X and XII availed by students and their guardians at Kesarpur's Drishtee Soochna Kendra.

c. Utilities (Util): Services like digital passport photo (Photo) at Kesarpur, and photostat (Photostat) at Ariyallur and Kesarpur come under this category. At Ariyallur, photostat was a non-Akshaya service. It was not part of the service provided by the network orchestrator, but was provided through a separate photocopying machine. However, at Kesarpur, it was a part of the basket of services provided by the network orchestrator since the multi-functional device was part of the equipment installed at the kiosk.
d. e-Governance (eGov): Although online payment of bills (e-Pay) at Akshaya e-Kendra was essentially a utility service, it was categorized as an e-Governance because the facility was provided through a gateway developed by the state. e-governance services also include sale of widow, old age pension and *shikshamitr* forms at Kesarpur (Forms).
e. Agriculture: Agriculture-related service include dissemination of price information (Price), procurement of commodity like Soya (Soya) and other extension services like soil testing and queries. The first two services were available only at the e-Choupal in Maharashtra, whereas the last service was available both in Maharashtra and UP.
f. Other: Other services include a mix of miscellaneous services like job work, DTP services, selling of FMCG products, insurance and inverter batteries etc.

All the three telecentre initiatives – Akshaya, e-Choupal and Drishtee – provided a basket of services, but individual entrepreneurs at the three locations focused only on one or two services. The three most popular services at the Akshaya e-Kendra at Ariyallur, Kerala were e-Literacy, Computer Education and Bill Payment availed by 61 per cent, 50 per cent and 26 per cent of the respondent households (See Table 8.2). At the e-Choupal in Pimpri Buti, Maharashtra, the services were price information, procurement of soya, e-Tuitions availed by 65 per cent, 43 per cent and 40 per cent of the respondent households. While at the Drishtee kiosk in Kesarpur, the most popular services were Photo, Photocopy and Online examination results considered by 61 per cent, 41 per cent and 27 per cent of the respondent households respectively. Thus the most popular services at three locations were availed by around sixty percent of the respondent households.

While the most popular service at Drishtee kiosk was a generic one of digital passport photographs, at the other two locations they were the core services of the particular telecentre initiatives. However, the two services – e-Literacy and Price differed in an important aspect. e-literacy at Akshaya was a one-time service, delivered in a mission mode by the

Table 8.2 Distribution of households by services

Services	Akshaya e-Kendra, Ariyallur, Kerala (N=107)	e-Choupal, Pimpri Buti, Maharashtra (N=81)	Drishtee Kiosk, Kesarpur, UP (N=61)
Education	–	–	–
e-Literacy	65 (61)	–	–
Computer education	53 (50)	–	8 (12)
e-Tuitions	–	32 (40)	–
Browsing	17 (16)	–	18 (27)
Utilities	–	–	–
Photo	–	–	40 (61)
Photostat	17 (16)	–	27 (41)
e-Governance	–	–	–
Forms	–	–	12 (18)
e-Pay	28 (26)	–	–
Agriculture	–	–	–
Price info	–	53 (65)	–
Procurement	–	35 (43)	–
AgriExten	–	4 (5)	11 (17)
Others	22 (21)	12 (15)	8 (12)

network orchestrator and the individual kiosk entrepreneurs at the start of the initiative. Once all households within the district were covered, the service was discontinued. Whereas dissemination of procurement price through e-Choupal was the primary service delivered through the kiosk, albeit only during the procurement season.

Socio-economic status of the households

Sixty-two households constituting around 24 per cent of the 254 respondent households belonged to the low socio-economic category. The corresponding figures for low-middle, middle and high were 64 (25 per cent), 89 (35 per cent) and 39 (15 per cent) respectively (see Table 8.3).

Sixty-six per cent of the households with low socio-economic status availed at least one service at the kiosks (See Table 8.4). In other words, 34 per cent of such households did not avail any service at the telecentre. Similarly, no service was availed by 19 per cent, 10 per cent, and 15 per cent of households from low-middle, middle and high socio-economic categories respectively. While the percentage of user households belonging to the three higher socio-economic categories ranged around eighty per cent, households with low socio-economic status also availed services at the telecentres, albeit less.

Table 8.3 Distribution of households by socio-economic status

Location	Socio-economic status				
	Low	**Low-middle**	**Middle**	**High**	**Total**
Ariyallur	24 (22)	26 (24)	42 (39)	15 (14)	107 (100)
Pimpri	18 (22)	26 (32)	26 (32)	11 (14)	81 (100)
Kesarpur	20 (30)	12 (18)	21 (32)	13 (20)	66 (100)
Total	**62 (24)**	**64 (25)**	**89 (35)**	**39 (15)**	**254 (100)**

Note: Figures in parentheses are the percentage of respective row total.

Table 8.4 Distribution of households by socio-economic status, number and type of services

Particular	Socio-economic status of households				
No of services	**Low (N=62)**	**Low-middle (N=64)**	**Middle (N=89)**	**High (N=39)**	**Total (N=254)**
0	21	12	9	6	48
	(34)	(19)	(11)	(15)	(19)
1	19	18	29	9	75
	(31)	(28)	(33)	(23)	(30)
2	16	18	19	7	60
	(26)	(28)	(21)	(18)	(24)
>2	6	16	32	17	71
	(10)	(25)	(36)	(44)	(28)
%User household	66%	81%	89%	85%	81%
Service availed	**Low (N=62)**	**Low-middle (N=64)**	**Middle (N=89)**	**High (N=39)**	**Total (N=254)**
e-literacy	17	15	28	5	65
Computer education	4	18	30	9	61
Tuitions	6	11	11	4	32
Internet access	–	4	21	10	35
e-Governance	4	6	25	4	40
Utility (photostat)	6	9	16	13	44
Utility (photo)	10	8	11	11	40
Price	7	18	19	9	53
Soya	5	11	13	6	35
Agri-extension	1	3	6	5	15
Others	9	2	3	1	15

Note: (a) Per cent User household is the percentage of households in each socio-economic category who have availed at least one service at the kiosk, (b) Figure in parantheses is in percentage of the number of households in respective category.

From the bouquet of services provided by the telecentres at each of the locations, some services were availed by households belonging to all socio-economic categories, others primarily by those belonging to higher socio-economic categories and some by households belonging to low socio-economic category.

The services accessed by households across socio-economic groups include price related information and e-tuitions at Pimpri Buti. Even though not all farmers actually went and sold their produce at the nearest ITC-ABD hub, they did keep track of the latest procurement price of soya at the village e-Choupal. With the introduction of e-tuitions at the kiosk at a very nominal fee, children from poor households also came because the tuitions complemented the teachings of the village primary school. Some of these households otherwise had no reason to be engaged with the telecentre. At Kesarpur, the kiosk was the only shop providing the photo and photocopy services in the vicinity of banks that gave loans to individuals, farmers and self-help groups. Thus people from all socio-economic backgrounds wanting to open bank accounts or apply for loans or ration cards or jobs availed the services at the Drishtee kiosk. At Ariyallur, seventeen households out of 62 (27 per cent) from low socio-economic category availed the e-literacy service. While this figure was comparable to 23 per cent and 31 per cent of households belonging to low-middle and middle socio-economic categories, it was much higher than that of 13 per cent of households with high SES.

The demand for services cutting across different socioeconomic groups were primarily generated by some local contextual characteristics, for example, occupational need, presence of supporting/complementing channel, state interventions, etc. Most of these services did not require people to actually handle a computer or access the Internet. On the other hand services like computer education, web- browsing, Internet-based transactions depended on the socio-economic status and were linked to need, opportunity, motivation, resource, and capabilities of the household. The users of these services, often belonging to higher socio-economic categories, physically came to the telecentre and used the computer on their own.

Thus, households from all socio-economic categories accessed and used the telecentre and its services. But there was variation in the number and kinds of services availed. At an aggregate, access and use of telecentre and its services by households with low socio-economic status was comparatively less (both in terms of percentage of user households and number of services) than the other three groups. However, there was variation across the three locations in this pattern also (See Table 8.5).

Table 8.5 Socio-economic status and percentage of user households

Socio-economic status	User households (%)			
	Ariyallur	**PimpriButi**	**Kesarpur**	**Average**
Low	79	67	50	66
Low-middle	88	81	67	81
Middle	100	85	76	90
High	73	91	92	85
Average	**89**	**80**	**70**	**81**

In Kerala, while households belonging to low-middle and middle socio-economic categories were more active users, the percentage of user households among low and high socio-economic categories were almost comparable. In the two agrarian villages, Pimpri Buti and Kesarpur, percentage of user households among higher socio-economic categories was more than the lower ones. This indicates that the overall development context of Kerala, with specific interventions and subsidies by the state, seem to be enabling access by lower socio-economic groups. The government, especially the local bodies played a role in the conceptualization, implementation and monitoring of Akshaya's e-literacy programme. Further, even for services like computer training programmes, the local *panchayat* floated special drives for the deprived castes and classes. Thomas (2006) has also made similar observation on the role of the overall development context in wider diffusion and adoption of technology in Kerala. In sum, the findings corroborates with the studies indicating that the users of the telecentre often belong to the affluent, socially and economically advanced communities (Jafri et al., 2002; Kiri and Menon, 2006; Kumar and Best, 2006a). However, it qualifies the finding by putting forth that poor also access some services.

Occupation

Occupation of the head of the household and other members was an important indicator of the socio-economic status of the household. Among the 254 respondent households, 85 households were headed by farmers. Depending on the size of their landholding, these households were distributed across the four socio-economic categories. While households headed by daily wage workers, fishermen, and petty traders had either low or low-middle socio-economic status, households headed by businessmen, government or private sector employee and professional primarily belonged to either middle or high socio-economic categories.

The occupational category 'Others' include households headed by women, most often housewives in Kerala. The socio-economic categories of these households were determined by the occupation of the main earning member of the family.

The percentage of user households among petty traders and daily wage workers was 57 per cent and 68 per cent respectively; much less than that of households headed by government employee (100 per cent), farmers (91 per cent) or professionals (88 per cent) (See Table 8.6). But like households headed by government employees, households headed by petty traders and daily wage workers have availed almost all types of education and utility services at Akshaya e-Kendra in Ariyallur and Drishtee kiosk in Kesarpur. At the e-Choupal in Pimpri Buti, five households headed by daily wage workers availed computer-based tuitions as compared to only one household that made inquiries about the procurement price of soya.

Courses on application of computers were available at Akshaya e-Kendra and Drishtee kiosk. Of the sixty one households availing this service, only eight belonged to Kesarpur and the remaining to Ariyallur. Computer education and training was available at the telecentres in Ariyallur, Kerala and Kesarpur, UP. Because of infrastructural constraints and personal inclination of the kiosk entrepreneur, computer education was offered only once at the Drishtee kiosk and eight students were enrolled at that time. All the students were young graduates and acquaintance of the kiosk owner. All the remaining 53 households were in Kerala belonging to households across different occupational categories.

Similarly, members from at least one household from all occupational categories attended the 15-day e-literacy programme at the Akshaya e-Kendra. However, subsequent enrollment in other computer training courses or use of other telecentre-based services by households headed by fishermen or petty traders was much less than others. Although in the case of fishermen, the households had links with self-help groups anchored at the Akshaya e-Kendra. Similarly the use of Internet-based communication by households having members abroad was much below expectation, apparently because of issues related to convenience and privacy. Utility services like photo and photostat was also availed by households across different occupational categories.

However, access and use of e-governance services was more nuanced. At Akshaya e-Kendra, the main e-governance service was payment of utility bills. Households headed by government employee, professionals, businessmen and housewives were the main users. Often members from

Table 8.6 Distribution of households by primary occupation of the head of the household, number and type of services availed

Particular	**Primary occupation of the head of the household**									
No of services	**Daily Wage (N1 = 40)**	**Fishermen (N2 = 10)**	**Petty Trade (N3 = 30)**	**Farmer (N4 = 85)**	**Gulf (N5 = 8)**	**Govt. (N = 26)**	**Prof. (N = 8)**	**Business (N = 21)**	**Others (N = 26)**	**Total (N=254)**
0	13	2	13	8	2	0	1	6	3	48
1	14	2	11	18	4	7	1	8	10	75
2	6	5	3	28	1	8	1	1	7	60
>2	7	1	3	31	1	11	5	6	6	71
%User household	68%	80%	57%	91%	75%	100%	88%	71%	88%	81%
Service availed	**Daily Wage (N1 = 40)**	**Fishermen (N2 = 10)**	**Petty Trade (N3 = 30)**	**Farmer (N4 = 85)**	**Gulf (N5 = 8)**	**Govt. (N = 26)**	**Prof. (N = 8)**	**Business (N = 21)**	**Others (N = 26)**	**Total (N=254)**
e-literacy	13	8	6	2	4	14	6	1	11	65
Computer education	10	1	9	3	2	17	6	6	7	61
Tuitions	5	–	1	24	–	–	–	–	2	32
Internet access	2	–	2	9	1	8	2	6	5	35
e-Governance	5	–	1	7	1	13	3	4	6	40
Utility (photostat)	7	1	1	10	–	9	3	6	7	44
Utility (photo)	6	–	3	15	–	3	–	8	5	40
Price	1	–	1	50	–	–	–	–	1	53
Soya	–	–	–	35	–	–	–	–	–	35
Agri-extension	–	–	–	13	–	–	–	–	2	15
Others	2	5	–	2	1	1	1	–	3	15

Note: See Table 8.4.

these households came for other services like computer education and paid the bills at the same time. However, in case of Drishtee kiosk, the main e-governance service was a localized one i.e. sale of physical forms for employment and pension schemes. Applicants and beneficiaries buying the form often belonged to households with low socio-economic status. The e-Choupal at Pimpri Buti did not offer any e-governance service. Thus, the profile of the households availing e-governance services often depended on the kind of service actually being provided by the telecentre.

Thirty-five households or around 14 per cent of respondent households had availed some kind of Internet based service, often mediated by the kiosk entrepreneur. Around 15 of them belonged to Kesarpur and used the Internet only once in a year to check secondary or high secondary results. At Pimpri Buti, only the *sanchalak* and one of his friends regularly browsed the Internet for news. At Akshaya e-Kendra, students and others used the Internet for personal activities like email, chatting, job search and school assignments.

A strong association between occupation of the head of the household and service accessed at the telecentre could be observed at Pimpri Buti in Maharashtra. The village was an agrarian village with the occupation of the head of the household closely linked to agriculture. The e-Choupal was a farmer-centric telecentre initiative with price discovery and procurement of soya as main services. Hence, it is no coincidence that the dominant users were farmers. Farmers also formed the largest group of users availing services related to market linkages and agriculture extension. However, no such association was observed for Drishtee kiosk at Kesarpur. While farmers did form a large user base for Drishtee, the services accessed by them were generic one and not related to agriculture. Unlike e-Choupal, the telecentre initiative was not a farmer-focused one and the two main services of digital photography and photostat were availed by almost all occupational categories. Thus, within a village, the extent to which households with particular occupations access and use the telecentre depend on the match between services provided by the telecentre and the information or service needs related to the occupation.

Similarly, a strong association between specific occupation of the head and the services accessed by the household could not be observed at Kerala. This can be partly attributed to the fact that in Kerala one cannot observe strong association between specific occupations and socio-economic status. Households headed by both government employees and daily wage workers had access to education and came for computer

education and training as they perceived some future benefits. Thus, at Ariyallur, the lack of association between occupation and pattern of access and use was because of contextual village level characteristics; at Kesarpur in UP it was because of kiosk characteristics.

In sum, occupation appeared to influence the pattern of access and use in two interrelated ways: (a) it defined the need for particular information or services either directly or indirectly and (b) it defined the socio-economic status of a household; thus, their need for particular services and also their capabilities to use and benefit from the service. Directly occupation defines the information needs of the user,[3] job-related requirements to know basic skills of word processor, spreadsheets, accounting software and Internet-based communication. Future job aspirations also drive people to enroll themselves for learning about computers. Changes in occupational pattern across generations triggered aspirations for acquiring computing skills. Indirectly, the occupation of a particular family member plays a role in compelling other members to come in contact with the technology.[4]

Assets, amenities and items

No specific pattern of access and use can be discerned by considering household amenities and items. However they substantiates the findings with regard to the overall pattern i.e. the number of households with low asset index access and use the telecentre less when compared to other households with higher asset index.

Thus the percentage of user households among those with asset index between 0–2 is around 65 per cent (See Table 8.7). If a house does not have either electricity or telephone connection, it actually has no need for services like bill payment. Landless and agriculture labours had no interest in tracking procurement price over the Internet. Thus, for households with low socio-economic status, the need to access services was defined by the existing socio-economic condition. But, for the households belonging to the high socio-economic group, the perceived convenience and value of the service determined their usage. Among the 65 households who attended the e-literacy programme, as many as 46 (around 70 per cent) had asset index less than or equal to 11, indicating that participation of households with low-middle or middle socio-economic status was more. Comparatively, only 10 households with asset index more than 11 participated in the e-Literacy programme. A basic computer literacy skill subsidized by the state did not hold much value as they had or could avail opportunities to learn computing on their own.

Table 8.7 Distribution of households by asset index, number and type of services

Particular	**Asset index**							
No of services	**0–2 (N1 = 20)**	**3–5 (N2 = 47)**	**6–8 (N3 = 60)**	**9–11 (N4 = 54)**	**12–14 (N5 = 34)**	**>14 (N6 = 20)**	**NA (N7 = 19)**	**Total (N = 254)**
0	7	10	15	6	5	4	1	48
1	4	13	19	18	12	4	5	75
2	6	16	12	13	4	3	6	60
>2	3	8	14	17	13	9	7	71
%User household	65%	79%	75%	89%	85%	80%	95%	81%
Service availed	**0–2 (N1 = 20)**	**3–5 (N2 = 47)**	**6–8 (N3 = 60)**	**9–11 (N4 = 54)**	**12–14 (N5 = 34)**	**>14 (N6 = 20)**	**NA (N7 = 19)**	**Total (N = 254)**
e-literacy	1	13	14	18	8	2	9	65
Computer education	–	5	13	20	5	3	15	61
Tuitions	4	9	10	4	5	–	–	32
Internet access	–	2	2	12	8	6	5	35
e-Governance	2	2	3	14	7	3	9	40
Utility (photostat)	2	4	7	13	3	10	5	44
Utility (photo)	2	7	5	10	5	11	–	40
Price	6	12	18	8	8	1	–	53
Soya	6	7	12	4	6	–	–	35
Agri-extension	–	2	2	3	5	3	–	15
Others	1	8	1	2	1	2	–	15

Note: See Table 8.4.

Pimpri Buti and Kesarpur were both agrarian villages. Farmers with 3–10 acres of land were the most active users of e-Choupal services at Pimpri Buti. Many big farmers in Pimpri Buti found it more convenient to sell at home than at *mandi* or at e-Choupal. Comparatively, the proportion of farmers in Kesarpur, a village in transition was less, but here also farmers formed the largest group. But the services were less agriculture-centric and more related to utilities like photo and photocopy, often required for taking loan from the bank. Land is a determinant of the pattern of access and use to the extent that it is linked with the occupational needs of the household and a match exists between this need and the service provided by the kiosk.

Caste and religion

At all the three locations, while OBCs were the dominant caste in terms of population, households belonging to upper castes were generally affluent. While all the twenty six households belonging to the upper caste availed at least one service at the telecentres, the percentage of user households among ST, SC and OBC caste categories was 59 per cent, 77 per cent, and 81 per cent respectively (see Table 8.8).

ST/NT households were present only in Pimpri Buti at Maharashtra. Most tribals in the village were landless and worked as agriculture labours. The very few households headed by farmers enquired about the procurement price of soya at the e-Choupal and sold their produce at the ITC-ABD hub. A couple of them sent their children to tuitions. Households belonging to SC category in Ariyallur and Kesarpur availed almost all types of services at the telecentre. Among OBCs, there was much variation religion-wise. While the percentage of user households among Hindus was as high as 88 per cent, it was only 64 per cent for Muslims. Contextual level differences can be observed between Ariyallur and Kesarpur.

While at Ariyallur the percentage of user households among OBCs and SCs was more than 80 per cent, in Kesarpur it was around 68 per cent for OBCs and 67 per cent for SCs (see Table 8.9). Further, the percentage of user households among Muslims in Ariyallur was 81 per cent, it was only 40 per cent in Kesarpur. This broad-based pattern of access and use can be partly attributed to role of the larger development context in which the telecentres were embedded. In Kerala, there was not much difference among various caste and religious groups in terms of access to basic amenities and services like education and health. Further, the local panchayats floated schemes and sponsored training programmes at Akshaya for people belonging to SC category,

Table 8.8 Distribution of households by religion, caste category, number and type of services

Particular	Religion and caste category					
No of services	**Hindu**				**Muslim**	
	ST/NT (N3=17)	**General (N1=26)**	**SC (N2=26)**	**OBC (N4=132)**	**OBC (N5=53)**	**Total (N=254)**
0	7	–	6	16	19	48
1	6	4	11	36	18	75
2	3	5	4	36	12	60
>2	1	17	5	44	4	71
%User household	59%	100%	77%	88%	64%	81%
Service availed	**ST/NT (N3=17)**	**General (N1=26)**	**SC (N2=26)**	**OBC (N4=132)**	**OBC (N5=53)**	**Total (N=254)**
e-literacy	–	9	9	28	19	65
Computer education	–	12	7	33	9	61
Tuitions	3	5	–	24	–	32
Internet access	–	9	2	19	5	35
e-Governance	–	10	4	25	39	40
Utility (photostat)	–	12	7	23	2	44
Utility (photo)	–	3	8	23	6	40
Price	6	7	–	40	–	53
Soya	4	4	–	27	–	35
Agri-extension	1	1	–	13	–	15
Others	–	1	–	3	11	15

Note: See Table 8.4.

Table 8.9 Percentage of user households by caste, religion and location

Particular	Ariyallur	PimpriButi	Kesarpur	Average
		Caste category		
General	100	100	100	100
OBC	87	85	68	80
SC	86	–	67	77
ST	–	58	–	58
		Religion		
Hindu	92	93	84	90
Muslim	81	–	40	61
Tribals	–	58	–	58

especially the women. In contrast, the Drishtee kiosk was by and large a stand-alone venture and the few households belonging to Muslim and SC categories generally availed services as per their current and future occupational needs.

Thus, in villages where there were households belonging to different religious groups, members from both communities accessed the telecentre, albeit with some variation depending on the occupational need, socio-economic status, education, etc. In villages dominated by single religious community, the dominant users belonged to that particular community. Caste and religion influenced the pattern of access and use to the extent that they defined the occupational pattern, existing socio-economic conditions and consequently the need for telecentre based services.

Education

Education has been often linked with the people's ability to learn computing skills and also access content on the Internet. In order to examine the linkages between education and pattern of access and use, the study looked at two parameters: (a) education of the head of the household and (b) highest education in the household. Both were considered in terms of the number of years of formal schooling/college. Education of the user played a role for services like computer education or web browsing, where the individual actually worked on the computer on his/her own. But for services like digital photography, bill payment, photocopy, etc. the educational status of the head of the household or the member accessing the telecentre played was not essential (see Table 8.10). Access was mediated or the service or its delivery was structured in a manner that did not require reading, writing or computing skills. At an e-Choupal, the *sanchalak* received information regarding prices from the Internet and pasted it on the board outside, where it became public knowledge. Anybody could read the price or get it read by a friend or a child. The farmers did not actually log on to the Internet to access the information. Thus, the extent to which low educational status of a household became barrier for availing a particular service depended on how it was structured.

Institutional and political affiliation

While political affiliations of the household appeared to have minimal influence, the larger institutional context of the village did shape the pattern of access and use by giving necessary legitimacy to the kiosk for services like e-Governance, generating demand and awareness, and

Table 8.10 Distribution of households by education of the head of household, number and type of services

Particular	Education of the head of the household							
No of services	**Illiterate (N1=46)**	**Primary (N2=49)**	**Upper primary (N3=48)**	**Secondary (N4=59)**	**High secondary (N5=17)**	**Graduate & above (N6=22)**	**NA (N7=13)**	**Total (N=254)**
0	19	9	6	8	3	1	2	48
1	9	22	9	18	7	5	5	75
2	12	10	13	16	4	5	–	60
>2	6	8	20	17	3	11	6	71
%User household	59%	82%	88%	86%	82%	95%	85%	81%
Service availed	**Illiterate (N1=46)**	**Primary (N2=49)**	**Upper primary (N3=48)**	**Secondary (N4=59)**	**High secondary (N5=17)**	**Graduate & above (N6=22)**	**NA (N7=13)**	**Total (N=254)**
e-literacy	9	14	9	20	2	8	3	65
Computer education	3	5	13	19	3	13	5	61
Tuitions	–	10	12	8	1	–	1	32
Internet access	3	2	9	7	1	10	3	35
e-Governance	5	1	8	13	1	9	3	40
Utility (photostat)	6	5	9	9	3	9	3	44
Utility (photo)	9	5	9	5	5	6	1	40
Price	5	11	15	14	4	1	3	53
Soya	4	7	9	8	3	1	3	35
Agri-extension	3	2	5	2	–	3	–	15
Others	6	4	1	2	1	1	–	15

Note: See Table 8.4.

facilitating social access. For example, in Kerala, *panchayats* played a role in deployment of telecentres and subsequently as a monitoring agency. At the local level, such institutional linkages with the *panchayat* helped in building legitimacy and trust among people. Further, SHGs and other clubs with large organizational base like Kudumshree in Kerala played the role in generating awareness and facilitating access, especially of the women. Whenever Akshaya carried out any campaign, it also disseminated the news through the Kudumshree linkages. The *panchayat* also used such channels for reaching out to the different groups and individuals. Thus, membership in this type of institution enabled many households to know about Akshaya and special programmes launched by them from time to time.

Formal institutions also played another important role i.e. in generating the local demand for particular services at the telecentres. Examples of such institutions are *mandis* and schools. Almost all farmers need to interact with the *mandi* and a particular need is the information regarding procurement price of soya. e-Choupal fulfilled this particular need. Non-farmers rarely used this particular service. Introduction of computers as a subject, and application of computers for school administration generated the demand for computer course for school going students. In Pimpri Buti school-going kids derived value from services like computer-aided tuitions.

Discussion

The comparative analysis of the patterns of access and use across the three locations affirms that in a particular village, access and use of telecentre and its services varies across different socio-economic groups (class, occupation, caste, religion, education and political and institutional affiliation). Households belonging to all socio-economic categories accessed and used the telecentre and its services. However, access and use by those with low socio-economic status was comparatively less (both in terms of the percentage of user households and number of services availed) than the other three socio-economic categories. While households headed by farmers and those employed in government or private services accessed more than other occupational categories, a clear association between the occupation of the head of the household and the pattern of use can be observed only in case of Maharashtra where there was a match between the occupational pattern and the services provided by the kiosk. The percentage of user households among SC, and ST was comparatively less than OBCs and General. While as many

as 86 per cent of Hindus accessed at least one service at the telecentre, the corresponding figures were only around 59 per cent for tribals and 64 per cent for Muslim. Services like computer education and web browsing were accessed more by households with higher educational status. But lack of literacy was not a barrier to access and use of many other services. Although no specific pattern could be observed with regard to institutional and political affiliation of the households, these two parameters did facilitate awareness and access at some locations. Based on the comparative analysis of the three case studies, the next chapter makes an attempt to draw some implications for telecentre and development.

9
Developmental Implications

This study is an attempt to contribute to the emerging body of literature investigating the socio-economic change brought about by telecentres in the villages and their larger development implications. Faced with the methodological challenge of observing, measuring and establishing a causal link between provision of ICTs and specific development outcomes, this study focuses on examining the pattern of access and use of the telecentre and its services by households belonging to different socio-economic groups in the village. The approach is based on two assumptions: (a) provision of access and capabilities to use the technology was a prerequisite to impact and (b) access to technology and its appropriation was differentiated across different socio-economic groups in the village. An examination of access and use of telecentre and its services can give an indication of the possible impact on different socio-economic groups and consequently on the village as a whole. Further, developmental implications of telecentres in rural India are drawn by juxtaposing the findings from the case studies against the larger discourse on telecentres and development. This concluding chapter discusses the key findings and their implications for policy, practice and research.

Key findings and discussion

The three case studies reveal that the most popular service was availed by around 61–5 per cent of the respondent households. At an aggregate, access and use of telecentre and its services by households with low socio-economic status was comparatively less (both in terms of percentage of user households, and number and kind of services availed) than the other three groups. While, some services like e-literacy in

Kerala, price discovery and e-tuitions in Maharashtra, digital photo and photocopy in Uttar Pradesh were accessed by households across different socio-economic classes, others (like computer education and web browsing) were accessed by households belonging primarily to the higher socio-economic groups. Existing studies have indicated that telecentre users often belong to the affluent, socially and economically advanced communities (Jafri et al., 2002; Kiri & Menon, 2006; Kumar & Best, 2006a). This study qualifies such observations by its finding that poor also access some services at the telecentres.

Services accessed by all socio-economic groups were generated by some local contextual characteristics, for example, occupational need, presence of supporting/complementing channel, and state interventions. Services like digital photography, bill payment, photocopy, etc., did not require people to actually operate a computer or use the Internet because access was mediated and/or the service delivery was structured in a manner, which did not require reading, writing, or computing skills. On the other side services like computer education, web-browsing, Internet-based transactions were often linked to not only the need, but also opportunity, motivation, resources, and capabilities of the households. The users in such cases physically accessed the telecentre and operated the computer and Internet. An implication of this finding is that access, use and consequently the benefits can accrue to households with low educational attainments. It thus challenges the notion put forth by many studies that illiteracy or lack of awareness, education or basic computing skills acts as a barrier to telecentre access and use.

However, education as a contextual village level feature did appear to play a role in the wider diffusion and adoption of new technologies. The literacy level at Ariyallur in Kerala (and also in Kanodar, Gujarat) was much higher than the other two villages in Maharashtra and Uttar Pradesh. This can be attributed to the presence of many educational institutions in nearby vicinity. The educational institutions were gradually incorporating computers and their applications in their curriculum and also in administration. Within the village, there was also wider use of computers in small establishments like chemists, hospitals, shops etc. The aspirational aspect associated with knowledge of computers, as a stepping stone to better job prospects appeared to be spurring demand for services (like computer education, accounting packages and Internet browsing), that require people to actually operate the computer.

Further findings of the study indicate that households with higher socio-economic status had the tendency to access services that were transactional in nature and were not provided by any other channels in

the village. For example, at Kesarpur in UP, the Drishtee kiosk was the only shop providing services like digital photography and photocopying in the near vicinity. Both rich and poor frequented the kiosk for these services. At Pimpri Buti in Maharashtra, big farmers kept track of the procurement prices at the e-Choupal, but often sold their produce at the local *mandi* or bargained with the private trader at home. Households belonging to the lower-middle or middle socio-economic categories accessed services like computer education. But, given alternatives like Internet browsing at home, sending children to nearby villages for education, enrolling them for 'recognized' courses in the city, etc., they did not necessarily availed similar services at the village telecentre. While the rich self-excluded themselves when they had other alternatives, the poor got excluded because of lack of institutional membership, basic capabilities or resources. For example, at Kesarpur, a household which was not eligible to access loans from formal sources, or had no land or ration card, or was not sending the children to school, had no reason to visit the kiosk even for services like passport size photograph or photocopy.

Recent studies on telecentres in rural India have put forth that caste can act as a social barrier when the kiosk owner discriminates against people belonging to some particular castes. Or in some cases, people belonging to particular caste communities self-exclude themselves or feel hesitant to access a kiosk located in an area occupied by other caste communities (Kumar & Best, 2006a, 2006b). A key finding of this study is that households belonging to all castes and religion accessed the telecentre and its services, though at places the percentage of user households among Muslims, scheduled castes and tribes was comparatively less than the OBCs and upper caste. While caste and religion did play a strong role in the socio-economic, cultural and political interactions within the village, access to the telecentre was not denied to anybody on the basis of either caste or religion. This can be attributed to the fact that at all the three locations, the kiosk was an enterprise based model. The revenue earned by the kiosk owner depended on the number of customers it served. It thus functioned as an economic entity and like any other business served all its customers.

However, caste and religion as contextual characteristics did shape the pattern of access and use of the telecentre thru their linkages with occupation and changes in the occupational pattern across generations. Traditionally, the occupational characteristics in Indian villages are closely associated with caste and religion. If the services provided by the telecentre catered to the information needs of the particular

occupations, households belonging to caste and religion associated with the occupation availed services. For example, in Pimpri Buti in Maharashtra was a traditional agrarian village with occupational characteristics of households revolving around agriculture and allied activities. The occupation of the head and other members of the household closely reflected the caste-occupation nexus. Most farmers belonged to either upper caste or OBC categories and very few belonged to tribal communities. Since e-Choupal catered mainly to farmers, the occupational characteristics along with caste/religion category was reflected in the pattern of access and use. But, on the other hand at Kesarpur in UP, the Drishtee kiosk was in no way linked to the information needs of the local Muslim artisans engaged in activities related to traditional embroidery, hence the number of users among Muslim households was comparatively less. However, the generic services like digital photo and photocopy and education-related services did cater to the need of educated Muslim youths.

Slightly different observations can be made for Ariyallur in Kerala where except for few traditional occupations like fishermen, the traditional caste-religion-occupation linkages were on wane. This can also be attributed to factors like near equitable access to education, connectivity and migration, political empowerment of people and also state support for welfare programmes. There was a strong preference among households belonging to all religious communities for a salaried employment in India or abroad. In the scenario of changing occupational preferences, education along with basic computational skills was often looked upon as ways of getting better employment opportunities and maybe increases in the socio-economic status. Hence for the popular services at the Akshaya e-Kendra like education or utility services like bill payment, no specific association between occupation or caste and pattern of access and use could be seen. The study would put forth that caste and religion as a determinant of occupation and hence the socio-economic status defines the need for particular services at the telecentre. If the telecentre caters to those requirements, households avail the services at the village telecentre. Lastly, although no specific pattern could be observed with regard to institutional and political affiliation of the households, the institutional context and political characteristics gave legitimacy to the telecentre for services like e-Governance, generating awareness and demand, and facilitating social access.

The characteristics of the telecentre model and the particular telecentre initiative shaped pattern of access and use by defining the ownership of kiosk, the services provided and their delivery structure.

Ownership of kiosk with private entrepreneurs partially explains an important finding of the study that social access to the kiosk was not denied to any person belonging to particular class, caste, or religion. In order to generate revenue, entrepreneurs catered to all their customers irrespective of their socio-economic background. Availability of services for meaningful engagement, user fee, and requirement of reading and computing skills further shaped access and use by different groups.

Services available at the kiosks were a mix of both – services designed and provided by the network orchestrator and services introduced by the kiosk entrepreneur on his/her own often catering to local demand. The delivery structure of the services was a combination of purpose, ownership of kiosks, technology dependence, revenue scheme, location of kiosk, and the capacity of the kiosk owner to provide the service. At Ariyallur in Kerala, the fees for some services like state sponsored computer training programme or bill payment were decided by the *panchayat* or network orchestrator. But the kiosk owner entrepreneurs did not have share revenues with the network orchestrator. Moreover, for many others localized services like photocopying, jobwork etc. the kiosk owner decided the user fee. Similarly at Pimpri Buti, the entrepreneur did not have to share any revenue with ITC-ABD. The core services of price discovery and procurement of soya were free. And the fee for e-tuitions was very nominal and locally decided. At Kesarpur, for some services like certified computer course, the kiosk owner had to share the revenue with the network orchestrator. This acted as a disincentive for him to provide such services since the demand was not enough and he also had to engage and pay salary to a computer teacher.

Depending on the type of service, factors like the location of the kiosk, gender, age and education of the kiosk entrepreneur and other intermediaries played a role in shaping access and use, especially by women. These factors played a minimal role when the service provided at the telecentre did not require prolonged interaction with the kiosk operator and/or spending much time inside the telecentre. For example, women accessed services at the Drishtee kiosk only occasionally when they required passport-size photograph or some photocopy. At Pimpri Buti in Maharashtra, women did not generally access the telecentre because of the lack of relevant services for 'meaningful engagement'. They became aware about the e-Choupal in the village, only after their children started going there for tuitions and many were still unaware of its other services.

Further, the capability of the kiosk entrepreneur to provide certain services was closely related to available physical infrastructure. The

pattern of access and use was shaped by the extent to which the services required electricity or internet connectivity, the revenue generated by the service, and the way the kiosk owner was managing their availability. Electricity and Internet connectivity was important services like online bill payment, web browsing, photocopying etc. At Kesarpur, non-availability of electricity for long hours increased the cost of delivery of some services. Depending on the urgency of the customer for a photocopy or photo, the kiosk owner used the generator and hence increased the cost of providing service. Poor availability of electricity was also a reason for his disinclination to start computer training classes. At Pimpri Buti in Maharashtra, while electricity was available in the form of solar-charged battery backup, the kiosk entrepreneur always has the alternative of calling the ITC-ABD hub to know the procurement price and display it on the wall outside. The service was not dependent on either electricity or internet connectivity. At Kesarpur, Internet connectivity was very critical for seven days in a year, when students came to check their board examination results; the other popular services did not require internet connectivity.

The extent to which roads and transport facilities shaped pattern of access and use depended on the service, presence of alternate channels providing the same service, and the cost versus quality provided by the two channels. At Ariyallur, the Akshaya e-Kendra was known for providing good computer training and education. Hence, good roads and transport services facilitated physical access to the telecentre, especially of women from nearby places. On the other hand, at Kesarpur good connectivity to the nearest city decreased the demand for services like education as students preferred to go to bigger, better and 'recognized' training centres. However, for utilities like digital photo and photocopy, the kiosk was definitely more convenient and time saving. At Pimpri Buti, both the road and transport facilities to the nearest city were comparatively poor, thus children and their parents staying in their village welcomed the education initiative.

Thus, while household characteristics and contextual factors do play a role in the access and use of telecentres, the characteristics of the telecentre model and particular telecentre initiative also play a role in facilitating or hindering access. Particularly, the services and the format in which they are delivered hold relevance and value for many households. The challenges for the telecentre initiatives lie in matching the services with the actual demand and managing the contextual constraints including designing appropriate incentives for the village level entrepreneurs.

Developmental implications of telecentres

Driven primarily by agencies (both Indian and foreign) each with their own purpose, priorities and pre-designed set of services, telecentres have been envisaged to bring about socio-cultural and economic development, and governance reforms. This section makes an attempt to draw developmental implications of telecentres by juxtaposing insights from the study of pattern of access and use of telecentre against the larger discourse on telecentres and development.

Telecentres and access to new technologies

The telecentre in places like Pimpri Buti in Maharashtra provided the first opportunity to the villagers to interact with new technologies like computer and the Internet. In Pimpri Buti, there were only 25 landline connections, no public telephone booths, no mobile connectivity or electricity for most of the time. With the deployment of the e-Choupal in the village, an infrastructure for connectivity was created in the village. Although not many farmers were actually going and selling at the e-Choupal hub in Yavatmal, and very few were physically using the computer and the Internet, the deployment of e-Choupal at Pimpri did enable a mainstream technology to reach a rural location, albeit not serving much beyond the purpose set by ITC-ABD.

The investment in technology made by the company primarily communicated the seriousness of ITC-ABD's intentions as an organization for long-term association with the farmers.

Compared to Pimpri Buti, people at Ariyallur and Kesarpur had been exposed to new technologies before as computers were installed in local institutions like banks and schools. At Kesarpur, the technology enabled availability of services within the village, for which people would otherwise travel far. Akshaya provided people belonging to all socio-economic groups to physically use computer at least once. For the district as a whole, a huge infrastructure for wireless connectivity was created, which was used also being by police and some government institutions. However, further research is required to understand the overall spillover effects of the connectivity infrastructure.

Telecentres, information exchange and dissemination

While, telecentres gave people at the respective locations an exposure to the latest technologies, the use of the technologies in general was less, especially for accessing, exchanging and dissemination of information. At Kanodar in Gujarat, while online communication for personal

purpose was immensely popular, not many accessed the Internet for information related to their occupation, business, government services or for any other purpose.

The e-Choupal was conceptualized as a platform similar to a physical *Choupal* in the village. The Hindi word *Choupal* is often associated as a place for information exchange and dissemination. It often conjures the image of a big tree, an elevated platform where all the elders of the village, mostly men sit and talk during afternoons and evenings. It is a place where all the *panchayat* meetings are held, and collective decisions are supposedly taken. e-Choupal sought to be a platform where the information exchange and dissemination would take place virtually. But at Pimpri Buti, apart from the kiosk entrepreneur and his friend who regularly browsed the site of a newspaper in local language, no other farmer actually sat at the computer and accessed the Internet. Static information regarding agricultural practices, etc., was not considered novel by them. The one critical information regarding price was available offline to them. Moreover, only limited number of websites, as decided by ITC-ABD was available for browsing.

In Kerala, the local print media and television in a way fulfilled all the 'information needs' of the people; Internet surfing for information was primarily by students working on their school and college projects. Some sought specific information on Gulf jobs, etc. At Kesarpur, Internet access was almost negligible apart from looking at online results of the board examination. Although an agrarian village, nobody actually checked the latest price on the Internet having doubts with regard to their validity, correctness and relevance in the local market.

Telecentres and online communication

The pilot study of Chiraag Banas kiosk at Kanodar in Gujarat and Akshaya e-Kendra at Ariyallur in Kerala provides interesting insights about popularity of online communication. Even though the district of Malappuram was known for high incidence of emigration, and one of the stated objectives of Akshaya was to enable low-cost communication channels, it was observed that unlike in Kanodar, households in Ariyallur, Kerala with members abroad rarely used the telecentre services.

At Kanodar in Gujarat, voice and video chat over the Internet were the two popular services with value propositions of cost saving, i.e. spending less for more talk. Video chatting had the additional novelty value that one could see the person on the other side, and there were examples of father seeing his child for the first time only over the Internet. Since both the entrepreneur and husband had gone through a similar experience of

staying abroad, they understood the demand and the customer requirements. Also, the people who migrated abroad were skilled workers often engaged in professions that provided them the capability, resource and skills to engage in Internet-based communication services.

At the time of the study in Kerala, officials attributed the low use of Internet-based communication in rural areas to the delay in making available the Internet connectivity. However, there are multiple reasons for the low use of Internet. While envisaging the Internet as a low-cost alternative to telephone, the assumption was made that the family member staying in the Gulf countries already has the required skills and opportunities (time, money and a computer) to access the Internet. However, people from Malappuram were mainly employed either as unskilled or semi-skilled workers, with little or no access to computers/Internet and often without the required capabilities to use Internet for communication.

There are cultural barriers also. Internet-based communication has an edge when voice and video chat is used. However, as we see in Kerala, in order to curb abuse of the Internet and ensure that the place was safe for women, KSITM had laid down certain guidelines, such as all the monitors should be visible to everyone, no cabins, etc. Further the computers were usually placed just adjacent to one another. Not only women, in general people were hesitant to have personnel conversation, especially voice and video chat, in such a public places. Entrepreneurs also discouraged voice chat, as it disturbed his/her other customers. In contrast, at Kanodar, the facility was located in a house of a relative; a separate room was provided that ensured privacy during a chat. Further, since the kiosk entrepreneur was related either directly or indirectly to most of her clients, women were familiar and comfortable with the setup. The socio-cultural characteristics and the ambience plus the intermediary at the kiosk facilitated access to the kiosk and Internet-based services.

The lack of popularity of Internet-based communication was also a matter of convenience. Web-based chatting in a shared computing environment also required an additional level(s) of coordination with the kiosk owner. It was subjected to the availability of a spare computer, connectivity and electricity. On the other side, telephone gave the required privacy. No additional coordination was required because of infrastructural constraints. One just had to fix a time with the PCO operator or the neighbour. Further, in Kerala telephone rentals and charges were considered to be among the lowest in the country. Thus, along the coast, a small thatched house of a fisherman also had a telephone connection, often serving the entire neighbourhood.

Telecentre and agriculture

Much against expectations, agriculture related services like online agriculture extension and purchase of agricultural inputs were not very popular through telecentres. Both at Kesarpur in UP and Pimpri Buti in Maharashtra there was much scepticism among farmers regarding the solutions suggested, more so because the claims were never demonstrated nor evidence provided for claims like increase in productivity increase when particular practices are adopted. At the time of the study, ITC-ABD was launching a new pilot project, whereby it partnered with different farmers for cultivation of soya on around 5–6 acres of land for demonstrating the benefits of adopting better farming practice. Since the organization had an interest in procuring better quality soya, it was willing to make the required investments and efforts. For other types of agriculture extension services like expert advice, ITC-ABD collaborated with nearby agriculture colleges for solutions to the online queries. But it required a series of interactions between the kiosk owner, network orchestrators and solution providers resulting in substantial transaction cost in terms of coordination time and time required to provide a solution. There were issues related to transportation of sample if required. Even if the solution to a particular problem was provided on time, questions emerged on their availability (eg. fertilizers and pesticides) at an affordable cost to the farmer, and adoption of proper procedures. At Kesarpur, private companies dealing with agricultural equipments and fertilizers made use of the platform provided by the network orchestrator to conduct meetings in the village. Some farmers felt it was a positive outcome of having the kiosk in the village. They were able to know about particular products and more importantly such meetings became an occasion for the farmers to come together and exchange notes. Thus, information was exchanged though not by surfing the Internet.

ITC-ABD as a procuring agency for some commodities did remove some of the ills associated with middlemen. Farmers at Pimpri Buti articulated the benefits as appropriate price for produce, less harassment than *mandi*, and better bargaining power vis-à-vis private traders. However, the benefits came with a rider. The quality of soya had to be good. The price offered by e-Choupal varied according to the quality of soya. ITC-ABD often refused to buy if the quality of soya was judged to be so poor that they did not qualify for the minimum support price. From the organization's point of view on efficiency, getting the price as per quality was a rational objective. However, the quality of soya was determined by multiple factors including rain, which were often beyond the control of the farmer or the company. Under such situations, *mandi* provides the

scope and space for farmers to sell their produce and at least get an average price even if the crop quality was not optimum. Further, e-Choupal at Yavatmal procured only one crop, i.e. soya and that too only during the season. It highlights a limitation of e-Choupal as an agriculture intervention. Farmers wanting to sell at the start of the season, when the amount of moisture in soya was more, or later when the price of soya increased, had to go to the *mandi* or private traders. e-Choupal did not exactly eliminated the middlemen since farmers anyway had to interact with traditional institutions like *mandi* for other commodities.

The removal of the middleman

Deployment of telecentres in rural areas promised to eliminate middlemen or intermediaries thereby enabling farmers and artisans to access market and market-related information directly. Two types of changes with regard to middlemen could be observed during the fieldwork. In the first case, e-Choupal did not actually eliminate the middlemen but only redefined their role, often co-opting them with the organizational objectives. However, farmers at Pimpri Buti did articulate some observable change in the behaviour of the traders towards them. Earlier, if the previous day *mandi* closed at a higher rate, the traders came early in the morning and bought the produce at a lower rate and the farmer would realize his lose only later. With e-Choupal, it was now possible to cross-check the price quoted by the private trader.

Further, to compete with e-Choupal, the private traders also started making use of electronic scales. Although, old-timers considered the traditional weighing scale better as better, because they could easily supervise the weighing process. Many found electronic scales difficult to read, even if they appeared to be more accurate. The presence of e-Choupal within the village did two things: first, it set the floor value for the basic negotiation about price and second, the farmer had a choice of an alternative channel, even though factors like quality and transportation often played a decisive role. A private trader at Pimpri Buti remarked that because of e-Choupal, his business did not exactly close, but the farmers were becoming rude. When the farmers were not satisfied with a deal, they often refused to sell their produce to him. However, the nature and extent to which the relationship between farmers and middlemen has actually changed needs to be further researched since ITC-ADB procures only one crop.

In the other case, telecentres like Drishtee, which implement e-governance services only on piecemeal basis, actually re-introduced an additional layer between the citizen and the service delivery agency. Some consider

the trend as good since citizens can get better service and the government apparently benefits by effectively "outsourcing" the service (Kuriyan and Toyama 2007). But, field based investigation of pilot initiative like Gyandoot found that rural elites actually get an upper hand in setting up of such services, thus reinforcing the caste-class-power structures (Sreekumar, 2011).

Telecentres and access to education

Telecentres provided two types of educational services: (a) computer education and training, and (b) computer based tuitions. Computer education and training was a popular service at Kanodar in Gujarat and Ariyallur in Kerala. For Kerala, a state with significant levels of achievement in primary and secondary education – computer literacy appeared to be a logical sequence to e-literacy. Computer education was a 'new generation' need of the people for getting jobs. The availability of professional courses like DCA, PGDCA, Tally, etc., at an affordable rate kind of increased the employability skills of the people. However, there were two issues: (a) quality of the education and its acceptability in the market and (b) the linkages between training imparted at the kiosks with employment. During the peak days of the Indian IT industry, there was a demand for software engineers and trained software professionals; government responded by creating the necessary infrastructure including giving accreditation to national level training institutes for the development of human resources. In Kerala, there was a general expectation that large amount of government records would be digitized; hence many people with basic data entry skills would be required. However, at the time of the study, the overall demand and supply situation for technically qualified people was not clear.

At Pimpri Buti in Maharashtra, it was difficult for the people to articulate the benefits of sending their children to e-Choupal for 'computer' and 'tuition'. There was a trend among households to send their children outside the village for studies, hence for households who could not afford to send theirs or did not have relatives in towns with whom the children could stay, the education initiative was a welcome one. A common response was that there were some changes in the behaviour of the children who attended tuitions. The children no longer loitered around in the hot summer afternoon, but stayed at one place for around two hours and studied for some time at home. Reaction from a parent who was not very educated was that 'there is some change, but I am not sure about the progress made'. Hence at e-Choupal, the teachers took weekly tests and sent the corrected papers home. Some mother referred

to those papers when asked about the progress. Elders quoted the change as *'line mil gaya'* (the children now have got a sense of purpose) and, *'bacchon mein zid aa gayi, jiske bina kuch nahin hota'* (the children have started acquiring determination and confidence to do something, which is good, because without them they can achieve nothing in life). 'We understand lessons better than schools' was the common answer from the children. They found the classes more interesting and lessons easier to remember. Apparently they regularly bunked classes at school, but not at e-Choupal even when the class was scheduled at six in the morning. Although the final examination results were not declared for that particular year, most claimed that the marks would be better. While people in Pimpri Buti were able to articulate the benefits of the education initiative, at the time of fieldwork it was only a pilot project driven by a highly motivated kiosk entrepreneur and his para-teachers; the continuity of the programme in long run was not very clear.

Telecentres and access to health

n-Logue at Kanodar, Gujarat made an attempt to replicate their Madurai experience with Arvind eye hospital (see Kumar & Jhunjhunwala, 2002) in Palanpur, Gujarat. But after the initial success, the process died a natural death when the person in-charge left. He was responsible for making arrangements with the city doctors, scheduling their appointment with villagers, doing a follow-up, etc. The initiative had no built-in incentive for the doctor to come to the centralized location and interact over the Internet with the villagers, may be other than that getting some referrals. Further, the sessions were more preventive in nature. At the kiosk level, the entrepreneurs often did not take the prescribed ten rupees from the people in order to popularize the venture. However, it did not justify the efforts he/she has to put to gather people at the prescribed time for an interaction. Further, for detailed consultancy with the doctor, customers pointed out the lack of privacy in a group.

In Kerala, the delivery of health related service through the Akshaya network was availability of CDs with health related information. In a place where health-related facilities were commonly available, such CDs were not much in use. e-Choupal at Pimpri Buti had no health related initiative as such. But the entrepreneur who showed personal interest in matters related to health took the opportunity to spread the knowledge among children attending summer classes. At Kesarpur, Drishtee made an attempt to pilot a telemedicine project using tablet PCs, but there also, healthcare interventions met with little success because of the

presence of multiple alternatives in the village and fixing of incentives of the various stakeholders.

Telecentres, rural employment and entrepreneurship

The number of jobs generated within the village because of the deployment of a telecentre was limited to one or two. The maximum was in case of Kerala, where trainers and social animators were employed. The pilot project claimed to have generated around 3000 direct employments. Some of the jobs like that of the social animators were temporary and once the e-literacy phase was over, not all were employed as trainers in the Akshaya e-Kendras. At other places, the staff was either a family member or worked on voluntary basis with the kiosk owner. Further, it is actually difficult to say how many 'new' entrepreneurs were created. In Kerala, the Akshaya e-Kendras entrepreneurs run computer centres, private colleges or tuition centres. Akshaya was an extension to their existing business. In the rollout phase also, preference for Akshaya franchisee was given to those who already had a computer centre, etc. The kiosk owners at Ariyallur and also at Kesarpur were entrepreneurs in their own right. At Pimpri Buti, the e-Choupal *sanchalak* also had the experience of being an LIC agent, although e-Choupal did help in spurring his ambition for entrepreneurship along with social work. In case of Kanodar, the Chiraag-Banas initiative did provide opportunity to the entrepreneur to start a business and be actively engaged in public life. However, here also the entrepreneur had identified the business opportunity and had approached the network orchestrator, instead of the network orchestrator coaxing them to start a telecentre. Thus, except for Kanodar, where the Chiraag-Banas initiative was the first business venture of the kiosk owner, at the other three places, the kiosk owners were already engaged in some sort of business or other. The extent to which, telecentres foster 'entrepreneurship' needs to be further examined. As such, there is no change in the overall occupational pattern of the village or the significant enhancement in the income of the people.

Telecentres and e-Governance

Telecentres have been envisaged to be the front-end delivery point for a wide range of e-Governance services. The delivery of the services through the telecentre was mixed, and depended on the network orchestrator. The Chiraag-Banas kiosk in Kanodar, Gujarat and e-Choupal at Pimpri Buti in Maharashtra did not provide any e-Governance services nor did they have any linkages with the larger policy environment. The Drishtee kiosk in Kesarpur in Uttar Pradesh did provide some

services that could be categorized as e-Governance viz. sale of forms for various welfare schemes, but it was more an initiative of the kiosk owner than any government intervention. The services were provided by the entrepreneur because he was aware of the additional income it would generate through digital photo and photocopy. Only in Kerala, e-Governance services were provided through the kiosks and they did have linkages with the larger policy environment. A gateway setup by the state managed the online payment of utility bills. In general, how the ICT-enabled governance and administrative reforms under the e-Governance rubric creates tangible impact on the general status of the common man was also not clear.

In sum, at all locations, the telecentres provided an opportunity to the people to interact with the new technology. However, impact was mainly in terms of convenience provided by some of the services vis-à-vis the alternate channel. The efficacy of the telecentre in generating new jobs in rural areas, increasing efficiency and reach of e-Governance and other basic services, enhancing livelihoods and well-being of the people, and overcoming the rural-urban divide appear to be limited. The findings indicate that access and use of the services provided at the village telecentre depended on the socio-economic status of the household and was shaped by the overall village characteristics. Further, telecentres were one of the many information and communication channels in the village. The information or service available at the telecentres were related but not central to the lives and livelihoods of the people. Other socio-economic, and institutional factors played far more important role in their daily activities. On the whole, the pattern of access and use of technology services appeared to reflect the existing contextual characteristics and maintain the status-quo in the village. Access and use by a particular set of households did not seem to leave others at a disadvantage. Telecentres as technology-based, programmatic interventions driven by objectives set by external agencies, did not address the structural or systemic issues that constrained access and use. Nor did they induce any major change in the institutional or political sphere. Thus existing socio-economic divides were neither alleviated nor exacerbated.

Implications for development policy, practice and research

The deployment of telecentres as development interventions can be considered to be deeply embedded in the global policy environment and driven by the key trends shaping development through liberalization,

privatization and globalization. Akshaya was part of the modernization government project funded by Asian Development Bank. e-Choupal represents the increasing informatization of the global commodity chains where information like price and quality play a role in increasing the competitiveness of the business organization. e-Choupal as a BoP venture also exemplifies the increasing use of IT by corporate to tap rural markets. The social entrepreneurship model of Drishtee presents the dominant view of using technology and market-based interventions for poverty alleviation. Telecentres as strategic interventions were deployed by various Indian and foreign agencies as per their organizational purpose, priorities and consequently a pre-designed set of services. From the three case studies, one key insight for the practitioners is that demand for information and services within a village was primarily generated by occupational needs (both current and future) or institutions requirements (again related to either livelihoods or capacity building). Further, while there might be infrastructure, capability and other constraints in the local context, they need not necessarily hinder delivery of services via telecentres if the structure of service delivery was designed appropriately taking into consideration the cost and incentives for the village entrepreneurs and other stakeholders. Factors facilitating or hindering access and use of telecentre by the people are often linked to systemic condition which in turn define the resources and capabilities of individuals and households.

The study puts forth that potential benefits of technology are greater if they are deployed as part of a larger system, especially if they address systemic or structural issues hindering access and use. For example, telecentre as an access point for healthcare services should be deployed as part of the complete telemedicine project implemented by an agency belonging to the health sector. And not in a manner that kiosks are deployed by one agency and then efforts are made to establish links with doctors and hospitals. When deployed as part of a larger initiative, computerization of back-end would take place simultaneously with front-end deployment. Delivery of services via telecentres would thus not be limited by the lack of back-end computerization and systemic process change. While the NeGP prioritizes computerization of backend processes, it still remains to be seen how CSCs are integrated as delivery mechanism. Institutional embedding of telecentre does not only mean that the kiosk be physically located at institutional public places like *panchayats*, government schools or libraries but that they should be part of the overall service delivery channel to avoid conflicts of goals, resources of space and time.

Further, while assessing techno-managerial interventions like ICT-D or even microfinance, it becomes imperative for the policy maker and the practitioner to have an understanding of the larger discourse, especially of the linkages between the agendas, policies and programmes of the key actors. The underlying and often unstated assumptions of such interventions shape the way in which policies are implemented and their impact. An awareness of such assumptions help to critically evaluate the outcomes and impact on the ground. For example, in case of telecentres, entrepreneurship and sustainability becomes a key issue for policy, practice and research partly because expansion of market is one of the underlying logic. The policy and practice then focuses on organizational structure and service delivery that favors the business logic rather than developmental imperatives. When sustainability becomes the lens for measuring impact, revenue generation takes precedence over intangible outcomes like first exposure to computers (tied with aspirational aspects of the society), or empowerment that comes from access to information, which in turn increase the capacity to negotiate with the existing power structures.

Furthermore, recommendations made on the demonstrated success of a single initiative should be applied only after critical appraisal. For example, the case of e-Choupal is often cited as an example for allowing private business to procure commodities directly from the farmer. But as the study indicates, e-Choupal is beneficial to farmers only for select commodities and only when the quality of the produce is good. And quality is often contingent on number of factors, many beyond the control of the farmers. In contrast, the traditional *mandi* has a certain welfare orientation. It procures even when the quality is low and it procures all commodities. Thus, IT-enabling *mandi* is an option to combine the benefits of the technology with welfare orientation of a traditional *mandi* system. The BoP narrative on e-Choupal while championing for a win-win situation for both the corporate and the farmer is actually presenting the challenges of Indian farmers and also the solution from a corporate point of view obscuring the real issues. What has been posited as inefficiencies of the Indian agriculture, is actually the sources of inefficiencies faced by the company in its supply chain. While it does increase the competitiveness of ITC-ABD, the question as to whether e-Choupals increase the overall competitiveness of Indian farmers or of the agriculture sector is still debatable. Telecentres put forth a techno-centric approach for providing solutions to development problems which do not necessarily address the structural and systemic issues related to the same.

Concluding remarks

The change induced by a telecentre within a village was incremental in nature, primarily because telecentres were one of the many communication and delivery channels in the local context. Further, access, use and impact were mediated by the multiple contexts in which telecentres were embedded. The deployment of telecentre was driven by many agencies, each with their own agenda, purpose and approach. It also depended to a large extent on the delivery structure of particular services in terms of user fee, need for reading and computing skills, and linkages with existing institutional context. The local context plays an important role in defining resources, and capabilities of households and consequently their need to access services at the village telecentre. Thus particular telecentre models or initiatives bring about some change within a village only when there is a match between the services provided by the telecentre and the local demand.

Annexure I: Telecentres in Rural India

Sl. No	Name of the initiative	Network orchestrator(s)/ ownership of individual kiosk	Start year	State	No. of telecentres	Services	Source
1.	Akshaya	KSITM	2002	Kerala	3000	e-literacy, e-Governance	www.akshaya.net
2.	Aswhini	Byraju Foundation (MLA,UNDP/ NISG, NF, ISRO)	NA	Andhra Pradesh	50	Connectivity, Basket of Services	http://byrrajufoundation.org/oldsite/html/ashwini.htm, www.telecentre.org/en/news.detail/29369
3.	Bhoomi	Revenue Dept, GoK	1998	Karnataka	168	Land Records	bhoomi.kar.nic.in, unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN015135.pdf
4.	COMAT (e-Disha eKal Sewa Kendras)	COMAT Technologies Ltd.	NA	Haryana, Karnataka, Tripura	1250	Basket of services	www.comat.com
5.	COMAT e-Governance Rural Business Centres	COMAT(ICICI)	NA	Maharashtra	350	IT enabled citizen centric services	www.comat.com/solutions_and_services/government/rural_business_centres.html

(*continued*)

Annexure I Continued

Sl. No	Name of the initiative	Network orchestrator(s)/ ownership of individual kiosk	Start year	State	No. of telecentres	Services	Source
6.	Common Service Centres (NeGP)	IL&FS and Multiple Agencies	2006	Multiple states	92526	Basket of Services	www.mit.gov.in/download/cscpyramid09092008.pdf
7.	Community Information Centres (CICs)	Ministry of IT, GoI (NIC)	2000	7 North Eastern states, Sikkim	487	Computer education and training	www.mit.gov.in/default.aspx?id=363, www.cic.nic.in/mainblocks1.htm
8.	Community Information Centres (CICs)	Ministry of IT, GoI (NIC)	2000	Uttarakhand	328	Computer education and training	www.mit.gov.in/default.aspx?id=363
9.	Community Information Centres (CICs)	Ministry of IT, GoI (NIC)	2000	JnK	135	Computer education and training	www.mit.gov.in/default.aspx?id=363
10.	Community Information Centres (CICs)	Ministry of IT, GoI (NIC)	2000	Andaman, Nicobar, Lakshawdeep	71	Computer education and training	www.mit.gov.in/default.aspx?id=363
11.	Cyber Grameen	Swarn Bharat Trust; Funded by State Government	2003	Andhra Pradesh	1	Basket of Services* including telemedicine	www.itforchange.net/ict4d/display/28
12.	Digital Ganaga Project	IIT-Kanpur, MLA	2002	Uttar Pradesh	15	Internet Assisted Services	www.medialabasia.org

13.	Drishtee	Drishtee DotCom Limited	2000	Assam, Bihar, Chattisgarh, Haryana, MP, Orissa, Tamil Nadu, UP	2200	Basket of services	www.drishtee.com
14.	e-Choupal	ITC-IBD	2000	MP, Maharashtra, Rajasthan, Haryana, Karnataka, AP, UP and Uttaranchal	6400	Basket of services	www.itcibd.com/eChoupal.asp
15.	e-Grama	Gramin Mahiti Parishat	2004	Karnataka	NA	Computer literacy, e-Governance	www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=88
16.	FOOD-RASI Maiyams	FOOD (District Administration)	2003	Tamil Nadu	25	Basket of Services*	www.itforchange.net/ict4d/display/132
17.	Gyan Sanchar	BSNL, GoMP	2002	Madhya Pradesh	NA	Telephony, e-Gov and e-commerce	www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=86, http://%20www.gyansanchar.net/
18.	Gyandoot	GoMP	2000	Madhaya Pradesh	38	e-Governance	www.gyandoot.nic.in
19.	GyanGanga	Gujarat Informatics Limited; n-Logue	2004	Gujarat	NA	Connectivity, education, e-Governance	www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=170

(*continued*)

Annexure I Continued

Sl. No	Name of the initiative	Network orchestrator(s)/ ownership of individual kiosk	Start year	State	No. of telecentres	Services	Source
20.	HimBhoomi (Touch screen kiosks only)	GoHP	2003	Himachal Pradesh	99	Land record	admis.hp.nic.in/lrc/dtingrpt.asp
21.	i-CoSC (Integrated Community Service Centres)	DIT, GoHP	2005	Himachal Pradesh	137	e-Governance	http://himachaldit.gov.in/,www.i4donline.net
22.	i-Kuppam Community Information Centres	Hewlett-Packard	2002	Andhra Pradesh	13	Basket of services	http://www.isasnus.org/events/insights/13.pdf
23.	Janmitra	GoR (UNDP)	NA	Rajasthan	10	e-Governance	–
24.	Jiva Baatchit	JIVA Institute (MLA)	2001	New Delhi	1	Information	www.iconnect-online.org/Stories/Story.import4975
25.	Lok Mitra	District Administration, GoHP	2001	Himachal Pradesh	25	NA	–
26.	Mahiti Mitra	Kutch Nav Nirman Abhiyan	2006	Gujarat	18	e-Governance	http://www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=296, http://www.kutchabhiyan.net/

27.	Mahiti Shakti	District Administration, GoG	2001	Gujarat	80	e-Governance	Patel et. al. (2003)
28.	MANAGE – Cyber Extension	MANAGE	2000	Andhra Pradesh	11	Cyber Extension	www.manage.org
29.	MSSRF Village Knowledge Centres	MSSRF, IDRC, CIDA	1998	Pondicherry	10	Basket of Services	IIIT-B (2005)
30.	Nabbanna	Change Initiatives (UNESCO)	2003	West Bengal	5	Education and Training	www.unesco.org
31.	NASSCOM RKC (Mission 2007)	NASSCOM + NGOs	NA	TN, Maharashtra, Karnataka, Goa, AP, Kerala, Orissa, Gujarat, West Bengal	105	Basket of Services	www.nasscomfoundation.org
32.	n-Logue Chiraag	n-Logue	2002	AP, Gujarat, Karnataka, Maharashtra, MP, Rajasthan Tamilnadu	5000	Basket of Services	www.digitaldividend.org/pdf/nlogue.pdf
33.	n-Logue EID Parryware	Parry India Lmt	NA	Tamil Nadu	30	Information	Srinivasan (2007)
34.	n-Logue SARI	n-Logue	2001	Tamil Nadu	29	Basket of Services	IIIT-B (2005)

(*continued*)

Annexure I Continued

Sl. No	Name of the initiative	Network orchestrator(s)/ ownership of individual kiosk	Start year	State	No. of telecentres	Services	Source
35.	n-Logue SARI - DHAN	DHAN Foundation	2001	Tamil Nadu	37	Basket of Services	IIIT-B (2005)
36.	Pehal	GoHP	NA	Himachal Pradesh	37	Transport, land records	himachaldit.nic.in/13thnov06toSecys&HODs.ppt
37.	Prava Village IT	Convergent Communications (NIC, ISRO)	1999	Maharashtra	NA	NA	http://www.networkmagazineindia.com/, http://convergentindia.com/, http://www.ict4rd.net.in/www.kvk.pravara.com, http://www.ict4rd.net.in/projects1.aspx?cat_id=3&proj_id=144
38.	Raj Nidhi	Rajasthan State Agency for Computer Services	2000	Rajasthan	1	e-Gov	http://www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=177
39.	Rajiv Internet Village	GoAP	NA	Andhra Pradesh	5655	Connectivity, e-Gov, computer literacy	www.aponline.gov.in/Quick%20Links/events/RIV%20Launch/BriefNoteOnRajivInternetVillage.doc
40.	Rural Digital Services	GoK	2003	Karnataka	22	e-Gov	http://www.ict4rd.net.in/projects1.aspx?cat_id=5&proj_id=89

41.	Rural e-Seva	District Administration, GoAP	2003	Andhra Pradesh	47	Connectivity, e-Gov, computer literacy	IIIT-B (2005)
42.	Rural Service Delivery Points (RSDP)	District Administration, GoAP	2003	Andhra Pradesh	103	Connectivity, e-Gov, computer literacy	IIIT-B (2005)
43.	SIRDI – Vividh Soochna *Kendra* (Multi facility Centre)	Satpura Integrated Rural Development Institution (SIRDI)	2002	Madhaya Pradesh	1	Information	www.idrc.ca/en/ev-68971-201-1-DO_TOPIC.html
44.	Swayam Krushi	GoAP	NA	Andhra Pradesh	NA	Computer training	www.itforchange.net/ict4d/display/150
45.	TANUVAS	TANUVAS-Cornell	NA	Tamil Nadu	3	extension services	wsispapers.choike.org/research_telecentre_development.pdf
46.	TaraHaat	Development Alternative	2000	UP, MP, Punjab	196	NA	Garain and Shasrach (2006, p. 67)
47.	Vadalur Knowledge Centre	Saranalayam Trust	NA	Tamil Nadu	1	Computer training	Vadalurknowledgecentre
48.	Warana	Central and State Government	1998	Maharashtra	70	Integrated rural development	Bobde, Deb and Rane (2002)

Note: All websites were accessed between 1–15 October 2011.

Annexure II: Studies on Telecentres in Rural India

Table A.1 Summary of the evaluation studies

Study	Research objective/ research question	Initiative/state/region & year/duration	Methodology & data collection	Main findings
Ahuja and Singh (2006)	To examine the extent and impact of computerization of land records on revenue administration and cultivators.	Bhoomi/Karnataka/ South from February 25 to March 15 2002	Case study: Gulbarga district/ 10 taluka/100 villages/ 1,478 respondents	Farmers benefit by availability of the records of rights of tenancy and cultivation, updated accounts through the facility of online mutation, greater transparency and less scope of manipulation. Operational problems and the location of kiosks in taluka towns limit the net savings to the farmer.
CEG-IIM-A (2002)	1) To identify and evaluate the benefits among the intended stakeholders. 2) To assess the impact on transparency, accountability and corruption within the district. 3) To identify gaps in usage patterns and	Gyandoot/MP/Central in May 2002/one week	Mixed: Exploratory study followed by survey. Both qualitative and quantitative data were collected thru survey of 32 users and 41 non-users/ 18 entrepreneurs/ 10 government officials/4 project	The project was path breaking and novel in terms of conceptualization, but its success in achieving its intended objectives was limited. The usage of the system was far below acceptable levels. ICTs alone cannot improve the service delivery to rural poor. Power supply, connectivity, and back-end support (with new value propositions) are the essential

	provide suggestions for a sustainable socio-economic impact.		staff in 7 districts and 25 functional kiosks	pre-requisites to benefit from such technological advancements. Significant re-engineering of back-end processes and introduction of services that directly contribute to poverty alleviation are needed to make telecentres sustainable.
Dossani, Jhaveri and Mishra (2005)	To explain the problems facing rural access to ICT and to make recommendations to improve access.	9 different projects/ 6 states; Karnataka (2), AP (2), TN (1), MP(2), Pondicherry(1), Maharashtra(1) from September 2004 to December 2004/ 3 months	Secondary research, field visits, Interviews (89) with three groups: project authorities, centre operators, and community members (users and non-users)	Introducing ICTs into a rural setting, which could be markedly disruptive, happened smoothly at every site. Though each project benefited some user groups, none were significant enough to have had a general socio-economic impact at its location, and none offered a replicable, catalytic model towards achieving such impact. Usage is disappointingly low, with some sites averaging five users per day, and most having fewer than 25. Self-supporting sustainability was not achieved at even the sites with high revenue generation.
IIIT-B (2005)	To generate hypotheses on e-governance projects and more specifically to undertake a comparative analysis of the costs, revenue and benefits	Akshaya/Kerala/South, Drishtee/Haryana/North MSSR/Pondicherry/South SARI/TN/South Rural e-Seva/AP/South Bhoomi/Karnataka/South June–July 2004/5 weeks	Case studies: Ethnographic approach using participant observation, informal and	Study identifies the key characteristics of e-governance services and projects that emerge from the research that can be treated both as hypothesis to understand e-governance and also design

(*continued*)

Table A.1 Continued

Study	Research objective/ research question	Initiative/state/region & year/duration	Methodology & data collection	Main findings
	of such projects in culturally and linguistically diverse contexts in India.		formal, structured and unstructured interviews, conversations, user logs	characteristics for consideration. It refrains from passing any judgment on the success or failure of the models under consideration. For e-governance to be relevant, provision of information should be localized.
Jafri et al. (2002)	To assess the overall impact of the project on villagers, kiosk operators, project administration.	Gyandoot/MP/Central	Mixed: Survey and informal interaction Probabilistic, multi-staged and independent sample survey-481 responses	While overall awareness about the project was found to be around 50%, it was lowest among women, in the more remote areas, and among those of lower educational and socio-economic status. Of the total sampled, 8% had used Gyandoot services. Of those who had not used Gyandoot, the vast majority had seen no reason for using it since its inception. Users of Gyandoot services are overwhelmingly male, in the higher socio-economic categories and in the young to middle age groups. Almost 80% of users were satisfied with the service obtained. Charges for the services were predominantly seen to be reasonable.

Menon, Kiri and Toyama (2003), Kiri and Menon (2006)	To what extent have kiosk owners been able to set up a sustainable business while providing the community with access to resources which otherwise are not easily available. 1. What are the services which and entrepreneur would focus on driving? 2. Do these services genuinely have an impact on the quality of life of the most marginalized members of the community in the village? 3. Which of these services are even perceived by the marginalized groups as useful?	Drishtee and n-Logue/multiple states November 2004 to April 2006/18 months	Longitudinal survey: 300 for-profit, entrepreneur-based kiosks with Internet in 13 districts. Semi-structured questionnaire were administered every quarter to 300 kiosk operator and 5 customers. Around 7000 customers interviewed in total	Kiosk customers tend to be young, 30% between the age of 19 and 25 years and another 35% between 26 and 35 years. They are mostly students, people with private jobs, educated unemployed youth and farmers. There is a shift towards users reporting high monthly household income. Around 75% are male. Overwhelmingly, more girls and women visit kiosks when the operator is female, and almost no women visit kiosks run by men. Kiosk marketing appears most effective through word of mouth, with over 60% of the respondents making their first visit to a kiosk after hearing from friends and family. About 70% of kiosk customers reported that the kiosk operator handled all transactions on the computer, and that they remain unable to use a computer. The kiosk, appears to be financially viable, but at a fairly slow pace, with stagnation setting in at profit levels around Rs. 2000.

(*continued*)

Table A.1 Continued

Study	Research objective/ research question	Initiative/state/region & year/duration	Methodology & data collection	Main findings
				Users visit the kiosk frequently – weekly, on alternate days and even daily. Browsing/email, games and computer education remain highly used, while e-government, agriculture/veterinary services and healthcare contribute to less than 10% of service usage.
Kuriyan and Toyama (2007)	Review of Research on Rural Kiosks. Synthesis of the main findings on entrepreneur-driven telecentres, primarily with regard to their sustainability.	Multiple/multiple states	Review of literature: Literature review. Focus on studies conducted in India, with few references to those conducted in Kenya and Ghana	Rural PC kiosks are difficult to sustain. Successful rural PC kiosks fall into several categories. Meeting business needs and social development goals simultaneously is difficult. The kiosk entrepreneur plays the most critical role in the success of a kiosk. A kiosk champion can help sustain a set of kiosks. Services require attention to the entire supply chain, not only to the kiosk. Focus on a single class of services increases likelihood of success. Kiosks do better in towns; kiosks do better in remote villages. Kiosks in offices and schools may provide alternatives to the standalone kiosk.

				Kiosk usage is dominated by relatively affluent, more educated young men. Per-transaction fees are resisted by many customers. Mobile-phone-based kiosks offer an alternative to PC-based kiosks.
Lobo and Balakrishnan (2002)	1. To assess benefits derived by users of Bhoomi Centres in relation to improved quality of service and satisfaction. 2. To provide inputs on benefits derived by users (for RTC as well as cases of mutation) to carry out the cost benefit analysis of Bhoomi Centres.	Bhoomi/Karnataka/South	Report Card Methodology in six districts/ 2 Bhoomi kiosk/ 198 interviews with users Control group/ 4 taluks/59 respondents	Benefits to the Bhoomi user are of two kinds: tangible and intangible benefits. Tangible benefits include significantly reduced time for getting the certificate. Intangible benefits are from the shorter durations spent in queues to get documents, less hassle with officials when compared to manual system, timely response to complaints (58%), and good staff behavior.
Madon (2004)	Evaluating the developmental impact of e-governance projects using Sen's capability approach.	Akshaya Kerala/South	Qualitative: Interviews (56)	A variety of functioning is enabled through establishment of the Akshaya centre's: citizens have a real opportunity to pay their bills without hassles form the middlemen, self-esteem and image of government officials have increased.

Table A.2 Summary of key empirical studies

Study	Focus & research objective/question	Discipline/area/ Framework	Initiative/state/ region & year/duration	Methodology & data collection	Main findings
Bailur (2007)	Community participation. Deconstructing the rhetoric of participation in ICT-D projects through an ethnographic study.	Development studies	VOICES (Name changed), Karnataka, South in August 2006 to February 2007 (6 months)	Qualitative exploratory study using ethno-graphic approach Interviews (400) and participant observation (3 to 4 months in the village, events and festivals)	Community participation is complex and contradictory. Participation is a top-down concept. The 'insiders' learn what the 'outsiders' want to hear, rather than vice versa; the 'needs' become socially constructed and the dominant interests become community interests. Even though the villagers are interested, they lack time to participate.
Best and Maier (2007)	Gender, culture and ICT use. Systematically document the information and communication needs of women in rural South India	Not explicit, situated within debates on gender, technology and development	SARI/TN/South	Exploratory study, does not specify type, but makes use of basic statistical methods Structured in-depth interviews with 17 women users and 22 women non-users in 5 villages	Rural women in the study find ICTs useful. There are gender-specific usage patterns and perceptions of ICTs. Obstacles to ICT use are generally structural (time, location, illiteracy)

	and how they use and perceive information technology.				and not personal – manifestations of gender awareness correlate with perceptions of obstacles to ICT use.
Kumar (2005)	Financial sustainability. To assess the financial sustainability of a commercial telecentre project	NA	e-Choupal/MP/ Central from December 2002 to January 2003 (3 weeks)	Mixed: Financial data analysis, formal and informal interviews (officials, operators, farmers, traders, villagers), group discussion	ICT projects can be financially sustainable when they are viewed not as an end in themselves but as tools to facilitate information exchange whereby, use of the technology enables higher efficiencies in another existing or new business setting, which provides the source of revenue to recover the initial investment.
Kumar and Best (2006a)	Impact and sustainability of e-governance services. To study the systemic and institutional factors responsible for the initial	NA	SARI/TN/South from June 2003 to August 2003	Mixed: Quantitative data from government records for the period of November 2001 to November 2002; Interviews: Government Officials (8), project officials(4), 10 users from 4 villages	E-Government programmes fail to be politically and institutionally sustainable due to people, management, cultural and structural factors (training, sustained leadership, institutionalization, evaluation and monitoring,

(*continued*)

Table A.2 Continued

Study	Focus & research objective/question	Discipline/area/ Framework	Initiative/state/ region & year/duration	Methodology & data collection	Main findings
	success and subsequent failure of the e-governance programme.				stakeholder involvement, and power shift); Neither information nor technology appear as critical failure factors.
Kumar and Best (2006b)	Social impact and diffusion of telecentre use. To examine why kiosk use has not been able to diffuse among a wider section of their communities.	Diffusion of Innovation	SARI/TN/South from June 2003 to August 2003	Mixed: Survey (132 kiosk users in 5 villages), prior baseline survey data, quantitative data from government records Interviews: Government officials (8), project officials (4), kiosk operator (12), 10 users from 4 villages	Telecentres may sustain existing socioeconomic inequalities within communities because the dominant users tend to be young, male, students, relatively more educated, belonging to higher income households, and coming from socially and economically advanced communities Location, local champions, local content and affordable services are factors contributing towards long-term financial and social sustainability.

Kuriyan, Toyama and Ray (2005)	Social development, financial sustainability. To study the social and political challenges and trade-offs involved in the implementation of kiosk projects and their implications for development.	NA	Akshaya/Kerala/ South	Qualitative case study research. Open-ended interviews with users and non-users (65 households in 3 villages), panchayat members and officials (3), entrepreneur (8 interviews with 4 individuals) and participant observation	There is a tension between the goals at a macro level (within the state) and a micro level (for entrepreneurs and potential consumers) that makes it difficult to run a financially self-sustaining ICT kiosk project that also meets social development goals. The implementation of ICTs for development is not simply a technical process of delivering services to the poor, but is a highly political process that involves trade-offs and prioritization of particular goals to attain sustainability.
Kuriyan and Kitner (2007)	Gender and class in shared computing environments. To examine how gender and class identities intersect with ICTs in the	Not explicit; situated within debates on gender, technology and development	Akshaya/Kerala/ South (also Penalolen in Chile)	Qualitative: Comparative case studies/ethno-graphic approach Participant observation/ in-depth semi-structured and	Women belonging to the 'emerging middle class', a dominant user group. Women construct identities and try to cross perceived class boundaries and maintain middle-class positions through

(*continued*)

Table A.2 Continued

Study	Focus & research objective/question	Discipline/area/ Framework	Initiative/state/ region & year/duration	Methodology & data collection	Main findings
	context of shared computing such as kiosks or telecentres.			recorded interviews (49), informal interviews with users, non-users and kiosk entrepreneurs	the use of ICTs and their symbolic values tied to linear notions and aspirations of progress, advancement, and upward mobility.
Madon (2005)	Sustainability. To examine telecentre sustainability from a sociology of governance perspective and how, why and in what ways telecentres can address the governance agenda?	Development studies. Governance – sociology of governance approach	Akshaya/Kerala/ South from December 2002 to August 2004	Qualitative: Reflexive methodology. Participant observation, semi-structured interviews (98 including) with government officials, politicians, entrepreneurs, private sector employees and various citizens	Sustainability is affected by: (a) building corporate confidence, (b) working with government, (c) renewing grassroots campaigning, (d) involving the legislative systems and (e) continuing support of political champions.
Mukhopadhyay and Nandi (2007)	Gender, social impact. To examine the assumed gender neutrality of ICT-based projects.	Development studies/gender	Akshaya/Kerala/ South from June 2003 to September 2003	Mixed: Key informant interviews, questionnaire surveys (400 trainees, 40 entrepreneurs) FGDs and intensive case studies	There are many types of gender differences in the impact of the project, the differences are sharp especially within the entrepreneur group.

Pal (2007) and Pal et al. (2007)	e-Literacy and performance of service delivery. To examine e-literacy using telecentres as public spending.	NA	Akshaya/Kerala/ South during early 2005	Quantitative: Stratified survey (1750 households, 25 locations)	General awareness of Akshaya was very high (88.6%), but only 49.1% of the total sample had heard of the e-literacy programme. Among those who had heard of it, over 60% had availed of it. The respondents did not complete the entire e-literacy course of 15 hours as prescribed.
Prakash and De (2007)	Interlinkages between development and technology, computerization of land records. To demonstrate that the meaning of development influence the design of ICT4D projects and is important in deciding what purpose they will eventually serve.	Technology and development	Bhoomi/Karnataka/ South in 2003	Case study research using structured and unstructured interviews (120) with farmers, kiosk operators and bureaucrats in six districts	The design choice, especially the content and service delivery model for an ICT4D project gets influenced by the development context within which it is set.

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Table A.2 Continued

Study	Focus & research objective/question	Discipline/area/ Framework	Initiative/state/ region & year/duration	Methodology & data collection	Main findings
Rajalekshmi (2007)	Role of intermediaries, issues of trust in delivery of e-governance services through telecentres. How trust between citizens and intermediaries at various levels affect the way e-governance services are delivered through telecentres?	Development studies/sociology of governance approach/ Institutional perspective	Akshaya/Kerala/ South	Case study research: Documents, archival records, semi-structured interviews (249), direct observations and participant observations	Trust between citizens and intermediaries at various levels affects the way e-governance services are delivered through telecentres. The institutional membership of the intermediary is critical for effective e-governance service delivery.
Rangaswamy and Toyama (2005)	Marketing of products and services to rural areas. What insights can be drawn from existing kiosk projects for good product and kiosk designs?	NA	Multiple	Ethno-graphic study: Visits to around 50 kiosks all over India. Participant observation, structured and open-ended interviews with kiosk operators and their customers	(1) Villages are surprisingly up-to-date vis-à-vis modern communications capabilities, (2) some villagers aggressively seek out modern technology, and (3) even the poorest populations have desires that go beyond those required for physical sustenance.

Rangaswamy (2006)	Social entrepreneurship. To examine rural internet kiosks as entrepreneurial business ventures.	NA	n-Logue/ Maharashtra/West	Qualitative: Ethno-graphic study: In-depth interviews with kiosk entrepreneurs (12), baseline of services provided, ethnographic profiling of the village	ICT ventures need to be particularly responsive to local needs in order to be successful. Commercially sustainable ventures need to target context related and local consumption needs or tease it out with new technology. Further, despite an infrastructural crunch, kiosks survive due to good entrepreneurial skills. In this, village contexts, resources and proximities to urbanity play a role.
Srinivasan (2007)	Trustworthiness. To examine trustworthiness as one aspect of the quality of information provided through kiosks.	Encapsulated Model of Trust	EID Parryware/TN/ South from May 2005 to June 2005 (6 weeks)	Qualitative. Ethno-graphic study of two kiosks: Participant observation, user logs, conversations and formal interviews with kiosk operators (2), villagers (120), Parry employees (10), others (5)	The provision of ICTs does not reduce information asymmetries or bring about socio-economic development in itself. The quality of information determines when information services are used and the consequences of such usage. Perceptions of trustworthiness are based

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Table A.2 Continued

Study	Focus & research objective/question	Discipline/area/ Framework	Initiative/state/ region & year/duration	Methodology & data collection	Main findings
					not just on the facts and analyses that are said to constitute information, but more on the context within which information is accessed.
Thomas (2006), Thomas and Pariyal (2008)	Social and digital divide, capabilities. To investigate the links between the digital divide and larger social and economic divides.	Development studies/ diffusion of innovation/ capability approach	Akshaya and Kuppam/Kerala and AP/South from July 2004 to August 2004 (2 months)	Quantitative: Stratified sample survey of households (45 in each location)	Digital divide is not merely a problem of access to ICTs, but part of a larger development problem in which vast sections of the world's population are deprived of capabilities to use ICTs, acquire information and convert information into useful knowledge. These capabilities can only be created through large-scale complementary interventions in economic and social development.

Annexure III: Data Collection Instruments

A. Checklist: About the Village

A1. Basic information

1. Name of the Village:
2. Taluka:
3. Block:
4. District:
5. State:
6. Area of the Village (Sq. Kms):
7. Total Number of Households:
8. Total Population:
   a. Male:
   b. Female:
9. Literacy:
   a. Male:
   b. Female:
10. Languages Spoken:

A2. Infrastructure (quantity, quality and availability)

11. Electrification
    a. Year of electrification:
    b. Coverage (No. of households):
    c. Availability (hours per day, seasonality):
12. Approach road (kuccha/puccca):
13. Nearest town (distance):
14. National highway (distance):
15. Nearest railway station (distance):
16. Nearest telephone exchange (type):
17. Approximate number of PCOs:
18. Approximate number of landline connections:
19. Approximate number of cellular service providers:
20. Approximate number of mobile connections:

A3. Economic characteristics

21. Primary occupation(s) of the people (seasonality, migration, emigration, gender patterns, wage):
22. Secondary Occupation(s) of the People:
23. Agricultural Produce, Handicraft(s), Other Business and Trade:
24. Local Enterprise(s) (type, number of people employed, need of computer related skills/ knowledge):

25. **Size of landholdings/ Number of households in each category:
26. **Land under Cultivation/Uncultivated:
27. **Land Irrigated/Unirrigated:
28. **Irrigation facilities:
29. **Non-land resources of the village (household/community ownership – forests, pond, etc.):
30. Type of agricultural implements used (traditional/modern):

A4. Social & cultural characteristics

31. **Number of economic classes in the village and distribution (No. of households):
32. **Basis of classification (land, occupation, resources)
33. Number of castes and **their distribution (No. of households):
34. Dominant Caste and basis of dominance
35. Caste gaps (Inter-caste marriages, Prevalence of untouchability)
36. **Distribution (No. of households) on basis of religion:
37. Festivals (per year – Common, religion-specific, community specific):
38. Prevalence of Inter-religion marriages and other interactions?
39. Prevalence of purdah system?
40. Prevalence of dowry system (Caste/Class/Religion-wise difference):
41. Average age of completion of education (girls/boys):
42. Average age of marriage (girls/boys):

A5. Formal institutions (presence within the village (Y/N) and/or distance)

43. Distance to the taluka/block office, DRDO:
44. Balwadis/aganwadis:
45. Primary schools (type of school, number of students and teachers, computer education):
46. Secondary schools (type of school, number of students and teachers, computer education):
47. Higher secondary schools (type of school, number of students and teachers, computer education):
48. Colleges:
49. Vocational institutes and other training colleges:
50. Libraries:
51. University/agricultural university/management institutes:
52. Office of agricultural extension officer/gram sevak:
53. Adult Literacy/Distance Education Facilities:
54. PHCs/PHC Sub-centre/alternate medicines:
55. Hospital (public/private):
56. Bank branches (public/private/credit societies):
57. Post office:
58. NGOs (Area of intervention(s)/ activities):
59. Cooperatives, SHGs, village welfare societies, youth organizations (activities):

60. Nearest Mandi (grains/vegetables/fruit/commodities sold in the area – seasonality):
61. Nearest daily/weekly market:
62. Places of worship:
63. What role (positive/negative) have the institutions play/played in
    a. Setting up the telecentre
    b. Running of the telecentre
    c. Defining need
    d. Enabling access and use
    e. Shaping impact
64. Whether there has been any perceived change in the functioning (efficiency, effectiveness, reach) of these institutions because of the telecentre?
65. If yes, what is the nature of change?
66. What factors (institutional linkages, resources etc) effected the change?

A6. Mass media in the village

67. Presence of television
68. Presence of cable television:
69. Presence of radios:
70. Presence of FM channels:
71. Presence of community radios:
72. Presence of cinema halls:
73. Presence of drama and theatre groups:
74. Popular newspapers
75. Popular magazines:

A7. Exposure to computers/Internet

76. Approximately how many households' posses computers?
77. Approximately how many households with computers have Internet connections?
78. Do any of the village level institutions making use of computers?
79. Is the village panchayat computerized?

A8. Political characteristics

80. Political Parties (dominant/others):
81. Members from the village in the Village Panchayat:
82. Name and background of the Sarpanch:
83. **Name and background of the Talati:
84. **Name and background of the Gram Sevak:
85. **Name of the Taluk Development Officer/Block Development Officer
86. **Name of the District Collector:
87. When was the last election (panchayat/state/assembly) held in the village?
88. Has the village panchayat played any role in setting up of the telecentre?
89. Does the village panchayat play any role in running the kiosk/enabling access and use of telecentres by the people?

90. Did local level politics play any role in the setting up of the kiosk and its operations?
91. Does local level politics play any role in access and use of telecentre by the people?

B. Checklist: about the telecentre located in the village

B1. Introduction

1. Name of the kiosk owner:
2. Date of establishment of the telecentre:
3. Address (including village and ward name):
4. Contact number(s):
5. Type of ownership of the kiosk (Individual, Group, Trust, Network Orchestrator, Other-specify):
6. Reasons for selecting the particular location:

B2. Beginning and evolution

7. Purpose for setting up the kiosk?
8. Approximate time taken to setup the telecentre?
9. What factors at different levels facilitated/hindered setting up of the kiosk? How?
   a. Kiosk owner (resources and capabilities):
   b. Organizational (support, technical, training etc.):
   c. Village characteristics (infrastructural, economic, social, cultural, institutional, political):
10. How long did it take to make the telecentre operational?
11. What were the initial perceptions of the people about the telecentre?
12. How have those perceptions changed over the years?
13. What have been the reasons for the change in these perceptions?
14. What is the overall experience (both positive and negative) with the parent organization and partner agencies in setting up and running the kiosk?
15. Installation Cost:

Item	**Total amount (rupees)**	**Paid by (mention proportion if more than one person/ institution paid for the same)**
Office space		
Furniture		
Hardware etc.		
Software/service		
Fee/content		
Connectivity		
Others (specify)		
Total		

16. In case the telecentre is closed down, who will take care of the hardware/ software etc.?
17. Details of Loans (if any) (Amount, Source, Date, Interest, Time period, Number of Installments)
18. How was the loan arranged? What has been given as collateral?

B3. Basic characteristics

19. Technology
    a. Hardware (Number, Configuration, Cost):

Equipment	Quantity	Configuration	Initial cost
Computer(s)			
Printer(s)			
Scanner(s)			
Web cam(s)			
UPS(s)/batteries			
Connectivity related			
Others			

    b. Software

Component	Price paid for acquisition and u`se	Paid by whom (mention proportion if shared by more than one agency)
Operating system(s)		
Application software (MS-Office, accounting, etc)		
Internet-related application (browsers, chat, download accelerators)		
Local content		
Others		

    c. Connectivity (service provider, plan, charges):

20. Services and Pattern of Telecentre Use
    a. How do you define a user and non-user of the telecentre services?
    b. How would you define the frequency of use as high, medium, low?
    c. Who are the dominant users for each category of service? (Occupation-wise, classwise, caste-wise, gender-wise, religion-wise, age-wise breakup)

Sl. no.	Name of the service	Frequency of use (high, medium, low)			Trend and seasonality	Dominant users
		Week	Month	Year		
1						
2						
3						

21. Pricing of Services

Sl. no.	Service	Producer of service	Provider of the service	Price/fee/charge		
				User to kiosk operator	Kiosk pperator to producer/ provider	Net earnings for the kiosk operator
1						
2						
3						

a. What are the determinants of pricing (priority wise)
b. Nature of involvement of the parent organization/local partner in service provision, pricing and delivery?
c. Independence/freedom at the kiosk level in designing, pricing and delivering services?
d. Availability of any facilities/services other than those of the kiosk
e. What services and facilities should be added to the existing ones?

22. Cost of Operations

Expense	Periodicity (daily, weekly, monthly, yearly)	Amount	Paid by
1. Rent			
2. Electricity bill			
3. Connectivity charges			
4. Stationary			
5. Maintenance			
6. Salary			
7. Others			
Total			

23. Revenue Generation: Details of the revenue – daily, weekly, monthly, yearly and since the opening of the telecentre

24. Policy Level Support: Support from local administrative and other institutions

25. Structuring of Access
    a. Location (private, public, locality, proximity to local institutions, degree of accessibility by the people – natural gathering, accessibility to all kinds of people including women):
    b. Timings (is it convenient for all):
    c. Who are the people who help him/her with the operations of the centre (family members, paid staff, volunteers, friends, others)? How does the involvement of family member/friend/others help the kiosk owner/ operator in running the kiosk?
    d. Presence of female intermediary (any change in pattern of access and use by the people)
    e. Number of Rooms/Waiting Halls (ambience):
    f. Separate space for teaching (if required):
    g. Privacy for communication services (if required):

B4. Developmental impact

26. Coverage
    a. How many villages does the telecentre cater to?
    b. How far is the next centre located?
    c. From which localities/villages do more people come to the telecentre?
    d. People from which localities or villages do not come to the telecentre?
27. In your opinion what is the overall positive and negative impact of the telecentre on individuals?
28. In your opinion what is the overall positive and negative impact of the telecentre on different sections (occupation-wise, classwise, caste-wise, gender-wise, religion-wise, age-wise breakup)?
29. Which section of the population (occupation-wise, classwise, caste-wise, gender-wise, religion-wise, age-wise breakup) has benefited less from the telecentre initiative?
30. In your opinion what is the overall positive and negative impact of the telecentre on the village as a whole?
31. What are the reasons for the differential access, use and benefits of the telecentre?
    a. Characteristics of the local context (infrastructural, economic, social, cultural, institutional, political)
    b. Characteristics of the telecentre (technology, services, price etc.)
    c. Background of the kiosk owner/ operator?
32. What steps need to be taken in order to enable people to access, use and benefit?
33. What are the developmental priorities for you village? In your opinion do you think that facility like telecentre will speed up/bring about development in the village? Why so?

C. Interview schedule – entreprenuer

C1. Basic information

1. Name:
2. Address (including village, panchayat and taluka names):

3. Telephone/Mobile Number:
4. Email Address (if any):

5. Age:
6. Gender:
7. Religion:
8. Caste/Caste Category (General, SC, ST, OBC):
9. Marital Status:

10. Highest Education Level:
11. Any Professional/ Technical Qualification:
12. Details of Educational/Technical Background:

Level	**Subject (if applicable)**	**School/college/ university**	**Year**	**Exposure to computers?**
School (std)				
Pre-degree				
Graduation				
Postgraduation				
Professional/technical training				
Others (specify)				

a. Whether educational background helped in becoming a kiosk operator

13. Exposure to ICTs (Computers and Internet):
    a. When and where did you first **hear** about computers?
    b. When and where did you first **saw** a computer?
    c. When and where did you first **use** a computer?
    d. Have you heard about Internet?
    e. When and where did you first **hear** about Internet?
    f. When and where did you first **saw** Internet?
    g. When and where did you first **use/browse** the Internet?
14. Have you studied about computers formally / informally (Y/N)?
15. If previous formal exposure to computers, details of the same: – self / guided

Name of the course	**Institute**	**Duration**	**Fees/sponsorship**

16. What are your favorite Mail Server, Chat software, Search engine, Online groups/newsletters, Websites?

17. Current occupation(s), other than as kiosk operator:

Type of occupation	**Number of working days in a month**	**Type of income**	**Approx individual monthly income (in Rs)**
☐ Government job ☐ Private job ☐ Large/medium business ☐ Small business ☐ Agriculture 1. Landlord 2. Small cultivator 3. Tenant 4. Labour ☐ Skilled worker ☐ Semi-skilled worker ☐ Unskilled worker ☐ Casual labour ☐ Self-employed ☐ Unemployed ☐ Others (specify)	☐ Not applicable ☐ 20–5 days ☐ 15–20 days ☐ 7–15 days ☐ Less than 7 days ☐ NIL	☐ Regular, salaried ☐ Regular, non-salaried ☐ Daily wager ☐ Seasonal (Details of seasonal variation)	☐ 0–1000 ☐ 1000–2000 ☐ 2000–4000 ☐ 4000–6000 ☐ 6000–8000 ☐ 8000–12000 ☐ 12000–16000 ☐ 16000–20000 ☐ > 20000

18. If unemployed, any previous job(s) (Y/N):
19. Details of previous job(s) on above mentioned parameters:

20. Do you originally belong to this village?
21. If no, then from how long have you been staying here?
22. Have you ever stayed outside the village? For what duration and purpose?
23. Membership in institutions / political party etc

Sl. No.	**Institution/ organization**	**Name of the institution/ organization**	**Holds/held position of responsibility**	**Engagement in activities**
1.	Panchayat			
2.	Political party			
3.	Trade Union			
4.	Cooperatives			
5.	Self-help groups			
6.	Welfare associations			
7.	Clubs			

C2. Initiation and experience with telecentre

24. When did you first hear about the Information Kiosk?
25. From whom or from where did you first hear about the Information Kiosk?

26. How did you get involved? How did you get in touch with the parent/ partner agencies?
27. Did they approach you or was it the other way round?
28. Why do you think they approached you?

29. What is the process prescribed and followed for selection?
30. Why did they select you?
31. Who were the other short listed candidates?
32. What is their individual and family background?
33. Role (implications) of the family background in helping/hindering in setting up and running the kiosk

34. Did you face any resistance/ hindrance from the people while setting up the kiosk?
35. Which section of the people hindered your venture? What sort of constraints did they put and how did you resolve them?
36. Who are the people who helped you in setting up the kiosk? How did they help you?

37. Who are the people coming to your telecentre?
38. Who are the dominant users (occupation, age, gender, caste, class, religion) of the services at telecentre?
39. What is the pattern of use (service-wise, period–daily, weekly, monthly, yearly, season)
40. Which section of the population is not accessing and using the telecentre?
41. What are the factors that are hindering their access and use?
    - ○ Individual level (need, shy, permission to go, fear of going, fear of technology, time not convenient)
    - ○ Kiosk (accessibility, location, timing, service, price, attitude of the KO, KO nature and orientation, men/women)
    - ○ Village level (economic status, social and cultural norms, institutional, political)
42. What steps can be taken to facilitate access and use by these sections of population?

Assessing the skill aquired

Component	Name	Level	Comments
Equipments	Computer	☐ Identifies all the parts ☐ Knows how to switch on and off ☐ Knows how to start and shut down	
Operating systems	Windows	☐ Can use, ☐ Can install, ☐ Can configure, ☐ Can attend to minor problems	Mention Versions

(*continued*)

Continued

Component	Name	Level	Comments
	Linux	☐ Can use, ☐ Can install, ☐ Can configure, ☐ Can troubleshoot	
Applications	Word Processor	☐ Can type a biodata/report in English/other language ☐ Know basic formatting ☐ Can design booklets, newsletters	Mention level of assistance (never, sometime, always) by the Akshaya instructor
	PowerPoint	☐ Can give presentations ☐ Prepare slides ☐ Know how to Include animation, video and audio in the presentations	
	Spreadsheets	☐ Enter data ☐ Use formulas for calculation ☐ Generate graphs ☐ Can do statistical analysis	
	Database	☐ Create databases ☐ Design forms ☐ Prepare and execute query ☐ Generate report ☐ Prepare a project	
	Picture Editor	☐ Draw, cut, copy, paste ☐ Apply filters ☐ Design newsletters/ booklets	
	Programming	☐ Generate even and odd numbers ☐ Create arrays and sort numbers ☐ Create small applications	Mention languages/ platforms known
	Other applications		
Internet		☐ Have email id ☐ Can type and send mails	

(*continued*)

Continued

Component	Name	Level	Comments
		☐ Chat/video and voice chat ☐ Search for information ☐ Have joined online groups ☐ Registered for newsletters ☐ Make web pages/Make a website ☐ Shopped online	
	Virus scanners	☐ Can clean floppy drives/ directories ☐ Enable/disable virus scanners	

D. Interview schedule-household

D1. Basic details

1. Name of head of the household:
2. Name of the main respondent:
3. Relation of the main respondent to the head of the household:
4. Address (including name of the village, taluka and district):
5. Contact no (if any):
6. Approx distance of the house from the telecentre**:
7. Religion:
8. Caste/Caste Category (SC, ST, OBC, General):

9. Number of members in the household:

D2. Profile of the members of the household

Sl. No.	Name of the person	Relation to the main respondent	Gender	Age	Marital status	Highest education/ training)	Read/ write the vernacular language		Understand/ speak/read/ write English				Primary and secondary occupation	Aware/ not aware about telecentre	Access/ does not access	User/ not a user	Do they know about computers/ internet?
							R	W	U	S	R	W					
							R	W	U	S	R	W					
							R	W	U	S	R	W					
							R	W	U	S	R	W					

10. Any member of the household stayed outside the village? For what purpose and duration?
11. Anybody staying outside the village? For what purpose and since how long?
12. Awareness regarding telecentre in the village:
    a. From where did the members of the family hear about the telecentre?
    b. Are you acquainted with the kiosk operator?
    c. Do you know where the telecentre is located?
    d. Which are the services that are found at the telecentre?
    e. In what ways can the telecentre help/ benefit your household

D3. Pattern of access and use of telecentre by members of thre household

Sl. no.	Name of the person	Purpose (main service (s0 accessed/ used)	Frequency of access (seasonality)	Last accessed	Frequency of use (seasonality)	Last used	Approximate spending at the telecentre	Remarks
1								
2								
3								

13. Why are some members of the family accessing and using telecentre more than others?
14. What are the reasons for not accessing (occupation, age, gender)?
15. For the household that does not use the telecentre
    a. Have they heard about the telecentre (Y/N)?
    b. From whom have you heard about the telecentre?
    c. If aware, then why are you not using the facilities of the telecentre?
    d. What are the factors that are hindering their access (location, ambience, timing, KO) and use (services, technology, language, facilitation, price)?
    e. If these constraints are removed, will you access and use the telecentre?
16. Factors that hinder access and use
    - Individual level (need, shy, permission to go, fear of going, fear of technology)
    - Kiosk (accessibility, location, timing, service, price, intermediaries)
    - Village level (economic status, social and cultural norms, institutional, political)

D4. Impact at household level

17. In your opinion how have the individual members of the family benefited from the telecentre?
18. In your opinion how has the household as a whole benefited from the telecentre?
19. In your opinion are the changes brought about by the telecentre for the household good or bad?
20. In your opinion are the changes brought about by the telecentre in the village positive/negative?
21. In your opinion which section of the population (occupation, caste, class, gender, age, religion) accessing, and using and benefiting?

D5. Household amenities

22. House (Self-owned/rented/other):

23. Type of House (Kuccha/ Pucca / Mixed):

Wall	Brick	Stone	Concrete	Wood	Straw/ palm	Mud	Tin/ Asbestos	Plastic	Others
Roof	Brick	Stone	Concrete	Wood	Thatched	Mud	Tin/ Asbestos	Plastic	Others

24. Area of the house:**
25. Kitchen (Separate/Combined):
26. Number of rooms excluding separate kitchen:
27. Toilets (Available/Common/Open):
28. Source of Drinking Water (Well, Tubewell, Piped, Community tap, Pond, Tank, River, Other):
29. Cooking Fuel (cow dung, straw, wood, kerosene, gas, electricity, mixed):
30. Source of Lighting (Candle, Kerosene, Electric Bulb/Tube light):
31.

D6. Household assets

32. Land and other productive assets

Owner	**Area (units)**	**Approximate cost**
Cultivable		
Fallow		
Operated		
Lease-out land (rents to others for cultivation)		
Residential		
Residential area on rent		
Total		
Lease-in land (whether he is also a tenant, rents from others for cultivation?)		

Additional questions:

- Amount of irrigated and non-irrigated land
- If land is fragmented, in how many pieces?

Non-owner (does not own land)	**Area (units)**	**Approximate cost**
Residential house (Rented/ Self-owned)		
Leased-in land for cultivation		

Animals and livestock	**Agricultural implements**		**Other productive assets**
☐ Number of goats ☐ Number of cows ☐ Number of bullocks ☐ Number of buffaloes ☐ Others (specify)	☐ Tractor ☐ Boat (mechanized/non mechanized) ☐ Three-wheeler ☐ Car/Jeep (commercial) ☐ Bus ☐ Truck Others (specify)		☐ Orchards ☐ Plantations ☐ Ponds ☐ Others (specify)
Vehicle	**Consumer durables**	**Media related**	**Others**
☐ Bicycle ☐ Scooter ☐ Bike ☐ Car/jeep ☐ Other (specify)	☐ Fridge ☐ Washing machine ☐ Water pump ☐ Camera ☐ Other (specify)	☐ Radio ☐ Tape recorder ☐ Television ☐ Computer ☐ Landline ☐ Mobile phones ☐ Cable connection (TV) ☐ Internet connection ☐ Newspaper and magazines	

D7. Household expenditure

Item	**Period (daily/weekly/ monthly/ yearly)**	**Amount**
Food items		
Non-food		
Education (school fee, books, uniform, travel)		
Health (doctors/medicine, travel)		
Fuel (cooking, heating)		
Electricity bill/telephone bill		

33. Whether grains are preserved from the harvest or brought from market?
34. Approximate expenditure during
    a. Festivals
    b. Marriage
    c. Birth/Death

35. Expenditure on Agriculture (if applicable)

Number of crops per year:			
Expenditure on each crop:			
	Crop 1	***Crop 2***	***Crop 3***
Name of the commodity			
Acres under cultivation			
Seeds (variety)			
Fertilizers/pesticides			
Water charges (rain/canal/tank/well)			
Electricity charges			
Labour wages			
Storage cost (land, godown)			
Transport/marketing			
Total			

D8. Household income by source

Source	**Period**	**Amount**
Main crop produce		
Other produce (fruits, vegetables, forest produce)		
Wage/bonded labour (agriculture/manual) Number of days in a month\ Labour per day		
Salary (govt./private)		
Business		
Rent		
Land		
House		
Shops		
Gifts/grants/assistance		
Remittances		
Other		
Total		

Approximate total household income in a month:	Approximate total household expenditure in a month:	☐ Number of working people in the house: ☐ Is income stable throughout the year (Y/N) ☐ Approximate money spent during festivals? ☐ Approximate money saved in a month / in a year: -
☐ 0–Rs. 1000 ☐ Rs. 1000–Rs 2000 ☐ Rs. 2000–Rs 4000 ☐ Rs. 4000–Rs. 6000 ☐ Rs. 6000–Rs. 8000 ☐ Rs. 8000–Rs. 12000 ☐ Rs. 12,000–Rs. 20,000 ☐ > Rs. 20,000	☐ 0–Rs. 1000 ☐ Rs. 1000–Rs 2000 ☐ Rs. 2000–Rs 4000 ☐ Rs. 4000–Rs. 6000 ☐ Rs. 6000–Rs. 8000 ☐ Rs. 8000–Rs. 12000 ☐ Rs. 12,000–Rs. 20,000 ☐ Rs. 20,000	

36. Approximate money saved in a month / in a year: –
37. Indebtedness (Details of only the loan(s) taken in last five years):

Source of credit (formal or informal)	**Purpose**	**Amount**	**Interest rate**	**Year/ duration**	**Outstanding loan**

D9. Welfare schemes availed (details of only last five years)

Sl. no.	**Agency**	**Type of agency (Govt./ NGO)**	**Scheme**	**Year/duration**

D10. Membership in institutions/organizations and participation

Sl. no.	**Institution/ organization**	**Name of the institution/ organization**	**Holds/held position of responsibility**	**Engagement in activities**
8.	Panchayat			
9.	Political party			
10.	Trade union			
11.	Cooperatives			
12.	Self-help groups			
13.	Welfare associations			
14.	Clubs			

38. Number of family members who voted in the last election
39. Degree of political involvement

E. Interview schedule – user

E1. Basic information

1. Name:
2. Address/Locality:
3. Ward No/Panchayat*:
4. Telephone/Mobile Number:
5. Email Address:
6. Age:
7. Gender:
8. Religion:
9. Caste/ Caste Category (General, SC, ST, OBC):
10. Marital Status:
11. Highest Education Level:
12. Details of Educational Background:

Level	Subject (if applicable)	School/ College/ University	Year	Did you learn/use computers at this level?
School (std)				
Pre-degree				
Graduation				
Postgraduation				
Professional/technical training				
Others (specify)				

13. Primary Occupation:
14. Details of Primary Occupation:

Type of occupation	Number of working days in a month	Type of income	Approx. individual monthly income (in Rs)
☐ Government job ☐ Private job ☐ Large/medium business ☐ Small business	☐ Not applicable ☐ 20–5 days ☐ 15–20 days ☐ 7–15 days	☐ Regular, salaried ☐ Regular, non-salaried ☐ Daily wager	☐ 0–1000 ☐ 1000–2000 ☐ 2000–4000 ☐ 4000–6000 ☐ 6000–8000

(*continued*)

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Type of occupation	Number of working days in a month	Type of income	Approx. individual monthly income (in Rs)
☐ Agriculture 1. Landlord 2. Small cultivator 3. Tenant 4. Labour ☐ Skilled worker ☐ Semi-skilled worker ☐ Unskilled worker ☐ Casual labour ☐ Self-employed ☐ Unemployed ☐ Others (specify)	☐ Less than 7 days ☐ NIL	☐ Seasonal (Details of seasonal variation)	☐ 8000–12000 ☐ 12000–16000 ☐ 16000–20000 ☐ > 20000

15. Secondary Occupation (if any) (Details on above mentioned parameters:
16. If unemployed, any previous job(s) (Y/N):
17. Details of previous job(s) on above mentioned parameters:
18. Membership in any local institutions (activities, position of responsibility):
19. Previous Exposure to ICTs (Computers and Internet):
    a. When and where did you first **hear** about computers?
    b. When and where did you first **saw** a computer?
    c. When and where did you first **use** a computer?
    d. Have you heard about Internet?
    e. When and where did you first **hear** about Internet?
    f. When and where did you first **saw** Internet?
    g. When and where did you first **use/browse** the Internet?
    h. Have you studied about computers formally (Y/N) / informally (Y/N)?
20. If previous formal exposure to computers, details of the same:

Name of the course	Institute	Duration	Fees

E2. Initiation with telecentre facilities

21. When did you first hear about the Information Kiosk?
22. From whom or from where did you first hear about the Information Kiosk?
23. Are you related/acquainted with Kiosk Owner / Family before he/she opened the telecentre?

E3. Services and pattern of use

24. From when have you started coming to the Information kiosk:
25. How often do you visit the kiosk in a day/week/month/year:
26. Any variation in your frequency of visit as per season:
27. How much money do you spend at the telecentre in a day/week/month/year (seasonal variation)?
28. Do you come alone or with friends?
29. Why do you come to the information kiosk:

Sl. no.	Services	Tick (can tick more than one)	Self/ intermediated	How many times do you visit the kiosk?				When did you last visit the kiosk?
				Per day	Per week	Per month	Per Year	
1	To seek information (details)							
2	To learn about computers							
3	To send email/ browse/ chat							
4	To pay bills							
5	For job-work							
6	For DTP-work							
7	Other (specify)							

30. Favorite:
    - ☐ Mail Server:
    - ☐ Chat software:
    - ☐ Search engine:
    - ☐ Online groups/newsletters/newspaper:
    - ☐ Websites frequently visited:
31. Structuring of Access:
    a. How far is the telecentre from your home (kms):
    b. How long does it take you to come to the centre:

c. How do you come to the centre (walk, bus etc):
d. At what time do you usually come to the centre:
e. Do you come at the same time always:
f. Are the timings of the kiosk convenient for you:
g. How often do you need the help of the kiosk owner/operator:
h. What is your opinion about the kiosk operator/owner's attitude and behavior towards you and other users (help, treatment etc)?
i. What kind of constraints (location, timings, etc) do you face in accessing the telecentre?
j. What kind of constraints do you face in using the services (technology, language etc)

E4. Use of information/services and perceived benefits

32. What sort of information do you access at the telecentre?
    a. From where did you access the information before?
    b. What advantage do you get in accessing the information from the telecentre?
    c. How do you use the information?

33. Is computers a subject at your school (Yes /No)
    a. How many computers are there in your school?
    b. From which standard is computers taught as a subject in school?
    c. How many students are there in your class?
    d. How many periods do you have in a week for computer theory?
    e. How many computer practical sessions per week in school?
    f. How many computer teachers do you have in school?
    g. Does he/she teach some other subjects also? (Yes/No)
    h. Does coming to Information Kiosk help you understand the subject better
    i. What new things did you learn here at the kiosk?

34. For what purpose do students/teachers at your college use computers?
    a. Why did you/are you learning about computers?
    b. Where will you use the knowledge and skill acquired after taking the computer course?
    c. Do you use Internet to search for additional notes and references for your studies?
    d. Since when are you using computers for such purpose?
    e. What kind of job are you planning/want to do?
    f. Do you think computers enhance your job opportunities?
    g. Does knowing about Internet and computers helps while going abroad for studies?

35. Does the place where you work has computers?
    a. How many computers does it have?
    b. Do all people use computers? (Yes/No)
    c. If No, then who are the people who use computers?
    d. Are other people allowed to use the computers for their work?
    e. Why are you learning about computers?
    f. Does your work profile require you to learn about computers?

g. Will it increase your chance of getting promotion/increment/new responsibilities/ new job?
h. Have you started using the knowledge and skills acquired here in your work?

36. Do you feel the need of using computers in your business?
    a. For what purpose will you use computers in your business?
37. Do you use computers and Internet for Communication?
    a. Did you learn about computers and Internet specifically to chat and communicate with friends/relatives abroad?
    b. How did you communicate with them before?
    c. Do you use Internet to search for jobs?
    d. Do you use Computers/Internet for apply for job/communicate with employers?
38. Why are you learning about computers?
    a. Because all your friends are learning about computers and Internet
    b. Because everyone in your family knows about computers
    c. To help children with their homework
    d. Because one should know about computers in today's world
39. Are services like e-pay more convenient (time and money saved) than going to the bill office and paying?
    a. Where did you pay your bills before?
    b. What was the cost incurred in traveling to that place?
    c. How much time did it take?
    d. If the fee for the service is increased from the current price, will you be willing to pay?
    e. If more such services are introduced will you be willing to pay?

E5. Family/household details

40. How many members are there in your household?
41. Details of the family members:

Member	Relation	Age	Gender	Education	Primary occupation	Familiar with computer/ Internet?	Visit any telecentre?

42. Any member of your household stayed/ is staying outside the village? For what purpose and duration?

43. Household Amenities
    a. House (Self-owned/rented/other):
    b. Type of House (Kuccha/ Pucca / Mixed):

Wall	Brick	Stone	Concrete	Wood	Straw/ palm leaf	Mud	Tin/ Asbestos	Plastic	Others
Roof	Brick	Stone	Concrete	Wood	Thatched	Mud	Tin/ Asbestos	Plastic	Others

    c. Area of the house*:
    d. Kitchen (Separate/Combined):
    e. Number of rooms excluding separate kitchen:
    f. Toilets (Available/ Combined/ Open):
    g. Source of Drinking Water (Well, Tubewell, Pipe, Community tap, Pond, Tank, River, Other):
    h. Cooking Fuel (Cow dung, straw, wood, kerosene, gas, electricity):
    i. Source of Lighting (Candle, Kerosene, Electric Bulb/Tube light):

44. Household Assets
    a) Land and other productive assets

Owner	**Area (units)**	**Approximate cost**
Cultivable		
Fallow		
Operated		
Lease-out land (rents to others for cultivation)		
Residential		
Residential area on rent		
Total		
Lease-in land (whether he is also a tenant, rents from others for cultivation?)		

Additional questions:
- Amount of irrigated and Non-irrigated land
- If land is fragmented, in how many pieces?

Non-owner (does not own Land)	**Area (units)**	**Approximate cost**
Residential house (rented/self-owned)		
Leased-in land for cultivation		

Animals and livestock	**Agricultural implements**	**Other productive assets**
☐ Number of goats ☐ Number of cows ☐ Number of bullocks ☐ Number of buffaloes ☐ Others (specify)	☐ Tractor ☐ Boat (mechanized/non mechanized) ☐ Three-wheeler ☐ Car/jeep (commercial) ☐ Bus ☐ Truck Others (specify)	☐ Orchards ☐ Plantations ☐ Ponds ☐ Others (specify)

Vehicle	**Consumer durables**	**Media related**	**others**
☐ Bicycle ☐ Scooter ☐ Bike ☐ Car/jeep ☐ Other (specify)	☐ Fridge ☐ Washing machine ☐ Water pump ☐ Camera ☐ Other (specify)	☐ Radio ☐ Tape recorder ☐ Television ☐ Computer ☐ Landline ☐ Mobile phones ☐ Cable connection (TV) ☐ Internet connection ☐ Newspaper and magazines	

E6. Household expenditure

Item	**Period (daily/weekly/monthly/yearly)**	**Amount**
Food items		
Non-food		
Education (school fee, books, uniform, travel)		
Health (doctors/medicine, travel)		
Fuel (cooking, heating)		
Electricity bill/telephone bill		

45. Whether grains are preserved from the harvest or brought from market?
46. Approximate expenditure during
    a. Festivals
    b. Marriage
    c. Birth/Death

47. Expenditure on Agriculture (if applicable)

Number of crops per year:			
Expenditure on each crop:			
	Crop 1	***Crop 2***	***Crop 3***
Name of the commodity			
Acres under cultivation			
Seeds (variety)			
Fertilizers/pesticides			
Water charges (rain/canal/tank/well)			
Electricity charges			
Labour eages			
Storage cost (land, Godown)			
Transport/marketing			
Total			

E7. Household income by source

Approximate total household income in a month: ☐ 0 –Rs. 1000 ☐ Rs. 1000–Rs 2000 ☐ Rs. 2000–Rs 4000 ☐ Rs. 4000–Rs. 6000 ☐ Rs. 6000–Rs. 8000 ☐ Rs. 8000–Rs. 12000 ☐ Rs. 12,000–Rs. 20,000 ☐ > Rs. 20,000	Approximate total household expenditure in a month: ☐ 0–Rs. 1000 ☐ Rs. 1000–Rs 2000 ☐ Rs. 2000–Rs 4000 ☐ Rs. 4000–Rs. 6000 ☐ Rs. 6000–Rs. 8000 ☐ Rs. 8000–Rs. 12000 ☐ Rs. 12,000–Rs. 20,000 ☐ Rs. 20,000	☐ Number of working people in the house: ☐ Is income stable throughout the year (Y/N)

48. Approximate money saved in a month / in a year: –
49. Indebtedness (Details of only the loan(s) taken in last five years)

Source of credit (formal or informal)	**Purpose**	**Amount**	**Interest rate**	**Year/ duration**	**Outstanding loan**

E8. Welfare schemes availed (details of only last five years)

Sl. no.	Agency	Type of agency (govt./NGO)	Scheme	Year/duration

E9. Membership in institutions/organizations and participation

Sl. no.	Institution/ organization	Name of the institution/ organization	Holds/held position of responsibility	Engagement in activities
15.	Panchayat			
16.	Political party			
17.	Trade union			
18.	Cooperatives			
19.	Self-help groups			
20.	Welfare associations			
21.	Clubs			

50. Number of family members who voted in the last election
51. Degree of political involvement

E10. Family experience with the telecentre

52. Family Involvement with the Telecentre
    a. Do other members of your family also come to the telecentre?
    b. For what purpose do they come to the telecentre?
    c. Approximately how many times do they visit the telecentre in a day/ week/month/year?
    d. Approximately how much money the family as a whole spends at the kiosks?
53. Overall Impact
    a. How has the telecentre benefited you as an individual?
    b. How has telecentre benefited your family?
    c. How has telecentre benefited your village?
    d. Any negative impact of the telecentre?
    e. Which section of your village is using and benefiting more from the telecentre?
    f. Which part of the village is not using the telecentre?
    g. Why are they not using the telecentre?
    h. How can they be made to come and use the telecentre?

F. Checklist: network orchestrator

F1. About the organization

1. Name of the telecentre initiative:
2. Year of starting of the telecentre initiative in the state:

3. Name of the network orchestrator:
4. Type of the agency (Governmental, Private, Corporate, Co-operative, Trust, Society):
5. Year of establishment of network orchestrator:
6. Vision:
7. Mission:
8. Broad purpose for setting up information kiosks:
9. Total number of kiosks existing/planned:
10. Total number of states covered/planned:

F2. Resources and capabilities related to telecentre initiative

11. Financial Resources:
    i. Total investment made till date in the telecentre initiative:
       a) Overall:
       b) In the particular state:
    ii. Source and amount for the funding of initial venture:
    iii. Source(s) for funding existing operations, further expansion etc of the telecentre initiative.
12. Human Resources (size and structure):
    i. What is the overall size, and structure of the parent organization/local partner
    ii. What is the size and structure of the organization of the unit dealing with the telecentre initiative (hierarchy, departments, flow of planning & decision making)
    iii. How many people are dedicated towards managing the kiosks at the field level?
    iv. What is the hierarchy, and their responsibility (An estimate of the break-up between strategic, technical, administrators, support, others at the field level)
13. Technology (Hardware/ Software/Connectivity/ Content)
    i. Nature of involvement of the organization in research and development of technologies related to kiosks
14. Services, Partnerships and Networks (technology providers, content creation, service provision, service delivery, policy advocacy etc):

Sl. no.	Name of the partner organization	Type of partner organization	Purpose of collaboration	Comments on the experience with the partnership

    i. How does the organization determine the service/basket of service for a provision?
    ii. How does the organization select service producers and providers for different services?

iii. How does the organization determine the cost of a particular service and the price that the user pays?
iv. What are the three main determinants of pricing?
v. Details of each kind of partnerships (nature of agreement/contract, cost of provision, revenue sharing, type of liaisoning, support and response to the kiosk operator, end-user etc.)
vi. What is the process of rolling out a service?

17. What are the awards and recognitions for telecentre-base initiatives
    i. How have each award/ recognition effected the organization either positively or negatively?

F3. Processes

18. Selection/ Scaling-up of an initiative
    i. What internal (organizational) and external factors are considered for scaling-up the telecentre initiative in the same or different state/district?
    ii. What are the criterion and the process of selecting a location for setting up the kiosk?

Sl. no.	Levels	Criterion	Process
1.	State		
2.	District		
3.	Village		
4.	Location of the kiosk		

19. Need Assessment
    i. What is the process of determining the needs of the people for telecentre-based service?
    ii. Is there any mechanism for incorporating the feedbacks of the kiosk owners/operators? Any examples?
20. Selection of Kiosk Operator
    i. What is the process for selecting a kiosk operator?
    ii. What are the basic criteria – minimum educational and technical qualification, profile, age, family background, caste, gender, class and political affiliation?
    iii. What kind of technical and other trainings are given to the kiosk owner/ operator?
    iv. What are the frequency and duration of such trainings?
    v. What are the basic traits of a successful / not so successful kiosk operator – ideal and identified from experience?

Sl. No.	Traits of the entrepreneur	Ideal	Identified from experience
1.	Successful		
2.	Average		
3.	Not Successful		

21. Performance Management of the Kiosks
    i. What are the parameters for measuring the performance of kiosks?
    ii. What kind of data do you collect for measuring performance?
    iii. How are the data collected for measuring the performance
    iv. What are the different categories of kiosks as per their performance?
    v. Approximately how many kiosks in each category in the state/ overall?
22. Policies and their effect
    i. Which are the policies (ICT and non-ICT related) at different levels (International, national, state, district) directly or indirectly influencing (enabled/constrained) the operations of kiosks?
        - Mobilizing its resources (financial, technological, human, subtle)
        - Deploying telecentres (provision of infrastructure, services, support from institutions)
        - Enabling access and use of the telecentre by the people (permissions, special schemes, local level support) etc.
        - Spreading the benefits (publicity, enabling access) and reducing the risks (regulation) associated with the new technology within the local context

Policy level	**Policy**	**Influence directly/indirectly (enable/ constrain)**
Local administrative		
State		
National		
International		

    ii. What is the overall experience (positive and negative) with regards to different policies?
    iii. How does the experience vary across the states?
    iv. Has the organization at any time able to influence (directly/indirectly) the policies?
        a) How did the organization influence policies?
        b) And in your opinion why has the organization been able to do so?

F4. Experience with information kiosks

23. Brief description of the Model:
    i. Structure of the Model (Number and levels of components, partners, linkages etc. - Physical model of service delivery from parent organization to kiosk operator)
    ii. Services at the telecentre:
        a) Revenue model from parent organization to kiosk operator

Name	Description of service/ content	Producer	Provider	Components and structure of the delivery channel	Pricing user-KO-PO/ PA -provider – producer

iii. Which are the most popular services and why?
iv. Technology
   a) Brief description (configuration, supplier etc.) about the technologies (at both backend and front-end)
      i. Hardware
      ii. Software
      iii. Connectivity
   b) Kiosk related technologies at all levels developed in-house and/or by external firms
   c) Any involvement in backend digitization/ backend integration
   d) Content
      - Main categories of content creation?
      - Who creates/provides/updates
      - Cost incurred by the parent/ local organization for creating/updating content
      - Legal issues in providing the same
      - Process for collection, frequency, responsibility for updation of content on the website?
      - How is the authentication of data ensured?
      - Any case of misinformation- what was its fallout and how was it handled?
      - Any support or incentives given by the organization for creation of local content?
v. Average cost (break-up) of establishing a kiosk (including training the kiosk operator):
vi. Average cost of maintaining a kiosk (monthly/yearly):
vii. Any variations across states?

24. Pilot Project of the telecentre:
i. Location of the pilot project (state/district/village):
ii. Why was the place selected for pilot?
iii. Number of kiosks established under the pilot project?
iv. Numbers of kiosks still existing from those initially establish?
v. What have been the specific learnings from the pilot (revenue model, service delivery model-technology, service, pricing, promotions)?
vi. What are the three most important changes made in subsequent models?

25. Details of Information kiosks:

Sl. no	Name of the state	Name of the district	Year of starting	Number of kiosks established		Number of kiosks still working		Number of female owners	
				Rural	Semi-urban	Rural	Semi-urban	Rural	Semi-urban

26. Is there a difference in response between semi-urban and rural kiosks?
    - Time taken to set up kiosk
    - Time taken to make the kiosks operational
    - Time taken for people to accept the kiosks
    - Type of services preferred and used by the people (three most popular services) – age-wise, group-wise etc.
    - Nature (individual and family background) and orientation of the kiosk operators
    - Response and performance of female kiosk operators
    - Support from the local administration
    - Revenue generated
        i. Are there any kiosks in the urban areas? How does the experience with the kiosks in urban areas differ from than in rural / semi-urban areas?
        ii. Remarks about the experience with female kiosk operators
        iii. Year-wise number of kiosks:

Sl. No.	Year	Number of kiosks established

iv. Age-wise number of kiosks:

Sl. No.	Age of liosks	Number of kiosks
1	< 6 months	
2	6–12 months	
3	1–2 years	
4	2–3 years	
5	3 years <	

27. How does the experience differ across states?
    i. What are the constant (standard features) available in all kiosks?

ii. What are the variable parts (customized) depending on the village/district where the telecentre is deployed?
- What are the services?
- What has been the experience across different states? Acceptance of the kiosks
- Time taken to set up kiosk
- Time taken to make the kiosks operational
- Type of services preferred and used by the people (three most popular services) – age-wise, group-wise etc.
- Nature and orientation of the kiosk operators especially female kiosk operators
- Support from the local administration
- Revenue generated

28. Issues in its deployment (preconditions to its successful acceptance, support required and available, etc.)

29. What are the reasons for success and failure as identified by the organization:

Type of kiosks | V	**At the village level (Occupational patterns, economic status, social structure, political institutions, literacy & awareness etc.)**	**At the kiosk level (skills of the KO, attitude, orientation, family background structuring of access)**	**At the level of the network orchestrator**	**At policy level and response from the administration**
Successful				
Struggling				
Closed				

i. Are there kiosks that were initially struggling, but later picked up? What were the reasons?
ii. Is there any reverse case, initially doing very well but later started lagging?
iii. Kiosks that are financially not doing well, but otherwise have been able to bring about some change?
iv. What possible steps need to be taken and resources that would be required to overcome the mortality rates of telecentres?
   a) State – Policy Level, Design, Implementation Level
   b) Organizational Level (parent organization and channel partners) – any structural flaws, changes in the design of layers, service delivery etc.
   c) Individual – telecentre operator
   d) User – awareness, education etc.

F5. Actual and potential impact of telecentres

30. What are the kinds of information the kiosk is disseminating and how are people making use of the information?
31. Impact at the individual, community and village level
    (Economic (income, employment, assets), Infrastructure, Social /Cultural, Institutional (reach, efficiency, effectiveness, participation), Political (involvement))
    * Direct Vs Indirect (spillover), Intended Vs Unintended, Positive Vs Negative, Tangible Vs Intangible.

Annexure IV: Distribution of Households by Socioeconomic Status

Table 1 Distribution of Households by Socio-economic Status, Ariyallur, Kerala

Particulars	**Socio-economic Status**			
Number of Households (N = 107)	**Low 24 (22%)**	**Low-Middle 26 (24%)**	**Middle 42 (39%)**	**High 15 (14%)**
Household Occupation	Coolie (10) Fishermen (9) Vegetable Vendor (1) Housewife (4)	Coolie (6) Emigration (1) Fisherman (1) Petty traders (3) Transport and Construction (5) [Auto/taxi/jeep drivers, carpenter, tailor, mason, painter, etc.)] salaried jobs [peons and shop attendants] (4) Housewife (6)	Coolie (5) Farmer (4) Private and Government Service (29) [army, postmaster] Small businessmen (6) Gulf emigrants (3) Housewife (5)	Government Service/Salaried/ Professionals (8) Emigration (4) Businessman (2) Housewife (1)
Type of House	Primarily *kuccha*	Either mixed or *pucca* houses	All *pucca* houses	All *pucca* houses

(*continued*)

Table 1 Continued

Particulars	**Socio-economic Status**			
Number of Households (N = 107)	**Low** **24 (22%)**	**Low-Middle** **26 (24%)**	**Middle** **42 (39%)**	**High** **15 (14%)**
Availability of Toilet	Toilets at home (17); Common toilets (6)	All have toilets at home (21)	All have toilets at home (30)	All have toilets at home (12)
Source of Drinking Water	Common tap/well and piped (6); Remaining have wells	Well	Well	Well
Cooking Gadget	Except one all use *chulha*	Almost all use *chulha*, some mixed	Majority use gas stove	All use gas stove
Availability of Electricity	Almost all have	Almost all have	All have	All have
White Goods	None	None	Fridge or Washing machine (17)	Fridge or Washing machine (11)
Media Related	Radio (14) Television (1) Landline (2) Mobile (1)	Radio (13) Television (12) Landline (9) Mobile (3)	Radio (18) Television (32) Cable TV (11) Landline (34) Mobile (10) Computer or Internet (1)	Radio (5) Television (13) Cable TV (8) Landline (14) Mobile (8) Computer or Internet (3)

Figure in parantheses indicate the number of households.

Table 2 Distribution of Households by Socio-economic Status, Pimpri Buti, Maharashtra

Particulars	**Socio-economic Status**			
No. of Households (N = 81)	**Low 18 (22%)**	**Low-Middle 26 (32%)**	**Middle 26 (32%)**	**High 11(14%)**
Land (acres)	0 to 3	3.1 to 10	10.1 to 30	>30
Primary Occupation of the Head of the Household (HoHH)	Agriculture labours Marginal farmers Carpenters Shepards	Farmers Auto drivers/Drivers Electricians Masons Aganwadi helper	Farmers Welders/Mechanics Medical practitioners School teachers	Large farmers Contractors
Secondary Occupation of the Head of the Household (HoHH)	Agriculture labours	Agriculture labours Masons Petty traders	Flour mill owners Small kirana shop Tailor with a shop School teachers	Large grocery store PDS shop Dairy
Household Occupation other than that of Head of the Household	Agriculture labours Tailor	Agriculture labours Tailors Private drivers	Post-master LIC agent Medical practitioners Aganwadi teacher Police patel	–
Type of cultivator	Self-cultivator	Self-cultivator Share-cropper Tenant farmer	Self-cultivator Share-cropper Landlord	Landlord
Monthly Household Expenditure (X)*	X<= Rs. 1000	Rs. 1000 < X < = Rs. 2500	Rs. 2500 <X <= Rs. 4000	X< Rs. 4000
Type of House	*Kuccha* (83%) Mixed (17%)	*Kuccha* (27%) *Pucca* (58%) Mixed (15%)	*Pucca* (92%) Mixed (8%)	*Pucca* (91%) *Kuccha* (9%)

(*continued*)

Table 2 Continued

Particulars	Socio-economic Status			
No. of Households (N = 81)	**Low 18 (22%)**	**Low-Middle 26 (32%)**	**Middle 26 (32%)**	**High 11(14%)**
Separate Cooking Space	Yes (28%) No (72%)	Yes (40%) No (60%)	Yes (85%) No (15%)	Yes (80%) No (20%)
Availability of Closed Toilet	No (89%) Yes (11%)	No (84%) Yes (16%)	No (54%) Yes (46%)	No (18%) Yes (82%)
Source of Drinking Water	Common tap (33%) Piped (67%)	Common tap (15%) Well/piped (85%)	Piped (92%)	Piped (45%) and private wells (36%)
Cooking Gadget	*Chulha* (94%)	*Chulha* (88%) Mixed (4%) Gas (8%)	*Chulha* (27%) Mixed (38%) Gas (31%)	Mixed (36%) Gas (45%)
Availability of Electricity	No (61%) Yes (39%)	No (12%) Yes (88%)	No (4%) Yes (92%)	No (0%) Yes (81%)
White Goods	None	None	None	Only 2 households had Fridge/ Washing machine
Media Related	Radio (27%) TV (11%)	Radio (73%) TV (58%)	Radio (100%) TV (81%) DD Direct (4%) Landline (31%)	Radio (100%) TV (81%) DD Direct (27%) Landline (63%)

* As a proxy to monthly household income, an attempt was made to obtain the monthly expenditure on food items, education, health, and electricity and telephone bills. However, it was difficult to infer much about the relationship between the stated monthly expenditure and the observed socio-economic category of the household since most respondents only gave a tentative and approximate reply. In addition there are seasonal and monthly fluctuations. For many families the essential grains and pulses were grown at home and not accounted accurately.

Table 3 Distribution of Households by Socio-economic Status, Kesarpur, Uttar Pradesh

Criteria	**Socio-economic Status**			
No. of Households (N = 66)	**Low** 20 (30%)	**Low-Middle** 12 (18%)	**Middle** 21 (32%)	**High** 13 (20%)
Land	0 to 2.5 acres	2.5 to 5 acres, also Muslim HH with less than 1.5 acres. Land was acquired and usually given on *theka* / *batai* because acquisition of land was considered an investment, a sign of prosperity	5 to 12.5 acres. Households with less than 5 acres were either Muslim or Hindu nuclear house, supplemented by some business.	> 12.5 acres
Primary Occupation of the Head of the Household	Bank peon Small bidder Carpenter Ironsmith *Chowkidar* Daily wage labour Farmer Midwife Potter/masons *Tongawala*	Small farmers Deliveryman Drivers Labour (construction) Mason	Farmers Ayurvedic Medical shops *Gallawala* Bank Employee Mini-bidder Workshop *Thekedar*	Large farmers *Daroga* School teachers Other government employees Gold shop owner Shop-building aterials/ *Zari* house
Type of cultivator	Self-cultivator	Self-cultivator Sharecropper	Self cultivator Sharecropper Landlord	Self cultivator Landlord
Type of Irrigation	Rainfed	Rainfed	Partly Rainfed Some had well	Majority had well

(*continued*)

Table 3 Continued

Criteria	Socio-economic Status			
No. of Households (N = 66)	**Low** **20 (30%)**	**Low-Middle** **12 (18%)**	**Middle** **21 (32%)**	**High** **13 (20%)**
Type of House	Primarily *Kuccha* (7)	*Kuccha* (4) Mixed (5) *Pucca* (3)	Majority have *Pucca* (18)	All *pucca* houses (13)
Cooking Space	11 had separate cooking space	6 had separate space, others do not	Majority (17) had a separate cooking space	All 13 had separate cooking space
Availability of Toilet	Yes (10) No (10)	Yes (8) No (4)	Yes (19) No (2)	Yes (13)
Source of Drinking Water	Common hand pump (1)/ Hand pump (19)	Hand pump (12)	Hand pump (21)	Hand pump (13)
Cooking Gadget	Almost all use *chulha* (17)	Almost all use *chulha* (6) some mixed (6)	*Chulha* (2) gas (4) mixed (15)	Gas (8) Mixed (5)
Availability of Electric Connection	Yes (1) No (19)	Yes (8) No (4)	Yes (17) No (4)	Yes (13)
Possession of White Goods	None	None	Fridge/Washing machine (11)	Fridge/Washing machine (11)
Possession of Media Related items	Radio (4) Television (7) Landline (1)	Radio (3) television (9)	Radio (11) television (18) landline (9) mobile (9)	Radio (8) television(13) landline (10) mobile (10)

Figures in parantheses indicate number of households.

Notes

1 Introduction

1. See UNESCO (1997, pp. 33–4) for detailed descriptions on technical, functional and corporate convergence along with their implications for the media, telecommunication and IT industries.
2. See Rothenberg-Aalami & Pal (2005) for research questions based on positive assumptions of ICT4D while Sreekumar and Riveria-Sanchez (2008, pp. 162–3) adopt the ICT-D perspective for examining the relations between ICTs and Development.
3. For brief history and experience of telecentres across the globe see Fuchs (1998), Latchem & Walker (2001), Carvin & Surman (2006) and Gomez (2012).
4. The rapid proliferation of telecentres in India and at the global level is often referred to as a 'movement' because many small and localized initiatives began separately in different parts of the country and gradually built the momentum for its acceptance as a development intervention (Carvin and Surman, 2006; Byfield, 2004).

2 Perspectives on ICTs and Development

1. Conceptually, IT is distinguished from CT in that the latter is primarily used for exchanging, transmitting or broadcasting information, while the former is associated with creating, storing, retrieving and processing information.
2. Digital technology transmits all forms of data – image, sound, text as binary streams, i.e., in 0's and 1's, enabling integration or multiplexing of data, compression and better use of bandwidth, transmission and reception over a single communication channel and seamless linking of various access devices like the computer, radio, television and telephone.
3. In terms of components, both information and communication technology consist of hardware and software. Hardware is 'the mechanical, magnetic, electronic, and electrical components making up a computer system', for example, the microprocessor chip, the hard disk, printers, speakers, etc. (Heeks, 1996, p. 26). Software refers to the 'the instructions, programmes, or suite of programmes which are used to direct the operation of a computer, or other hardware (Meadows et al., 1987, cited in Heeks, 1996, p. 26).
4. This apart from the worldview of the researcher investigating the change brought about by new technologies.
5. For example, reports from development agencies highlight the opportunities provided by ICTs to developing countries to 'leapfrog' or 'catch-up' with the developed countries by bypassing traditionally bulky and analog, outdated and expensive technologies, and consciously adopting the newer and cheaper ones (UNDP, 1999; World Bank, 1998–9).

6. Indicators measuring 'information society' or 'network readiness' often link tele-density, penetration of computers and the Internet etc to a particular developmental state of a country or region.
7. www.g7.utoronto.ca/summit/2001genoa/index.htm accessed on 15 October 2008.
8. www.itu.int/wsis/docs/geneva/official/dop.html accessed on 15 October 2008.
9. Entry barriers (in terms of investment required, expertise needed, R&D capabilities) for hardware manufacturing units were higher when compared to software, but it was still considered to be less than other kinds of manufacturing industries.
10. HP labs, Microsoft emerging markets.

3 Telecentres in Rural India

1. Special issues on telecentres have been published by the *Journal of Development Communication* (2001, vol. 12, issue 2), *Regional Development Dialogue* (2002, vol. 23, issue 2), *International Journal of Service Technology and Management* (2005, vol. 5, issue 3–5), *Electronic Journal of Information Systems in Developing Countries* (2001, vol. 4), *Journal of Community Informatics* (2006), *Information Technology and International Development* (2007).
2. Completed or ongoing doctoral dissertations include Bailur (ongoing), Kiran (ongoing), Kumar (2009), Kuriyan (2008), Pal (2008).
3. Long after the associated projects have stopped functioning, the documents continue to be stored in online repositories, without any disclaimers.
4. http://it-taskforce.nic.in accessed on October 15, 2008.
5. http://itformasses.nic.in accessed on 15 October 15 2008.
6. http://www.mit.gov.in/default.aspx?id=836 accessed on 15 October 2008.
7. www.mit.gov.in accessed on 15 October 2008.
8. The word 'model' is commonly used to denote the business model delineating the cost-revenue structure of the initiative. In this thesis, both the words – 'model' and 'type' – are used interchangeably. Many of these models no longer exist – for sake of completeness and documentation

4 Conceptual Framework and Methodology

1. Traditionally an agrarian village society was commonly divided into two main classes – landlord and working class, based on the ownership or non-ownership of land and other productive assets. And class was looked as a system of conflict and contradiction (Beteille, 2007, p. 947); Andre Beteille (2007, p. 945) puts forth class as a segment of society that is defined primarily by property, wealth, occupation, income and education. Classes are differentiated from each other by the economic attributes of the individuals and households that are their members.
2. Caste, defined as a small and named group of persons, is characterized by endogamy, hereditary membership, and a specific style of life which sometimes includes the pursuit by tradition of a particular occupation and is usually associated with more or less distinct ritual status in a hierarchical system

(Beteille, 1996, p. 46). People belonging to same caste tend to live nearby. The essence of the hierarchical system is the absence of equality among the caste units, which are associated with ranked differences of diet and occupation. Though it is often difficult, and at times impossible to determine the exact, or even the approximate, place of each caste in the hierarchy (Srinivas, 2002, p. 59). A caste may dominant when it preponderates numerically over the other castes, and when it also wields preponderant economic and political power (ibid., p. 57). Caste is differentiated from class in that membership in a case is by birth, and a person does not change his/her caste by changing his/her income, occupation or employment status. Further, every major caste contains members who belong to a variety of social classes (Beteille, 2007, p. 947).

3. Within the village, land reforms led to changes in the landholding patterns and emergence of a large number of middle and small farmers. However, over the years, frequent sub-divisions within families have resulted in fragmentation of land. Accompanied by vagaries of nature, lack of adequate irrigation and other infrastructural facilities, agriculture has become unproductive. It can no longer provide sustained employment and income triggering preference for non-farm employment and migration to urban areas (Gupta, 2005). Additional factors like access to education, and at places better connectivity with towns, are bringing about change in the occupational patterns within the village (ibid.). Those with resources and access often shift to non-farm employment. Non-agriculturalists are taking up agriculture as tenants, servants and labourers. The traditional caste-occupation nexus no longer exists. Transitions between agricultural and non-agricultural occupations along with diversification of occupation(s) have led to changes in class or economic standing.
4. While staying with a host family within the village, presence of female members was found necessary.
5. For example, the activities at the e-Choupal and interactions between farmers and *sanchalak* would have been different during the season than off-season.
6. A group of 5–6 people staying in the village were asked to define and identify the rich, middle and poor households in the village. Initially only three groups – low, middle and high were decided, but based on the fieldwork at Kerala, low-middle group was introduced. This group, neither falling in middle or in poor groups, was an emerging group accessing the telecentre regularly within the village.
7. Simple numerical results have been derived from data to allow testing and supporting of claims that are inherently quantitative.

5 Akshaya, Kerala

1. http://dic.kerala.gov.in/web/policy.php (Retrieved July 2012).

6 e-Choupal, Maharashtra

1. Formally known as ITC's International Business Division (ITC-IBD).
2. http://www.baramatiinitiatives.org.
3. http://www.itcabd.com/aboutitc.asp.

7 Drishtee, Uttar Pradesh

1. Gyandoot in Madhya Pradesh was possibly the first telecentre-based e-Governance project for rural India.
2. In the year 2000, along with the District Rural Development Authority (DRDA), Dhar, CyberEdge won the first prize at the Stockholm Challenge Award in the Public Services and Democracy Category.
3. www.Drishtee.com, accessed 22 January 2007
4. CyberEdge, registered prior to Drishtee was engaged fully in the design and development of the educational material. Quiver was spinned off as recently as 2005–6 and focussed exclusively on the design of other private services. Drishtee Foundation is the non-profit sister organization of Drishtee and it undertakes research like need assessment, readiness survey, awareness campaigns and other promotional activities, both for Drishtee and any other institutes on behalf of Drishtee.
5. During the ten days of fieldwork in hot summer months of May–June, electricity was available for only two days and only for four hours from 8 in the morning to 12 in the noon. The nearest city of Bareilly received only six hours of electricity per day, though it slightly improved on the days it rained.
6. Popularity of a service was measured in terms of the number of households who have availed the particular telecentre service at least once.

8 Pattern of Access and Use

1. In Gujarat, the Chiraag-Banas initiative of Banas Dairy and n-Logue were not part of any state or district level policy action. However, in subsequent years as the e-Gram project was planned, and n-Logue was given the responsibility of implementing it, a decision was taken that no e-Gram kiosks will be deployed where Chiraag-Banas kiosks were already present. Further, in Gujarat, non-IT-related policies like provisioning of computers at schools and making IT compulsory as part of curriculum in a way had spurred demand i.e. of teachers being trained in basic computing skills and children taking tuitions at the local kiosks.
2. In Kanodar, apart from the entrepreneur, her husband also managed the telecentre in the evenings after work. He also took classes on common computer applications and accounting software. The combination of the intermediaries was a balanced one as far as the access according to age and gender was concerned. During the daytime and early evenings, women came to the telecentre for both online communication and computer education. And during late evenings, mostly young boys and men came to the telecentre. That the entrepreneur was a housewife, and a relative, helped women to be comfortable while chatting with their husbands abroad.
3. The user might not necessarily be the head of the household.
4. Most housewives and young girls at Kanodar came for online communication because their husbands/fiancés stayed abroad.

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