Chapter 2

Review of Literature and Research Design of the Study

The present chapter is about brief review of literature on use of ICT in Government sector in general and E-governance in particular. The review is brief because, firstly the E-governance is an emerging new concept\(^1\) and not much literature is available\(^2\) and secondly across the most of the research papers, similar kinds of arguments are made. Definitions and background for E-governance applications in government sector are already covered to some extent in preceding chapter. Need, scope, research methodology and limitations of the study are the latter part of this chapter.

2.1 Review of Literature

The E-governance term has been coined on the pattern of E-commerce and the popularity of E-governance worldwide started with American Government's the then Vice-President Al Gore in 1993 when he proposed use of ICT in the US government for better working and cost-effectiveness in the functioning of the government departments (Gore, 1993). On June 24, 2000 the then President Bill Clinton made a webcast address to the public through American Website (http://www.firstgov.gov) to start E-government initiatives, initially offering one-stop access to grants and procurement opportunities. During the last American presidential campaign Al Gore made E-government as his main technology policy plank (FCW, 2000). By the end of 2002, almost all the developed countries and some developing countries had initiated E-governance activities. These countries, world over, have started E-governance initiatives at two fronts- framing policy documents and setting time periods for actually moving their governments to on-line mode, and partial delivery of citizen-services through Internet (ICA, 2002). However, the use of computer and communication technology in government sector dates back to the invention of computers in late 1940s onwards when computers were used in military and scientific installations. The invention of Internet proliferated the use of computers world-wide especially after the invention of the WWW in early 1990s. Prior to the coining of the term/concept of E-governance, the computers

\(^1\) Most of the dictionaries do not list the word E-governance.
\(^2\) Though one may find a lot of reports and discussion papers on E-governance on Internet, but the authenticity of these documents is doubtful for academic purposes.
were being used in government sector as MIS applications. This point is taken into consideration while discussing literature. The definition of E-governance has been treated as any use of ICT in government sector. No distinction has been made between the terms E-governance and E-government as these terms are used interchangeably in literature, though some doctrinal differences are being attempted between these terms (Riley, 2003). Also, the developed countries are already ahead in use of ICT in governance and their main priority is no longer whether government is on-line, but in what form the genuine E-governance is to be achieved, whereas the developing countries are still trying to go on-line (Chadwick, 2004). This argument is also taken into account in review of literature and due representation is given to the literature both from the developed and developing country contexts. The literature can be divided into two categories- prescriptive literature and descriptive literature. The prescriptive literature discusses deployment of ICT in governance purely from theoretical grounds or prescribing ICT adoption strategies in governance by evaluating the ICT adoption experiences based upon secondary studies. The descriptive literature is based upon the field evaluations of E-governance experiments. The literature has been divided in two categories for reviewing because due to the nascent field of E-governance, the literature is “largely speculative and ideological, often not real” (Fraunholz & Unnithan, 2002, p.2) and therefore descriptive literature will provide concrete and real understanding of the concepts behind E-governance.

2.1.1 Prescriptive Literature

The computer based information systems started affecting working of organisations in 1950s. In 1950s-1960s computers were used for technical changes by replacing manual systems (especially as payroll systems) by automated systems for EDP, in 1960s -1970s the computers and telecommunication technology were used for general purpose managerial support as MIS, 1970s-1980s for customised management control as DSS & ESS and 1985 onwards for strategic use for survival and prosperity of the organisations (Loudon & Loudon, 2002).

In 1970s there were discussions in literature on the role of computers in administrative reforms to run government businesslike on professional management.

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43 Information Systems can be defined as collection, transformation and dissemination of information by a set of people, procedures and resources in general and in particular in context to ICT– Information Systems use hardware, software, telecommunications and other information technologies for transformation and dissemination of information. MIS (Management Information Systems) provide information for decision making by managers, cf. (O’Brien, 1995).

44 That is what we were discussing Y2K problem in legacy computer applications in government in 1999!
patterns (Loudon, 1974). The debate was whether usage of computers in government would influence existing power structure. On the one hand it was suggested that computer usage was apolitical and it did not lead to power shifts (Kling, 1974) and on the other hand it was found that computers was a tool for the administrative reforms and was not apolitical (Dutton & Kreemer, 1978). Kraemer and Dutton (1979) studied the power shifts resulted from governmental computer use against the five hypothesis—(i) computing is controlled by professional bureaucrats and used to enhance their control over subordinates; (ii) computing will be controlled by technical people and technocrats will control design, development and use of technology; (iii) computing is controlled by elective representatives to enhance their capability for control; (iv) whosoever participate in governmental decisions shape the adoption and use of computing; and (v) control over computing varies across organisations. It was found in the study that computing is a ‘malleable technology’ but certainly not apolitical and it serves those whosoever design and use it.

Taylor and Williams (1990) found on the basis of adoption of ICT by government and role of information in government, particularly of UK, that computerised information use was extending from finance functions (payroll and rates billing) to other areas and computers were enhancing economy and efficiency—‘reducing costs of service delivery and leading to improved resource use’. The study found that ICT use was leading to change in traditional bureaucratic structure of public administration and recasting it from administrative principle to business principles; from hierarchical structure/control principle to loose-tight structure/network management principle; from functional principle to co-ordination and collaborative principle; and paternalistic relationships to responsive relationships to citizens.

The role of ICT for reforms in public administration in general and information management in particular stems from the universal characteristics of ICT. Danziger (1977) maintained that computers use for EDP was assured to be continued for characteristics of computer based information systems for efficient and economic storage of information; more accuracy; level of sophistication, speed and magnitude of data processing; and easy retrieval and transfer of information. Inadequate utilisation of EDP was due to “either user’s resistance to or the user’s failure to understand computers” and poor system design without the involvement of the users. However the study lamented that there were not objective observers of the utilisation of computers for EDP and whosoever generally studied these systems ‘confuse potential with performance and they vigorously teach EDP catechism’. Taking cue from the successful adoption of ICT for
EDP, MIS and ESS by business sector, the ICT was proposed to be used in government sector (Mohan et al, 1984, cited in Laudon & Laudon, 2002, p.633).

In context to public administration in India Patkar (1988) shares his experience that his organisation made a system for land records where, by entering a village name, file number or page number, the document could be retrieved quickly. He cites other examples of software developed in the organisation and efficiency achieved. Based on his experiences he suggests that if the routine jobs of the public administrator are taken care of by computerisation, then the administrator can discharge his responsibility of development planning effectively. Also it is suggested that the qualities of discipline, punctuality, productivity consciousness and work responsibility which came to western world over three centuries due to industrialization, is difficult to be achieved by Indian administration in few decades, therefore it is essential to ‘leap-frog’ into information use for improving the administration.

Sanwal (1991) finds the introduction of microcomputers inevitable in developing countries for development. The impediments in introducing computers in administration are attributed to the lack of awareness of the benefits of computers at the level of heads of organisation, lack of appreciations by the end users in computer application development and of the value of investment in software. From the experience of India Banking sector, which proposed to install 10,000 computers between 1985 and 1989 but less than 3000 were operational, he concludes that adoption of computers is a complex and non-linear process and it impacts organisational structure, power structure and skill levels. He proposes that for successful computerisation a top level strategy is required to manage change. The potential of ICT for human development was also stressed by Stover (1984, cited in Akpan, 2000). The analyses presented a statistical profile of the ICT based communication gadgets in countries vis-à-vis their economic growth. The study found, “poor countries have fewer means of communication than the rich ones, and lack of information correlates with low level of development” (Stover, 1984, p.8). However, Avgerou and Land (1992) found many failures of ICT related projects in developing countries. These authors acknowledge the potential benefits of ICT for development, yet their argument is that the developing countries have other pressing priorities to look after, therefore poor achievement on part of computerization is due to lack of giving proper attention to the benefits of ICT and reluctance to divert financial resources for computerisation. Madon (1993) studied the CRISP (Computerised Rural Information Systems Project) which was started in India at district levels to improve decision making in DRDA. The findings reveal that ICT has acted as a probe to reveal
inefficiencies in basic administrative tasks and procedures. The administrative culture has developed own ‘rationality’ to deal with numerical analysis and quantitative data relating to physical and financial targets, therefore political and social biases decide the use of CRISP. Peterson (1998) found that in developing countries ICT related reforms fail or under perform because in bureaucracy those who resist the change are more in number than those who support reforms. The study found that the role of technocrats is neutral in the ICT related projects and it is among the bureaucrats that one can find promoters or detractors of ICT related reforms.

Heeks (1998a) analysed the studies on MIS in Public Sector in USA, UK, Africa and Asia in contrast to contemporary information systems of late 1990s. These MIS applications can help public agencies in faster & better decision making and control through the provision of timely & relevant information. However he finds that MIS are different from other types of public sector information systems (contemporary information systems) in the sense that MIS mainly target operational and tactical management levels, focus on what is happening rather than plan for what will happen and are based on database management systems.

The role ICT for administrative reforms continued to be discussed in 1990s and on the basis of ICT adoption world over it was found that ICT use in government can increase efficiency; can support efficient and effective decision making at decentralised locations, can increase accountability, can provide effective managerial control on resources and can provide better services to the citizens (Heeks, 1998b; Heeks, 1999).

Heeks (2001a) elaborates on the differences between the old models of using IT, which have been in use in the developed countries for more than 40 years, and the new models of E-governance. He points out that the old models laid emphasis on automation of the internal working of the government by processing data whereas E-governance uses ICT for supporting and transforming the external functioning of governance by use of all kinds of ICT, especially Internet. He defines the scope of E-governance encompassing ‘joined-up thinking’ by connections within government; strengthening accountability of government by connecting government and citizens; transforming service delivery to the citizens and business, supporting learning and concerted action by connections between/within NGOs; and building social and economic development by connections within/between communities. On similar lines, Okot-Uma (2001) relates E-governance for development by providing good governance to the citizens using ICT for improved access to government services to citizens, health care, training, business development and empowerment of individuals and communities.
In context to developing countries, Nath (2000) says that ICT in general and Internet in particular works on principle of ‘inclusion and participation’ and information put on public domain by Internet can be accessed cost-effectively by developing countries as well for creating knowledgeable societies. He argues that more and more information on the public domain is leading to re-arrangement of societal forces and governance structures for greater efficiency, transparency and accountability. He illustrates the role of ICT for empowerment at all levels – for example, if at village level the information about legal ownership of the land is put on Internet, then rural communities can be saved from exploitation of the handful of those few who have access to such kind of information. Nath (2000) and Davison et al. (2000) see the adoption of ICT in developing countries as an opportunity to ‘leap-frog’ in technological development to stimulate social and economic development by using ICT for education, distance health facilities, better access to market information and improved governance. On similar grounds, the adoption and harnessing of ICT in developing countries for sustainable development is being discussed in context to modern economy based on globalisation and liberalisation for the reason that ICT usage can create knowledge societies which could lead to development in every human activity - be it trade or human resource development or rural development or administrative reforms, to name a few (Thomas, 1999; Heeks, 2001; Gokhale, 2001)

The British Council (2001) builds the concept of E-governance from the developments on E-governance in Commonwealth countries, Europe and other countries world over. It reports that the government’s role in information age is changing from a passive-information giver to active citizen involvement for informing, representing, encouraging to vote, consulting and engaging the citizen through Web or variety of access media (telephone, E-mail, computer, digital television etc.). The access to government information and services can be given to the citizens through a single window seamlessly (irrespective of variety of agencies) for 24 hours a day. Griffiths (2002) sees E-government as step towards E-democracy. He argues that role of Internet is ‘potentially a democratic technology’ and as more and more local governments get on-line and more people have access to Internet, it will lead to their empowerment and better democratic choices. He also suggests that more devolution of power through information to the local governments can counter the ill effects of globalisation.

Backus (2001) conceptualises E-governance in a clear-cut manner. According to him E-governance is application of electronic means in internal government operations; and interactions between government and citizens and government and businesses. The
overall aim of E-governance is 'to simplify and improve democratic, government and business aspects of governance'. Lal and Haleem (2002) lay down the objectives of E-governance on similar lines as improving connections between citizens and government, betterment of administration, reducing poverty, participation of women in government policy making etc. The concept of E-governance in India has been modelled on Andhra Pradesh State as smart government; the word smart spelled in capital letters as SMART which de-acronym into Simple, Moral, Accountable, Responsive and Transparent government (Singla, 2000).

According to UNPAN (2003, p.4), “the potential of E-government as a development tool hinges upon three prerequisites – a minimum threshold level of technological infrastructure, human capital and e-connectivity – for all. E-government readiness strategies and programmes will be able to be effective and ‘include all’ people only if, at the very minimum, all have functional literacy and education, which includes knowledge of computer and Internet use; all are connected to a computer; and all have access to the Internet. The primary challenge of E-government for development therefore, is how to accomplish this”. The issues raised in this quotation are compositely termed as digital-divide – access of ICT within nations, regions, communities or people (Riley, 2004). Riley (2004) points out that digital divide is a challenge both for developed and developing countries and “…economics, lack of access to the Internet and other technologies, low literacy levels, and often lack of interest or willingness to use the new technologies, contributes to a country’s digital divide”. According to him the digital divide if not ‘closed’ in poor countries, then these countries may be left behind further in the information age. He expresses hope that with the emergence of new technologies like radio Internet and mobile phones, the developing countries can use these as tools for E-government at regions where there is low number of landline telephones.

In developing countries and particular South Asian countries the priority of government is not deploying ICT rather other pressing problems of poverty, unemployment, illiteracy etc. where most of the government funds go (Singh, 2001). Vittal (2001) argues that after post cold war era and in India after 1991 the role of government has become as a regulator, therefore to deal with the issue of funding ICT deployment for development in India the role of public-private-partnership (PPP) would be significant in bridging the digital divide. He suggests that private enterprises should be given ‘right of way’ along railway lines or highways or electricity boards’ networks for installing communication networks in order to expand connectivity and there should be ‘symbiotic’ relationships between government and private sector for mutual benefits.
Mbarika (2002) points out that in the least developing regions the cost of Internet is higher due to low levels of tele-density and inefficient telephone services. He prescribe that the governments should frame policies for privatisation of telecom sector, use wireless communication technology (as wireless/cellular based technology is more reliable and cost effective to implement) and set up community based telecentres. This will buck-up the e-readiness of the countries to take up E-governance.

Francois (2003) proposes that emphasis for ICT use should be given for rural development to bridge the digital divide. He prescribes grass root ownership of ICT initiatives, appropriate use of technology, address actual needs of local people, regulatory frame work in place, proper training and phase-wise increase in technological sophistication with proper skill development. According to UK National Audit Office (2002, p.9), “…the E-government initiatives have to be capable of domestication. Social psychological research into how people accept technological innovations shows that innovations that cannot be domesticated into personal, everyday routines, are unlikely to be used”. The building public trust and confidence in E-government is also important because if the E-governance applications are not tuned to local needs and the public is not provided training and incentives to use E-governance applications then the E-governance initiatives can not succeed (Tolbert & Mossberger, 2001; Toregas, 2001).

Atkinson and Ulevich (2000) argue that the ICT use for E-government should not be just to automate existing processes rather it should be to “simplify government processes, drive internal change, and reorganize government” (p.9). The focus of this change should be on customer (citizens) not on government agencies. However the government does not operate in competitive environment; therefore pace of this change is slow. They also point out that traditional means of communications with the citizens like mail or phone should also be continued for some future until the full fledged E-government is in operation. The UK Parliament Report (2003) suggests that recasting government for E-government should take both external customers (citizens and businesses) and internal customers (policy makers and who run government) into account. Whatever management model is applied the focus of re-inventing government should be to measure performance not on the ‘inputs’ rather on the ‘outcomes’.

Singla (2002) highlights BPR as ‘most potent mantra’ for E-governance. However he foresees resistance for change from the bureaucrats who enjoy the existing bureaucracy! The re-engineering demands support from politicians, bureaucrats and it should win the confidence of the citizens. According to him re-engineering is “a painful process which requires substantial financial resources and involves controlled destruction
of age-old paradigms, convictions, norms, and power centres" (Singla, p171). Budhiraja (2002) points out that going for E-governance needs to address the management of change issue as fundamental challenge. The management of change will need to address de-layering of decision making levels, changes in legal provisions, amendments to State laws, loss of vested powers amongst politicians and executives, training of personnel and support programmes to public to use new channels effectively.

Mishra (2004) finds BPR difficult to be achieved in government. He argues that government offices are less flexible and more comfortable in maintaining status quo. In context to BPR in government he argues that sometimes the proposed change requires so many efforts that the officials refrain from even attempting it. Vittal (2001b) sees at least four main cultural resistances in going for E-governance in India. These resistances are: the government culture of secrecy, lack of transparency which breeds culture of corruption, culture of seniority where a senior who does not have knowledge of IT can block E-governance initiative proposed by juniors, and sheer lack of imagination. He suggests that freedom of information act and commitment to transparency can tackle first two resistances whereas encouraging dedicated officials and forming a team of these dedicated officials can overcome the other resistances.

Agarwal (2004) argues that for a successful E-governance, there is need of training for all the stakeholders. The training should not be simply on ICT rather it should make known to the learners the purpose of E-governance, otherwise simple training will make the training meaningless and learners frustrated. Chakraborty (2001) emphasises the need of computer training for IAS officers in India. He points out that officers are taught computer fundamentals and for some higher age group officers it is difficult to teach computer fundamentals. He expresses the need to revamp computer courses taught to officers so that they can appreciate computers in their day to day life.

Atkinson and Ulevich (2000) suggest that E-governance initiatives should be started immediately in smaller steps and based on the performance; the initiatives could be scaled-up. The IT revolution is changing so rapidly that waiting until the ‘perfect’ comprehensive system can be developed will mean that any solution will be out of date by the time it is implemented. Whereas Zhou (2001, cited Davidrajuh, 2004) takes a counter argument. He suggests complete modelling government business prior to beginning the realisation of E-government; defining all government businesses, both internal and external. Davidrajuh (2004) alarms that developing country should measure the cost of failure before hand and the E-governance should be adopted in phases. Bhatnagar ( ) argues that pilot projects started in India are difficult to be scaled-up
because of lack of experience of dealing with large ICT projects among the managers and problems of effective team work.

Verma and Kalra (2002) point that providing a Website by government department is a first step for increasing government interaction with the public. They highlight that the Website should be well planned before designing phase keeping in mind the targeted audience. The contents should be authentic and up-to-date and presentation of contents should be in PDF form so that they are easy to read, their layout does not get distorted and they could not be modified. Nath (2001) draws from emerging E-governance Websites that depending upon the target audience different models of Website could be developed for digital governance.

Wyatt (2000) argues that ICT and innovations “are not only a matter of artefacts and knowledge of how to use them, they are also of social relationships…..for the public sector information systems, development [of information systems in government] is further complicated by its susceptibility to other public policy issues”(p. 414). Toregas (2001) argues that E-governance is a complicated proposition due to complex political action of giving due hearing to citizens with regional and cultural variations. Since the E-governance initiatives are being implemented within a number of jurisdictions and cultural contexts, therefore a ‘one-solution-fit-all’ offering will not suit for this multiplicity of cultural differences.

Berman and Tettey (2001) argue that the computers were developed in western industrialised societies and the technology is shaped for the bureaucratic culture of these societies. They suggest that ICT should be adopted in developing countries taking into account cultural aspects of the bureaucracy of the countries. Holliday (2002) in context to ASEAN countries argues that for E-government to be successful there is need to pay more attention to mundane social, economic and political realities. Avgerou (2000) argues that information systems have been developed keeping in context the scientific and economic situations of ‘western modernity’ and therefore deployment of information systems in developing countries need to be studied against the backdrop of historical and cultural rationalities of the countries rather than universal rationalities of information systems. Heeks (2001a) also points out to similar findings.

Heeks (2001b) summarises barriers to ICT implementation with his ‘DEPREST’ framework where D: Data barriers which prevent data sharing between government departments or prevent information sharing with the public, E: Emergencies to shift efforts and resources to other area, P: Political and legal barriers such as inadequate legal infrastructure to deal with electronic record keeping, R: Resources barriers particularly
of human resources, E: Economic barriers viz. regional funds recession or global recession, S: Socio-cultural barrier such as ‘bureaucratic mind-set’ and T: Technical barriers such as difficulty of networking. He argues that these barriers result, with regards to IT projects, in Partial failures when goals are unattained, Sustainability failures when system works for sometimes but later abandoned due to lack of financial assistance and Replication failures occur when successful pilot system cannot be scaled-up.

2.1.2 Descriptive Literature / Experiments

Hunt (2001) ‘sample’ studied the telecentres in Latin America and Caribbean countries. According to him the tele-centre can be a powerful concept in rural areas to tackle social problems (water, education, training, communications, planning, services for disabled people, youth migration etc.), governance problems (participation of people in governance, remove corruption, trampling of land rights by powerful landlords etc.) and falling behind the given demands of globilisation challenges. However the general problems he highlights with the these telecentres are: sustainability is in question due to lack of funds generation schemes to offset telecentre costs; lack of community support because there is no culture of internet using; poor infrastructure which include poor electric supply, costly and low quality telecommunication links, lack of support for Linux operating system, inadequate training resources etc.; fear of technology; lack of local contents; and lack of strategic alliance with private partners etc. Ulrich (2003) evaluates central China’s rural Internet information centres installed for poverty reduction. He highlights that china has used its own local customisation and local technology products for these centres. In these projects not only county level officials but even local government officials and people from academia were actively involved with the projects. At places where Internet connectivity was poor, fax acted as the best communication mode. Funds were raised from local communities and at some places government provided subsidies. Ulrich further adds that in China’s mountainous regions it is difficult to put up landline or micro-wave links, therefore Satellite communication possibility is the best option for future expansion of these centres.

In Pondicherry in Southern India, M S Swaiminathan Research Foundation (MSSRF), a non-profit Trust is involved in providing the telecentres in rural areas for economic development and access to government services (www.mssrf.org). These telecentres are based on sustainable business model. The trust lists various success stories. The two key success factors of these initiatives are - leadership and the
relationship with the local community which is not of the ‘donor-recipient’ type but one of ‘partnership in progresses’. Also the timely information and local contents of the database are contributory factors for success. The MSSRF uses PCs, dial-up connectivity, radio spread spectrum and other modes for communications whichever are suited for local conditions. During a travelling workshop to India on ICT-enabled development in India, Ferguson (2003) argues on the basis of success of MSSRF projects that the concept of a telecentre should not be seen as an access centre rather as a knowledge centre and technology should be seen as means to an end. He found that besides computer, telephone, building and electricity, the pre-requisite for the sustainability of a telecentre is that community feeling of owner-ship of the tele-centre. However he points out that strong sense of community is missing else where in India to run telecentres on sustainable business model.

A project called Gyandoot was launched in District Dhar of Madhya Pradesh in 2000 to bridge the digital divide in rural landscape, to provide various government services to citizens at their door steps and make governance transparent (http://www.gyandoot.net). The project is envisaged on business model to provide government information and certificates to citizens on nominal charges through telecentres. Sharma and Yurchik (2001) evaluated the project during first nine months of its initiation. They found that breaking the monopoly of single person dealing with a specialised task in government is a daunting task in order to put information on-line. They also highlighted the problems of electricity, telecom connectivity and training needs of the persons manning the telecentres. Since the public in villages is illiterate there was need for an intermediary, either private person or government clerk, on their part to use computer and also due to high costs of Gyandoot E-commerce application it should be used only for e-mail and government databases retrieval. Jafri et al (2002) found with respect to Gyandoot that despite the immense potential of the project the services are highly under-utilised. There were problems due to poor connectivity, absence of back-end computerisation in government, lack of publicity, non-involvement of local elected representative and lack of interests shown by successive administrators to the promoters of the projects. The Centre for E-governance IIM Ahmedabad (2002) also evaluated the project. It was found that there were better service delivery channels already existing and common man did not want to use Gyandoot for the same. The Centre summarized that despite initial excitement with the project, it remained highly unsuccessful and there was need to seriously review the project management approach. The Hindu newspaper reported the observation of an MIT Professor about Gyandoot,
“when reminded about the Gyandoot experiment in Madhya Pradesh, he said it was a single-district project. He has visited the project, and knows the originator, whom he admires. But the project had stalled after the latter was transferred out of the district” (Hindu, 2003).

In Andhra Pradesh E-Seva service for citizen has been launched to avail various government services through single window (http://www.esevaonline.com). The model is based on public-private partnership where infrastructure and building are provided by the government and staff and hardware/software/connectivity is provided by the private company. A service charge is levied on the users of E-Seva. Pardhasaradhi (2004) found that in overall the citizens are very happy with the services; however the lack of communication between the various departments and E-Seva, and lack of punctuality on the part of E-Seva employees are creating hurdles. Also the citizens are apprehensive of turning E-Seva centre ambience into just like any government premises.

The Kerala government has started a citizen-centric E-governance initiative called FRIENDS (Fast, Reliable, Instant, Efficient, Network for Disbursement of Services) in every district headquarters to pay utility bills as one-stop services (http://www.friendscentre.net). There is no service charge levied on citizens for availing services from FRIENDS. Madon and Kiran (2002) found that the FRIENDS is working very well, but main problems are that the FRIENDS centres are at district headquarters, so people don’t like to travel so far and also sometimes some centres do not provide services of some departments. The study proposes backend computerisation of administration so that services of all departments can be availed on-line and also there is need to extend FRIENDS centres to sub-district headquarters to cut the distance travelled by the citizens.

E-Choupal network of telecentres has been started in India by ITC business house in various States of India. The telecentres are located in villages. Through these telecentres centres ITC supplies agri-inputs to the farmers and procure their food grain products by on-line negotiations. The benefits of the E-Choupal to the farmers are that they don’t have to take their produces to mandis, thus they get best price for their produces without going the exploitative channels of the middleman. The ITC has used local village level people as their agents. The lesson from this experiment is that business groups can also help in developing rural economy (Annamalai & Rao, 2003).

45 The more emphasis on the literature on Gyandoot is given because LokMitra initiative in H P was also inspired by Gyandoot project.
The Bhoomi system for land records computerisation in Karnataka was envisaged to provide 'Records of Rights' to the people at Taluk level. The project is reported to be running in success. But the challenges during the implementation were fear in employees of role loosing, mutilated manual records and lack of computer knowledge amongst employees. However these challenges were tackled by strong leadership, training and involving the employees, hiring private agencies for data entry, recruiting fresh college graduates who had not tasted 'fruit of corruption', involving elected leaders and controlled re-engineering process etc. The Bhoomi System uses digital signature and biometrics for data security purposes. Similarly the CARD system for 'Land Registration and Deeds' in Andhra Pradesh has reduced time for land deeds registration and weeded out corruption of selling fake stamps and wrong valuation of property. The challenges were huge data entry and resistance to change by employees. It was found by CARD experience that major challenges for ICT based projects are change management and reengineering, and as compared to these challenges the technological challenges are very less compared to management challenges.46

There are various Governments to Business E-governance initiatives world over. Chile government E-Procurement system was started in 1998 to do business through its Website. As a result of this system there were benefits of cost savings in procurement, transparency and accountability. The main challenge before the project was as how to reconcile the opportunities and possibilities of Internet with the administrative and cultural realities of different government organisations. In Singapore the system was developed for on-line tax filing. The project was successful because of a strong team who worked very hard and due to the technological sophisticated population of Singapore.

The ICT can be used in different innovative ways to address the needs of common man and bridge digital divide. Pringle and David (2002) cite the example of Kothmale community radio station in Srilanka based on 'marriage' of Internet with radio to remove lack of access to ICT, language barriers and lack of skills to use Internet by local community. The radio station broadcast the 'Radio browsing the Internet' programme and surf the Internet on the requests of the listeners. The listeners could send requests by phone or postcards for particular information and the experts sitting at radio studio browse the Internet and simplify the contents to the listeners. The Central

46 The references in this paragraph and immediate next paragraph have been taken from World Bank Website. The site also lists and evaluates various E-governance experiments world over, cf. http://www1.worldbank.org/publicsector/egov/.
Vigilance Commission Web page in India (http://cvc.nic.in) was used in an innovative way to expose corrupt officials by putting corrupt officials names on the page. According to Bhatnagar (2001) this experiment brought many positive outcomes. The experiment brought to the notice of the general public that the corrupt officials are still holding the sensitive positions, the lengthy delay in departmental inquires is supporting corruption as many officials claimed no charge sheet about them and it emboldened other government agencies or media to start such initiative. Tehelka.com (http://www.tehelka.com) could be said as one organisation which is using its Website to expose corruption in public sector. Such experiments can promote transparency and improve governance. Devraj (2002) cites about an experiment in a village near Pune where an NGO is using telephone to give agricultural information to farmers through interactive voice response (IVR) system. This experiment shows that there is always no need to use ‘hi-tech’ ICT tools to harness ICT.

2.2 Research Design

In research design we have described need, scope, and objectives of the study. Depending upon the need, scope and objectives we have formulated research methodology. We have also listed difficulties faced during the research, limitations of the study and also highlighted future scope of the study.

2.2.1 Need of Study

The deployment of computers in government sector was started quite earlier, but it is clear from the review of literature that computers were used as isolated instances in government– and mostly they were used in developed countries. The serious efforts to use ICT in government world over started only around 2000. It is also evident from the review of literature that E-governance is a complex, susceptible to failures and costly in terms of funds and time for implementation. It is complex because its successful implementation involves a whole gamut of issues which touch almost all academic disciplines. Also there is no integrated and established theory of E-governance and every country or federal States of big countries have there own approaches adopted for it (Jagadish, 2004). During the implementation of E-governance the whole gamut of issues from diverse disciplines add to the complexity in the absence of some set formulae to address the challenges of E-governance. In fact, as identified by Andersen and Danziger (1995) that public sector in itself is extremely complex field and impacts of ICT in public sector are very difficult to specify and measure, particularly in the absence of empirical
documented knowledge. Due to the complex nature of E-governance, the failure rate is also high. The issue of high cost of E-governance can be attributed to lack of any given theory or where the government puts its priorities. Despite all the challenges and hurdles in going for E-governance all over the world there is talk on re-inventing governments in information age and ‘E-government development has become a part of high-level politics’ and ‘by 2003 all but 19 UN member States were on-line’ (Szeremeta, 2003). The fundamental question is why do we need E-governance despite all the odds? The answer is that E-governance is rewarding- it has value for public. The concept of E-governance opens up government from ‘in-line’ to ‘on-line’ for public services, brings transparency, infuse efficiency in administration i.e. value for tax-paid by the citizens, strengthen democracy and does many more good things which can be summed up as good governance. Also in the globalised and networked world E-governance empowers people by carrying them into knowledge age. However, as said in section 2.1, the field of E-governance is evolving one, and literature on E-governance is speculative and ideological. More and more implementations and their evaluations will expose general inferences which will lead towards a sound understanding of the theory of E-governance.

If we look at ICT as only independent variable to be used in government sector, then basically we are talking of a technology-push approach. In this approach we are taking a fatalistic view, according to which technology is a ‘god sent’ entity and we should accept whatever it offers us without any control from our side. Of course, ICT has some fundamental universal characteristics and the ICT will introduce these characteristics in any area of its application. If we use this approach, then there is no need for the study of E-governance, because just pumping technology in government will choose its own course! However according to Feenberg (1991, p5) technology has both positive and negative implications and the use of technology is contingent on how we use it. Therefore, to use ICT positively we need to look at its applications in a controlled fashion to harness it for positive implications. In this approach we use technology-pull approach where we are deterministic or particular about the implications of technology in a given environment. We can shape technology according to our needs. We not only can use technology for its universal characteristics, but we can also customise and deploy it in innovative ways as well. According to technology-pull approach, E-governance becomes the dependent variable which we are going to achieve through ICT as one of the

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47 For a discussion on fatalism, determinism and particularism of IT, refer (Licker, 2001)
independent variables. The other contextual variables are many as emerged from the review of literature viz. digital divide, funding, administrative culture, re-engineering, training etc. which determine the applications of E-governance. Since the other variables are many, therefore to simplify the complexity of the study these variables can be clubbed as management issues. This can be justified by the definition of management as "the application of knowledge to realities in order to attain desired result" (Koontz. et al, 1986, p.13). In achieving E-governance we are harnessing knowledge of ICT as main independent variable and knowledge of management principles for the existing realities (contextual variables) in government sector. Thus there is need of study for technology and management issues to achieve E-governance.

The literature points out that there are political, social and economic determinants and also ICT is an invention of western cultural settings. Therefore E-governance needs to be studied in the environment of non-western countries' political, social and economic capabilities.

In context to India, “government taken as a monolith from Central Government right down to the lowest functionaries in the gram Panchayat level is a vast, complicated, multimode and multi-channel network of administrative offices and functionaries. Its geographical reach extends across the country and it touches and affects all citizens” (MIH, 1996, p.215). For understanding and managing this monolith and complex administrative functions of the Government it can be further broken up into States and each State is further divided into Districts. It is at district level that the citizens interact with government at various levels directly or indirectly. However the, the administrative structure is hierarchical and there is not much cross integration among the agencies/offices. The administration primarily works through rigid bureaucratic structures and with little flexibility towards stated objectives of serving the citizens.

There is still colonial malaise prevalent within the bureaucracy, which was designed by colonial masters to keep people under control and create conducive environment for their trade. The government interface with the citizens is known as a system full of harassment with endless forms, red-tapism, large amount of paperwork, secrecy, authoritarianism and many more vices (Singh & Sharma, 2004). In this context, there is a need to reform government administration and there is need to look into the aspects as how the ICT can be

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48 Contextual variables emerge from government sector while we introduce ICT in governance. Also the E-governance is not an exact science, so the mathematical analogy in discussion is used just for explanatory purpose.
used as a tool to make citizens’ life easier. Also in India, though there is almost similar kind of political and administrative structures but there is cultural diversity which varies from State to State or within a State. There are different languages (18 officially recognised), different levels of economic developments or human developments and different kinds of priorities for development of each State or different regions within a State. Also there is division of the functions and powers of Indian Central government and State governments—some functions and powers have been clearly demarcated and in some cases there is concurrency (Basu, 2003). Given this scenario, there is a need to look into the local customisation of E-governance.

As discussed, the diffusion of telecommunications is a pre-requisite for bridging the digital divide. The Indian government has opened up its telecom sector for private operators. The enabling Bills of ‘Right to Information’ and ‘IT Act 2000’ have been passed by Indian Parliament and ‘Citizens’ Charter’ has been prepared by the Central Government (www.mit.gov.in). The Central government has opened a Centre for E-governance and various States in the country have started E-governance initiatives (government sponsored or private sector sponsored as is evident from review of literature) to provide SMART governance or FRIENDS governance. However, the performance of Southern States is better in terms of e-readiness and E-governance initiatives than that of Northern States (Joseph, 2004). The reasons for Southern States being ahead of Northern States are that of more literate population and more density of knowledge workers in Southern States (Fraunholz & Unnithan, 2002). Some of the initiatives have been sampled in the review of literature and it can be said about these initiatives that though they were started with big ‘fan-fare’ but the results are not encouraging. There is the need to further look into such initiatives and in different socio-economic situations within the country. Also most of the literature has been written by those who were instrumental in promoting such initiatives i.e. IAS officer and NIC personnel. There is the need for third party evaluation of such initiatives in order to develop a coherent understanding of issues involved in E-governance. Also, Kenniston (2001) points out that in 2001 there were at least fifty grass root projects in India which were using modern ICT for development in India. However, these projects had been rarely studied, no comparisons had been attempted and the issues of appropriate technology, sustainability, scalability etc. were not addressed. Once these projects are evaluated and only then there could be real understanding of the E-governance. At the

This can be said by our experience of personally attending the International Conference on E-governance held in IIT Delhi from 18-20 Dec. 2003.
moment no such attempt has been made, therefore the generalisations of E-governance issues is difficult to find.

Our study is related to the Indian State of Himachal Pradesh. Himachal Pradesh has already NIC establishments at its headquarters and districts headquarters since 1989 which looks after computerisation efforts in public administration of the State. There are also some citizen centric E-governance initiatives started or proposed by the State government. However, so far there is no theoretical or empirical study available on the performance of computerisation efforts or on the E-governance initiatives in the State. There is a need to evaluate the computerisation activities in the State government and to observe the performance of citizen-centric E-governance initiatives going within the State.

2.2.2 Scope of the Study

The present study entitled "E-governance: Technology and Management Issues (A Case Study of Himachal Pradesh)" investigates the E-governance in context of Himachal Pradesh. Since the field of E-governance is emerging one and not much has been done on front of genuine E-governance, as prescribed in literature, in the State, therefore we have taken the definition of E-governance as any computerisation activity taken within the State government and its implications within government or to the civil society. The Definition of 'Governance' has been taken as defined in Webster's Encyclopedic Unabridged English Dictionary - "A method or system of government or management." This definition we found more suitable and workable to the study because the definition relates to general concept of governance and our aim is not to study the epistemological underpinnings of the concept of governance.

The definition of Technology is any information and communication technology which may include computers and peripherals; telecommunication infrastructure; assorted electronic gadgets; standard procedures, techniques and principles in the field of ICT; assorted set of software – software applications developed in-house or proprietary software products; electricity infrastructure etc. The 'Technology Issues' means usage of technology and its principles, appropriation of ICT in the field of its application, policies for ICT usage, reliability of the technology etc.

The definition of Management has been taken as given by Koontz et. al (1986, p13) "...the design of an environment in which people working together in groups can accomplish objectives ...design is the application of knowledge to a practical problem for the purpose of determining the best possible results for the situation. This is what
management is all about— the application of knowledge to realities in order to attain desired results.” In our case we have investigated the design of E-governance in Himachal Pradesh government environment. Since innovations not only adapt to existing organisational arrangement rather they also transform the structure and practice of these environments (Van de Van, 1986), therefore as E-governance is an innovative idea to be applied for governance we expect in the study various management problems arising which may be of managing the technology or other management problems. The study applies deterministic approach to harness ICT in government and applies the knowledge of management discipline to manage the impacts of ICT in governance. The ‘Management Issues’ means the various principles of management theory which are needed to be applied as a result of application of ICT in government sector. The guiding management principles for the study are planning, organizing, staffing, leading and controlling—which are available in any standard text book of management theory.

Since the present study is a seminal study in the field of E-governance in Himachal Pradesh and also as the E-governance is an evolving interdisciplinary field, we have taken exploratory approach for our study. There may be many technology or management issues which have not been identified in literature on E-governance and which may be specific to E-governance in our environment of study. On this argument, we don’t follow any rigid approach as such to confine the issues as listed above; rather we adopt an open systems approach to identify other issues arising during the study.

The present study aims at investigating the technology and management issues in geo-administrative area of Himachal Pradesh with regards to E-governance applications. The study has taken a macro level view of E-governance applications in the State in general and in particular it investigates the experiences in a district of the State for E-governance. The study of a district has been chosen because a district is the basic unit of governance where citizens interact directly or indirectly with various government departments or agencies and also a district government in India replicates all functions of government at Central or State level (Singh & Sharma, 2004). If an E-governance initiative is successful at any district level in the State, then some general inferences can be made to some extent (within contextual limits) to replicate the same initiative in the State or in any district of the Country. We have chosen district Hamirpur as a candidate unit for our research. The reasons to choose this district were: the NIC has been installing computerised applications in the district right since 1989, the citizen-centric community- information-centres E-governance initiative called LokMitra was started in
the district on pilot basis in 2001 and an E-governance centre has been operational at the district headquarters since 2003.

The reporting of the study is narrative; no dichotomy has been maintained between technology issues and management issues. This has been done deliberately because management issues arise because of the interaction of technology with the environment. Each investigating chapter of the study begins with the reporting of E-governance applications and followed by the observations. The thesis gives answers to the following questions:

(i) What level of computerisation is there in the State and what is happening at E-governance front?

(ii) How the computerised applications are affecting the government and how they are serving the citizens?

(iii) Why the E-governance application was started and to what extent the application is successful?

(iv) How the technology and management approaches are being employed and what could be the best possible approaches for a given application?

The term computerised application or computerisation encompasses both hardware and software whereas the computerised software application means only software. The terms citizen, people, and public are synonyms in the report. All the field investigations for this study were stopped in June 2004; therefore this thesis reports the status of computerisation or E-governance applications till the end of June 2004.

The scheme of reporting the study is as follows:

**Chapter 1** is a general overview of ICT and E-governance. It discusses the characteristics of ICT, rationale why business sectors are deploying ICT applications and why ICT should be used in government sectors. The chapter builds up the concept of good governance as evolved from the old paradigms of governance in public administration discipline. The definitions of E-governance are explored and ways to deploy E-governance are discussed. Various general technology and management issues arising during the implementation of E-governance are highlighted and finally, the chapter discusses briefly E-governance models and phases of E-governance adoption.

**Chapter 2**, the present chapter gives rationale for the present study and provides the agenda to read the thesis. In this chapter review of literature has been done and research design of the present study has been formulated i.e. need, scope, objectives and research methodology of the study are discussed. The chapter also discusses the sources of
information for the study, the problems which were faced during field investigations and highlights the limitations and future scope of the study.

**Chapter 3** describes the various computerisation activities and E-governance initiatives in the HP State against the backdrop of government structure, IT infrastructure, and IT Policy and E-governance guidelines. The chapter lists various computerised applications implemented in the State and makes observations about the status of computerisation and the State Website. The interviews of the State Informatics Officer and of the Principal Secretary for IT of the State are appended to the chapter.

**Chapter 4** explores the context for implementing E-governance applications at a district level in the State. Hamirpur district has been chosen as the unit of study. The chapter discusses: socio-economic profile of the masses, needs of governmental information for the public, the existing service delivery channels through which general public avail government services and overview of the interactions of citizens and government offices. The status of Electricity and Telecom infrastructures in the district is also described.

**Chapter 5** is descriptive study of the telecentres based citizen-centric E-governance initiative started on pilot basis in district Hamirpur of the H P State. The initiative is named *LokMitra*. An exploration has been done on the technology and management issues involved in the implementation and operations of *LokMitra*. The observations are based upon the census study of the *LokMitra* telecentres. The interview comments of some of the officials and the former DC - the executive promoter of *LokMitra* have been appended to the chapter.

**Chapter 6** is brief description of the E-governance Centre opened at headquarters of district Hamirpur in December, 2003, and the status of various computerisation applications in the district is given.

**Chapter 7**, the last chapter of the thesis, summarises the observations made in the preceding chapters. The summary is supplemented with critical discussion on the technology and management issues involved in deploying E-governance applications in the State. Finally, a suggestive E-governance framework has been given for the State.

A list of annotated bibliography, Websites accessed during the study and annexures mentioned in the text of the study are attached towards the end of the thesis. Since the printout of the study is taken in ‘Black-White’ and some diagrams in the report depict coloured effects, therefore a CD containing the thesis text has been affixed in the end of the thesis.
2.2.3 Objectives of the Study

In context to Himachal Pradesh, no study has been done on E-governance so far either by government itself or by any third party. Therefore the main objective of the study is to prepare a comprehensive report on the computerisation efforts in general and recently initiated E-governance activities in particular. The other major objectives of the study are:

(i) To describe the progress of E-governance initiatives of Himachal Pradesh State in general and in particular to describe the progress of LokMitra E-governance initiative in district Hamirpur of the State.

(ii) To monitor the usage of Technology (hardware, software, communication technologies) in context to E-governance initiatives in the State and to suggest appropriate use of the technology.

(iii) To analyse management issues involved in existing mode of E-governance.

(iv) To suggest an E-governance framework for the State based on the inferences from the study as envisaged in all earlier objectives.

2.2.4 Research Methodology

The research conducted in this study is exploratory in nature and can be said as what Bickman et al. (1998) defines as descriptive research. In descriptive research the relationship between the two and more variables is described qualitatively. The intention of our study is to explore and describe what is started happening to governance as a result of proliferation, deployment and innovation in the field of ICT in government sector. We are concentrating on research questions based on ‘what’, ‘why’ and ‘how’ rather than ‘how much’, ‘how many’ or ‘what amount’. This makes our research qualitative rather than quantitative. In quantitative research or other experimental research the casual relationships between the different variables is tested by systematically varying the independent variable/s and measuring the effect on dependent variable/s (Bickman et. al, 1998). In our study we have dependent variable E-governance but its boundaries are not mathematically limited. Also the independent variables may be many, emerging from the given geo-socio-economic environment for E-governance as said in review of literature, therefore we can not predict these variables finitely before the actual study conducted in the field. Kaplan and Maxwell (1994) argue that the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context is largely lost when textual data are quantified. The research context of our study is to describe and understand (textually) the
working of the phenomenon of E-governance as sub-system of the environment of governance in Himachal Pradesh. Thus we have chosen qualitative research techniques.

"Examples of qualitative methods are action research, case study research and ethnography. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher’s impressions and reactions" (Myers 2003, p1). Among these qualitative methods we have chosen case study method of research because our research questions and objectives come closer to what Yin (1994) defines as a descriptive case study. According to Yin (1994) a case study is an empirical inquiry that “investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident... [and] relies on multiple sources of evidence” (Yin 1994, p.13). In our study, E-governance is a contemporary evolving field and its application contexts are not known before hand. Benbasat et al. (1987) also proposes case method of research for the study of information systems since the object of information system discipline is the study of information systems in organizations, and interest has shifted to organizational rather than technical issues. The rationale for choosing case method of research can be summarised as most of the studies on use of ICT in governments is prescriptive in nature rather than descriptive, and since the information systems are rich and varied field, hence method of study must take into account the subject matter and the real world complexity in a given situation, for that case method is the best research method (Montealegre, 1999).

2.2.4.1 Case Study Method of Research

The origin of the case study method of research goes back to the field of sociology. As sociology tried to arrive at laws and generalisations in regard to human nature and society, it was found that these laws are not static which could be studied by natural law theorists rather these laws have constant possibility of change given the dynamic nature of society. Therefore to study social phenomenon in a given situation, the need was expressed to do real field study to ‘get the pants dirty in real research’ (Colorado, 2003). Thus case method of research is based on picking the instances of realities in the field.

There are detractors as well as advocates of this method. The detractors proscribe case study method for the inherent subjectivity which is difficult to generalize, the case study reporting is massive resulting in unreadable documents and case study method is unscientific approach of using qualitative data. The advocates point out that case studies produce much more detailed information than what is available through quantitative or
statistical techniques, while statistical methods might be able to deal with situations where behavior is homogeneous and routine, case studies are needed to deal with creativity and innovation in any field of study which is contemporary and boundaries between context and phenomenon are not evident (Yin, 1994; Colorado, 2003). Yin (1994) points out that a case study method is as good as any other method of research if the case study method is carefully designed.

The research questions starting with ‘exploratory what’, ‘why’ and ‘how’ lead to case study method. In case study either a single case may be chosen or multiple cases may be chosen. A single case is appropriate for a revelatory case when an investigator has an opportunity to investigate a phenomenon at a given site previously not investigated. The investigation is like a reporter reporting on a given situation. Whereas multiple cases are appropriate to study similar phenomena at different sites. The information for case study can be collected from documents, archival records, interviews, direct observations, participant-observations and physical artifacts. The requirements on the part of a case study researcher is that one should have inquiring mind to frame good questions, he should be good listener/observer, should be flexible to change to an unanticipated event, should have grasp of issues and should not have any pre-conceived position (Yin, 1994).

2.2.4.2 Application of Case Method of Research to the Study

Given the contemporary nature of our field of study, there is large range of predicted or unforeseen technology and management issues. It would not have been justice to the study if we had chosen quantitative research techniques. Therefore as argued in previous sections on qualitative research, we have chosen case study method of research. We have chosen a single composite case of the whole Himachal Pradesh. This composite case has been divided into sub-cases: macro level case of the E-governance initiatives in the State (Chapter 3 as case I), governance scenario of district Hamirpur (Chapter 4 as case II), LokMitra initiative in district Hamirpur (Chapter 5 as case III), and E-governance Centre and general computerised applications in Hamirpur district (Chapter 6 as case IV).

Initially, prior to attempting the study, we gathered information on E-governance initiatives going on world over, collected literature on E-governance in order to grasp the concepts on E-governance. Then we visited various government offices in the State headquarters to observe the functioning of the government departments and computer usages. When the LokMitra was started, we visited LokMitra Soochanalaya (main centre) and seven Soochna Kendras (telecentres) in different blocks of Hamirpur district.
We also visited some villages of Tehsil Bhoranj. During this phase we got first hand information about the working of E-governance and computerised applications in the State. Also we established an informal rapport with various employees and Soochaks (people manning Soochana Kendras). We also kept on visiting the above mentioned personnel periodically to keep alive the contacts and to disclose our intention to conduct the research. During this phase we kept on recording the observations as well.

Based on the pilot probe, we prepared a set of interview schedules (Annexure I) for different level of employees, Soochaks and people. From the various interviewees we not only extracted the information as per interview schedules but as and when any employee whom we came across made a statement pertinent to our area of study, we recorded it. For the Soochana Kendras we have made a census of all the Soochana Kendras. We were not very rigid in our interview rather we kept flexibility to let the interviewees speak at divergent lines. This was done deliberately; firstly to keep the interviewing environment self-propagating and secondly to explore any further issues which we could not enlist in the interview schedules. Sometimes same employees were interviewed many a time (even without showing the questions). This was done to know the conviction of the particular employee so that our study could become reliable. We have interacted with large number of employees during the study but we have reported only those answers which are relevant to exploratory purpose. Also the anonymity of the employees has been kept in the report as desired by them. It were not only interviews on which our study is based, rather we involved in discussion/suggestions with technical personnel about the computerised applications going on to extract the information. Also we kept on observing the hardware, software and work culture in the offices or pragmatics of the discussions with the employees. The Soochaks and employees were also interviewed on telephones to ask then again about what they had said or what further they want to add wherever we found some ambiguity in their answers during the interview. Overall we followed case study method of research as given in the book of Yin (1994) with slight modifications to our study needs whenever required. For examples in order to know the awareness of LokMitra services on citizens and employees we have taken dichotomic sample survey.

2.2.4.3 Data Collection
The data used in the research have been collected both from secondary and primary sources as described follows:
Secondary Sources

The secondary data have been collected from various journals articles, books, published government reports, magazines/newspaper reports, documents put in public domain on Himachal Pradesh Website and documents put on Websites of various universities, renowned organisations and of governments world over (including Websites of Central government and State governments in India). Since the E-governance is a multidisciplinary field, we had to consult secondary sources from diverse fields with special eye on Computer Science, Business Management, Public Administration and Political Science journals and books. Despite consulting library of Himachal Pradesh University, we retrieved research papers from IIT Delhi library Computer Centre where the journals are available on-line and also requested re-prints of research papers from the authors through E-mail.

Also the Internet was surfed prolifically for the material on E-governance. We used two popular search engines Google and Yahoo. [cf. Appendix A to this Chapter (p.72) for tips on searching the Internet]. Generally it was found that the people who write on E-governance, have knowledge of computers, they have tendency to put their works on the Internet. However the material on Internet is so vast that it is very difficult to ascertain the quality and reliability of the data and sources respectively. For that we followed principles set by Harris (1997) to judge the quality and reliability of the Internet sources. The information on Internet may exist in various forms viz. facts, opinions, stories, interpretations, statistics etc and it may be there to serve various purposes other than academic purposes viz. to inform, to persuade, to sell, to present a viewpoint, and to create or change an attitude or belief etc. Therefore some principles/criteria need to be followed to ascertain the quality and reliability of the source. Some of these principles are credibility of source: author/Website’s credentials; accuracy of sources: purpose of information; reasonableness: absence of slanted tone, balanced, reasoned; and support: supported with background literature, contact information available etc. [cf. Appendix B to this Chapter (p.73) for these principles from Harris (1997)].

Primary Data

The primary data sources used in the research are interviews/discussions with the government employees (all levels) and Soochaks; interactions with the public; various internal circulars/file pages and documents handed over by the employees during interviews; personal communications with government employees and direct observations in the field. The methods of primary data collection have been reported in discussion of sections 2.2.4.2 and 2.2.4.4.
2.2.4.4 Difficulties Faced During the Research

Every researcher is faced with various kinds of difficulties during the course of his research study. We are no exception to this rule. The major difficulty which was faced during the course of our study was that of the attitude of the government employees towards disclosing the information. Most of the employees in government offices believe in the principle of maintaining the secrecy. They believe that parting the information will lead to the violation of ‘official code’ and hence we found them less transparent in divulging the information. We found very few articulate employees. Generally the employees did not want to give written interviews, so the interview questions were asked surreptitiously during the course of discussions with them. The majority of the employees who provided information were insisting not to quote them. Also sometimes the answers were in circumspect manners or plain praises of their departments and we had to extract information ‘reading between the lines’. Also the information was gathered by walking with the employees after office hours through informal contacts or over a cup of tea. Interactions with higher officials were difficult as they were busy people and most of the time they were either on tours or in meetings. The interviews with them went in highly unstructured way, because interviews/discussions were interrupted by long telephone conversations. Similarly during visits to the Soochana Kendras, some of the Soochaks were not present even after fixing the meetings over phones. They have left for some personal work and their Kendras were closed or manned by some other persons. However the Soochaks whenever contacted were very responsive and articulate.

2.2.5 Limitations and Future Scope of the Study

The present study is a seminal study on E-governance applications of Himachal Pradesh State. Despite every effort made to carry out the study within its scope, stated objectives and research methodology, but still the study could not be said as absolute. Some of the limitations can be pointed and future scope of the further studies can be built upon them, as follows:

(i) The primary data collection is based mostly on unstructured interviews, personal communications, government reports, internal government circulars and the State Website contents. Despite our sincere efforts and time devoted to extract the information, it was found that government sector still tries to maintain secrecy in divulging the information. Hence it is possible that we have missed some of the vital information. A formal study with the approval of the State government will give more understanding of the E-governance issues.
(ii) The study has taken only the State capital government offices and Hamirpur district as jurisdictions of the study. To draw general inferences, all the districts which have different geo-socio-economic situations will present a broader picture of E-governance needs and issues in the State.

(iii) The field of E-governance transcends beyond technology and management issues into other social sciences. However we have taken mainly only technology and management issues to check the unwieldiness of the report. Further study taking into account all the aspects involving other social sciences or studies in individual aspects of different social sciences will lead to holistic understanding of the E-governance in the State.

(iv) The study has been carried after some of the computerisation or E-governance applications were already implemented in the State. This was something like applying 'reverse engineering' approach. Since the E-governance applications are at 'conception' or 'infant' stage in the State, there is scope that the study of the E-governance is carried out by using action research methodology to know the exact nature of the field.

(v) Since the present study is exploratory, further studies conducted under different need based research methodologies and triangulation of their findings will lead to a better understanding of the general theory of E-governance.
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Appendix A to Chapter 2

Searching the Internet

Some tips on querying/searching Internet through Search Engines.

**Quotation Mark:** Use quotation mark to search a phrase i.e. to look for Role of ICT in Governance, the search is to be made on "Role of ICT in Governance" and all the topics containing this phrase will be listed.

**AND:** AND (uppercase) is used if one wants to retrieve documents containing two terms i.e. if we want to list all documents containing words ICT and Governance then the search would be ICT AND Governance.

**OR:** If one wants to find documents containing either of the two words or both, then search would be ICT OR Governance.

**+ Sign:** Sometime search engines ignore short words i.e. in, a, are, the etc. In order to include these words for query on Internet, the search would be +ICT +in +Governance.

**- Sign:** This sign is used to exclude any word in the query, i.e. if we want ICT and Governance but not governance in Industry then search would be ICT AND Governance -Industry.

*** Sign:** This symbol can be used to truncate a word i.e. if we want ICT and Government or Governance or governing etc. then search would be ICT AND Govern*.

Any combinations of these marks, words and signs can be used to further refine the search or in Google search there is option search within results to further refine the search i.e. first search ICT then click search within results for Governance and further on. Parenthesis can also be used to combine search. For example if one wants ICT in Governance or IT in Governance, then queries can be given as

((ICT OR IT) AND “in Governance”) or “ICT in Governance” OR “IT in Governance”

or (ICT OR IT) AND (+ in +Governance)

**Note:** Further tips can be had from http://www.ctg.albany.edu/resources/htmlrpt/best-current_kit.html
Appendix B to Chapter 2

Evaluating Internet Research Sources

The “CARS” Checklist for Research Source Evaluation

<table>
<thead>
<tr>
<th>Credibility</th>
<th>Trustworthy source, author’s credentials, evidence of quality control, known or respected authority, organizational support. Goal: an authoritative source, a source that supplies some good evidence that allows you to trust it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>Up to date, factual, detailed, exact, comprehensive, audience and purpose reflect intentions of completeness and accuracy. Goal: a source that is correct today (not yesterday), a source that gives the whole truth.</td>
</tr>
<tr>
<td>Reasonableness</td>
<td>Fair, balanced, objective, reasoned, no conflict of interest, absence of fallacies or slanted tone. Goal: a source that engages the subject thoughtfully and reasonably, concerned with the truth.</td>
</tr>
<tr>
<td>Support</td>
<td>Listed sources, contact information, available corroboration, claims supported, documentation supplied. Goal: a source that provides convincing evidence for the claims made, a source you can triangulate (find at least two other sources that support it).</td>
</tr>
</tbody>
</table>

The “CAFE” Advice to deal with information on Internet

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Who says so, why says so and why should I believe it? Who are the target audience? Who support it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapt</td>
<td>Be sceptical to the information and find robust evidences, before adapting to the information.</td>
</tr>
<tr>
<td>File</td>
<td>File information in mind rather than believing it straightway. Gain more knowledge than believe or disbelieve it.</td>
</tr>
<tr>
<td>Evaluate</td>
<td>Evaluate and re-evaluate the information. New information or changing circumstances may affect the accuracy.</td>
</tr>
</tbody>
</table>

For the source of the checklist and the advice see

http://www.sccu.edu/faculty/R_harris/evalu8it.htm
Or http://www.virtualsalt.com/evalu8it.htm
Or Book by R Harris