Citizens Participation and Technology Interventions in Government Programmes

The Case of Nemmadi Kendras in Bangalore

Bhuvaneswari Raman and Zainab Bawa

April 2011

Abstract

This research examined the relationship between the concepts of participation, communities and technology in the context of a e-governance programme in India. It explored the role of information and communication technologies (ICTs) in governance drawing on the case of Nemmadi Kendras (NKs). NKs are computerized kiosks which were introduced in rural areas of Karnataka, a South Indian state, to provide revenue services and land records to rural citizens. NK programme was introduced by the Government of Karnataka (GoK) to digitize service provision under a public-private partnership arrangement. GoK argued that the introduction of digital technology as an interface between the state and citizens would contribute towards good governance in terms of enhancing the efficiency, transparency and accountability. In this light, we have examined the manner in which the introduction of technological interface, namely NKs, has influenced citizen's engagement with the state. Drawing on the social shaping of technology perspectives, our findings point towards two issues: first, introduction of information technologies is only one aspect of the overall process change that is introduced for governance of land and welfare services in rural areas. Hence, we argue that a thorough analysis of the impact of information technologies in the realm of governance necessitates paying attention to the larger processes within which the technology is introduced and embedded. Second, sSocial relations including the influence of local politics, continues to determine access to revenue services and land records. Here, we suggest that the introduction of information technologies in a fraught and contested context adds more layers (in terms of bureaucracy and middlemen) which rural citizens have to navigate before they can actually attain the welfare services. We also discuss social factors relating to concerning costs, scale social relations influence and decisions on adopting ICTs and the design of databases and their role in management of land information.

Contents

1 Introduction

1.1 ICT enabled Governance and Citizens Participation

Citizens' participation in State's processes and programmes is advocated as a way of strengthening the responsiveness and accountability of the State (Gaventa 2004). Many governments have introduced ICT enabled governance, also known 'e-government' and 'e-governance'[1], as a means to enhance citizens' participation (von Haldenwang 2002; Madon, 2006; Gil-Gracia & Martinez-Mayano 2007; Gatty 2009) and to reform institutional practices. The terms 'e-government' and 'e-governance' have leitmotif for efficiency, accountability and transparency of good governance (von Haldenwang 2002). It is widely believed in policy circles that existing practices relying on human interface perpetuate the problems of its inefficiency and accountability gaps confronting the State. And that these problems can be addressed through replacing human interface with ICT interface.

It is widely believed by both policy makers and some academics that ICTs because of its reach, data visibility and accessibility, have an inherent potential to improve the manner in which the State conducts its business (Ahuja and Singh, 2005a, 2005b; Bhatnagar and Chawla 2005; Chawla and Bhatnagar 2004; Komito, 1999; Singh and Gururaj, 2009)**.** Internet is compared to an 'agora' or a public space where interactions between elected representatives and citizens as well between citizens can be organised. Data available in websites set up by governments not only provide information to citizens about government processes, laws, and procedures, but also creates opportunities to monitor the state and to hold it accountable. The free flow of information via ICTs has the possibility to intensify Citizens' participation. Thus, ICT interface between government and citizens through intensifying the interactions between citizens and the State and between citizens, together with opening up data held by the State has the potential to (re)configure the patterns of interactions and relationship between the state and society and thereby, aid in achieving the governance goals of efficiency, accountability and transparency.

[1] In this paper, governance is defined as connections and relationships between governments (local and other scales) and between governments and citizens. These connections and relationships are part and parcel of processes and protocols of the wider political system (Stern 2002). e-Governance is defined as the ways in which insertion of technology affects the workings of the government and its relationship with other agents in society.

Official discourses on the rationale for introducing e-governance and ICT led development are underpinned by views of technological determinism. Policy makers dominantly assume that technology has an "inherent logic outside the influence of human agency" (William and Edge 1996: 857) and that its outcomes can be predetermined. In contrast, findings of several studies show that technology, structure and agency reflexively influence one another in complex ways rendering it to pre-determine the outcomes (Masaki 2004; Cleaver 2001, 2004; Rossel and Finger 2007). As (Bijker and Law, 1992; William and Edge, 1996: 856) note,

> *"technology does not develop according to an inner technical logic but is instead a social product, patterned by the conditions of its creation and use. Every stage in the generation and implementation of new technologies involves a set of choices between different technical options. Alongside narrowly 'technical' considerations, a range of 'social' factors affect which options are selected, thus influencing the content of technologies and their social implications" (William and Edge, 1996: 2).*

A multiplicity of political economic logics shape the decision to introduce technology, the choice of technology, the domains in which it is introduced are influenced by wider political economic dynamics ((; Rossel and Finger, 2007). In contemporary times, forces of globalization and neo-liberalism have had a significant influence on many government's decisions to introduce ICTs. Thus, as succinctly argued by Smith (1985), technological artefacts are simultaneously social products which embody power relationships and social goals and structures. Rather than assuming a linear trajectory of the outcomes of ICT interventions, it is vital to explore its effects, social factors influencing the choice of technology and the ways in which different groups in society appropriate technology.

Discussions on e-governance both in the academic literature and policy discourse overlook the heterogeneous characteristics of communities. They assume community to be homogenous in terms of their interests, ability to shape public policies, and alliances with the State. It is suggested that opening up data will automatically neutralise existing power differences between various social and economic groups within a society. In other words, the assumption is that members of a community have an uniform ability to claim resources via the State and to capture information opened up by internet. Several studies on state society

relationship particularly in the Indian context (Benjamin 2000; Chatterjee 2000), and elsewhere (Singermen 1995) show that citizens' alliances with different functionaries in the bureaucratic hierarchy of the State as well as the geographical and political scales of the state differ (Benjamin 2001; Chatterjee 2000; Raman 2010). Consequently, their ability to establish claims on different parts and scales of the State differs. When technology gets embedded in a milieu marked by differences in terms of interests among community members and their alliances with agents inside and outside the state, the terms - efficiency, accountability and transparency can take different meaning and are highly contested (Gaventa 2004). Given these contested meaning, we argue that it necessary to interrogate how and where technology is embedded.

The manner in which technology gets embedded in the State has an effect on the outcomes of ICT interventions, particularly in the Indian context. Technological interventions may be used as a tool at reconfigure existing power relations and social structures. Therefore, their effects are not neutral but may affect various groups in society differently. Of significance here is the oft mentioned bureaucratic rationality for introducing ICTs in government processes to discipline one part of the state, particularly, the street bureaucracy (Lipskey 1980:IX, 3; Zourdis and Bovens 2003), through its role replacement with 'system bureaucracy'(Bovens and Zourdis 2003: 7). Undergirding such rationality are assumptions of the State and Society as distinct domains and that the State acts neutrally in its role as a mediator of conflicting interests in society. Several studies on the anthropology of the State have illustrated the embeddedness of State in Indian society (Corbridge, *et al* 2005; Fuller and Harris 2002; Gupta 1995[2]). Government functionaries, especially those working on the ground, are often faced with competing claims on resources particularly land (von Benda Beckmann 2010; Bakker, Nooteboom and Rutten 2010; Nuitjen 2006) and demands from different citizen groups for related services which they have to negotiate in the course of fulfilling the state's obligations towards citizens and in delivering services. In this milieu, cooperation, rule adherence, decision-making and maintenance of order take place through what Cleaver suggests as "the practical adaptations of customs, norms and the stimulus of everyday interactions" (2001: 42). When such interventions are introduced, it affects the ability of different groups in society as well as state functionaries ability to respond to the claims of different groups of citizens. It is useful to delineate the extent to which community

[2] Significantly all three studies have focussed on state-society relations in the Indian context.

participate via ICT interface and how it impacts on their already existing avenues of engagement with the State. Analysis of effects of ICT interventions need to analyse which institutional levers, nodes and processes are sought to be curbed/reformed, and what kinds of interactions between governments and citizens are tried to be straightened. Besides, actors and groups constrained by 'system bureaucracy' (Bovens and Zourdis 2003: 7) may in turn adapt or appropriate technology in forms suited to realising their goals. In other words, the outcomes of ICT intervention aimed at reconfiguring state-citizen relationship may not have similar effects on different groups in society. It is equally important to map how government functionaries and citizen groups appropriate such technologies.

We explore these issues in this research drawing on the case of an e-governance initiative called *Nemmadi Kendras* (NKs) telecentre programme implemented in the state of Karnataka in South India.[3] The research focussed on questions of the effects of technology, factors impinging on technical decisions, and appropriation of technology.

1.2 Approaches to Understanding Technology, Community, Participation and Governance

There are two approaches to understanding the relationship between technology, community and participation in the context of governance. One is driven by assumptions of technological determinism, which assume unidirectional links and relationships between the role of technology, citizen participation and good governancei. An alternative approach is to conceptualize technology as a social artefact. The approach adopted in this paper is informed by a range of perspectives broadly grouped under the rubric of 'Social Shaping of Technology' (SST) (William and Edge 1996:856). As Bijker and Law (1992:4) argues, "... *when we talk of technological, we are not talking purely technological – that no such beast exists... Rather technological is social*".

Our notions of participation and state-citizen relationships are informed by anthropological perspectives on everyday politics, every day state and embedded relations. Community is understood as a heterogeneous space with differing and conflicting interests

[3] Fieldwork for this research was conducted under the aegis of the generous grant awarded by SIRCA/NTU to Servelots, Bangalore. We would also like to acknowledge the support of B. Manjunath who assisted with the field research and analyses of data.

over resources, alliances, and claims over the State. Participation as a concept has been widely discussed in the context of community development over the last two decades (Kothari and Cooke, 2004; Gaventa 2004) wherein it is predominantly conceptualized as organized forms of engagement in a programme. This form of conception has come under wide criticism (Kothari and Cooke 2001; Singermen 1995, Cleaver 2004). We conceptualize participation as a process encompassing a wide variety of socio-political practices embedded in society (Cleaver 2004) that citizens use to participate in the State and secure their claims. Drawing on Diane Singerman (1995), we view everyday material acts of claiming and procuring services as acts of participation. These acts are essentially political acts as they involve interactions/encounters/negotiations/ confrontations with the state. Thus, our empirical and conceptual focus is on both the content and the context of interactions between the state and citizens because it through these forms they encounter / 'see' the State in their everyday life (Corbridge, et al, 2005) and develop consciousness of their political and social positioning vis-à-vis the state (Corbridge, et al, 2005; Fuller and Harriss, 2001).

We turned to the literatures on e-governance, community / citizen participation, and telecentres in order to infer about the role of technology in reconfiguring patterns of citizens interactions with the State and their relationship to State agents. We summarize the key findings of the review in the following sections.

1.3 Forms and Effects of Participation

Defining Communities participating in ICT led State Programmes

The concepts of citizen and community are very often, less clearly defined in ICT studies (Schlossberg and Shuford, 2005; Riley, 2003; Norris, 2001). Participation as a concept has been widely discussed in development studies, in which the process is located in the arena of 'community' (Gaventa 1999; Bailur 2008; Gurstein 2007). Community is defined as a group sharing a common spatial or social identity (Schlossberg and Shuford 2005; Thomas 1995). It is assumed to be a homogenous group constituted by individuals and households with similar interests and ability to participate in a programme (Schlossberg and Shuford 2005). Findings of some studies raise questions about such assumptions of a community's homogeneity and alignment of interests among its members (Cleaver, 2001; Nagar and Leitner 1998). Nagar and Leitner (1999) found differences in interests among

members of a community sharing similar social identity. Cleaver (2001) argues that community is "the site of both solidarity and conflict, shifting alliances, power and social structures. Moreover, interests of communities differ and so also, members of a community may have diverse interests (Nagar and Letiner 1999). Similarly, in their critique of participatory development, Bill Cooke and Uma Kothari (2001) observes how the discourses of participation "... *wishes away conflicts of interest and power*" (Corbridge, et al, 2005: 121). Unlike the case of a community development programme, diverse social and economic groups participate in ICT led government processes. It is critical to attend to how diverse interests of 'communities' are accommodated in ICT programmes in order to conclude about the role of technology in configuring state-citizen relationship.

Unlike in community development programme, defining the boundaries of communities participating in an ICT led governance programme is further complicated due to the overlapping roles of agents involved in such programmes and, the difference in their intensity of participation and power to influence the course of the programme. ICT led participation can take different forms such as online consultation, websites and telecentres. Participation in such programmes is not limited to communities confined to a specific geography. For example, online consultations are organized both by the agents of the state – particularly, elected representatives as well as by communities of citizens seeking to influence policy formulation or its implementation. Similarly, such consultations may be used by different communities for different purposes, including that of mobilisation of opinions and people4. This is further complicated in the case of telecentre programmes implemented under a public private partnership, in which some members of the community may have overlapping roles. For example, agents of the State may also benefit from the programme as citizens. Private sector actors involved in implementing the programme are connected to it as users. Similarly Schlossberg and Shuford's (2005) observation about the need for analysing the ways in which different types of public are linked to Participatory Geographical Information Systems (PPGIS) is relevant for this research. It is critical to deliberate on who participates, in what forms and how they are connected to the ICT enabled governance programmes in order to infer about the forms of participation and its effects on different groups in a society.

[4] Personal communication with Anja Kovack, February 2011

Schlossberg and Shuford (2005) suggest two ways in which communities participating in PPGIS programme may identified. One, is to delineate their boundaries based on their role vis a vis the programme (e.g., decision makers) or in terms of methods for identifying and selecting such people. The former approach is adopted in Thomas (1995) method of identifying communities in terms of who can affect or is affected by the programme (Thomas, 1995). These include the following groups:

- Those affected by the decisions related to the programme or users (Sanhoff 2000; Jackson 2001);
- Those who have information or knowledge about a decision or programme (Sanhoff 2001; Thomas 1995); and
- Those who have power to influence the implementation of this programme (Thomas 1995, Mitchell et.al1997 and Sanhoff 2000).

Drawing on the suggestions by Schlossberg and Shuford (2005) and Thomas (1995), we delineated the boundaries of 'communities in the context of this research as that of users, implementers and decision makers. We explored the ways in which each of these groups are connected to the programme, their roles and their relationships with one another, and its effects, in order to understand about the role of technology in shaping their agency and social relations, which is discussed further in sections 4 and 5.

1.4 Effects of Participation and Appropriation of Technology

Reconfiguring Relationship with State Bureaucrats for Efficiency and Accountability

ICTs interface between citizens and the State is seen as a panacea to the problems confronting the State in terms of its inefficiency, accountability gaps and lack of transparency. Citizens predominantly view and encounter the State in their everyday lives via 'street bureaucrats' (Lipsky 1982) and elected representatives (Corbridge 2005; Fuller and Harris 2001; Chatterjee 1990). Relationships with these agents are critical particularly for relatively less powerful groups to negotiate the state (Corbridge 2005; Fuller and Harris 2001; Chatterjee 1990). Many of these interactions and relationships are located within the rationalities of law in practice (Santos 2001) but which tend to be viewed by senior

administrators and a section of society as 'vestiges of traditional patron-client relations' (Weiner 1991, 'transient' (Cleaver 2001) and one which perpetuates corruption and inefficiency with the State domain. The rationality of many e-governance programmes is woven around re-configuring citizens' relationship with street bureaucrats and elected representatives (see Chawla and Bhatnagar 2006).

ICTs are seen as a progressive avenue of participation in the State that will replace existing social avenues of participation with its locus in street bureaucracy and electoral politics. ICT interface would enable the State to circulate information to the community and which will free communities from depending on front line workers. Armed with information, citizens will be able to confront front line workers and thereby, reconfigure existing asymmetries in their power relations (Gatty 2009). Through restricting citizens' dependence on street level bureaucrats, power relations between them can be reconfigured. ICT interface would also lead to automation of services and elimination of discretionary practices among frontline officials. The flow of information from the community upwards in the bureaucratic hierarchy will enable senior bureaucrats to hold those down the hierarchy to account for their actions. Besides, these benefits of improving the efficiency and accountability of the State, ICT interface will ensure timely availability of information at one place which would help senior administers plan effectively and allocate resources. In addition to these benefits, telecentres set up by the State in remote parts of the country can help in bridging "digital divide" and facilitate flow of information to all sections of society. Thus, It would pave way for the creation of a new generation of 'professionals guided by weberian ideals of 'neutrality' and rationality in their interaction with citizens (Gatty 2009). We examined the outcomes of these changes on citizens forms of participation in the State and its effects in terms of its ability to enhance efficiency and accountability of the State, discussed further in section 4.

Introduction of ICT tools are often accompanied by changes in institutional practices and decision making powers (Ahuja et.al 2005; Chawla and Bhatnagar 2006). Decisions relating to dispute resolution and authorising the veracity of citizens' claims are centralized higher up in the bureaucratic hierarchy. When technology is introduced to realign existing processes, implicated it is also a struggle to refocus power relations within the specific department and between different departments of the State (see also Grindle and Thomas 1991). Information is a key weapon in this struggle as agents in a specific institution and

across Government institutions derive their differential social and political powers and status by capitalizing on certain kinds of information. Thus, introduction of technology is also to do with bringing various institutional actors in line with existing political regime and state agendas. When senior bureaucrats and cabinet ministers make particular information available on websites and databases, they invariably attempt to curtail/reshape power relations vis a vis their subordinates and elected representatives influencing the workings of these institutions. The extent to which decision makers manage to achieve their goals, in other words, the ways in which technology is adopted and the ways in which communities appropriated are shaped by the manner in which technology is embedded within the administrative process.

Avenues of Participation: Technology and other forms of Engagement

Technology interface may be one of the various ways in which communities engage with the State. Citizens use different avenues in their engagement with the State including organizations/institutions, social networks and relations of everyday life (Corbridge 2005; Oldenberg 1972; Singermen 1995). Citizens participation via institutionalized channels are prioritized over other forms of social mediation as it is perceived to be durable and robust (Cleaver, 2001: 40). Institutionalized processes – including rules and codes of conduct - are also viewed as the legitimate framework for guiding State-society interactions. This excessive focus on institutions and rules, procedures and formal protocols obscures the significant influence of everyday interactions and social relations on state-citizen interactions. Social networks is a dominant 'avenues of participation' (Singermen 1995) for different groups in society including the relatively less powerful economic and social groups (Singermen 1995) as well as elites (Dasgupta and Seralgedin 2000). The variety of avenues that citizens use to engage with the State to claims resource or to channel their demands are influenced by their perceptions and assessment of their situation, social conventions, societal relations, complex systems of loyalty and connections to the State (Cleaver 2004; Raman 2010). Similarly, the actions of different agents in the state realm are guided by social norms, identity and their location in society, and by politics of the place and time(Gupta 1996; Fuller and Harriss 2001; Raman 2010). These findings call into question the extent to which technology is used as an avenue for participation, by whom and in what ways? Our aim here is not to defend the virtues of engagement via social networks and everyday

relations but rather to underscore the need to situate the contexts in which ICT tools for participation are embedded and the factors that may influence the adoption of such avenues.

Appropriation of Technology

Participation via institutionalized avenues including ICT tools may not automatically strengthen the voice of citizens over decisions of the State or transform the underlying political and "structural" conditions that have given rise to vulnerability, exclusion and subordination for certain social groups in the first place (Cleaver 2001:42). In some instances, it may in fact reinforce existing inequalities. Communities participating in an online consultation may not have any influence over the decisions as such consultation might have been organized for tokenism (Riley 2003). Johnson and Kolko (2010) suggest that while technology may facilitate routine interactions between governments and citizens, but they may not always change the nature of citizens' communication with officials. Moreover, decision making within the State is controlled by a select group of senior bureaucrats and elected representatives (Grindle and Thomas 1998). If technology is used to further centralize decision making process, how does it impact on different groups whose connections to the State vary in contexts like India. How do the affected groups respond to the new situation? In order to infer about these question, it is critical to attend to how these programmes are embedded; why these programme were introduced and who controls decisions relating to its design and day to implementation.

Open Data, Non-neutrality of information and impacts on participation

Introduction of ICT tools in public administration are often justified on grounds that transparency of vast amounts of data held by the government will enable citizens to hold the State accountable (Riley 2003). Placing the data on the web is expected to create more opportunities for citizens to participate in the State. Different stakeholders including NGOs, think tanks, academics and corporations, among others may access information in government websites and use / reuse it for different purposes including mobilisation of citizens, and reinterpretation of data (Davies, 2010; Ramanna, 2010; Kovacks 2007).

Advocates of open data vociferously demand for more and more information held by the state to be placed on the web. They often assume that information made available through e-government websites or in other forms of digital data as 'rational' and 'open/complete'. They tend to ignore the influence of power in shaping the rationality for opening different types of information or in the way information is produced (Flyvberg 1999). On the contrary, the presence of information in e-government websites or portals may not guarantee free flow of information (Johnson and Kolbe 2010). Websites are used by some governments to promote State agendas which reinforce existing power relationships (Johnson and Kolbe 2010). Governments will still be able to act as "gatekeepers" of information because it is the government officials who will "set the categories and structure in which the data is recorded and released" (Davies (2010: 5). Power relations influence the processes of data collation, categorization, production and representation of information (Flyvberg 1999). Thus, what is purported as 'open data' may actually conceal the underlying power relations and structures in a society. Creators of databases and websites rarely highlight this issue, which affects our interpretation of census and demographic statistics, planning data and maps made public by the State.

Some advocates of open government data argue that it is possible to remove information hierarchies and thereby create equality in society (Parycek and Sachs, 2010: 5). However, opening up different kinds of data may have different repercussions on society. For example, the when crime data was made public in some parts of the world, it affected the real estate values based on speculations and perceptions arising from such data (Parycek and Sachs, 2010: 5). Moreover information held by the State may not reflect the manner in which resources are claimed and controlled by different groups on ground. Government departments may rarely maintain complete information/data on sensitive issues, as such information may be used by competing agents/ departments in the process of consolidating and maintaining their power. Specifically, this is the case of land related information where availability of perfect information on land claims is a myth rather than a reality (Haila 2007; 2008). When land information held in certain records or forms, in this case, digital forms is prioritised over others, it may result in burying the contestations rather than producing 'clear' 'legible' claims as argued by decision makers advocating ICTs in government (see Chawla and Bhatnagar 2005). Moreover, accessing information and the ability to benefit from the information secured are two different issues (Rose 2008). Lobbies for open data operate in specific political economic context and have differing interests over accessing information

and uneven ability and power to benefit from the information. In non-egalitarian contexts where social inequalities and information hierarchies already exist, open government data can accentuate the inequalities and render the positions of groups with tenuous claims even more vulnerable (Benjamin et.al 2005; Haila 2007). In such contexts, opacity of data may be sought by competing groups to enhance their bargaining power. It may aid particularly weakers groups to gradually consolidate their claims over the state and resources. Open data, may weaken their "quiet" (Bayat, 1997) "insurgencies" (Holston, 2008) over physical and political space. For example, Waddington and Mohan (2004) found that opposition to mainstream approaches that sought to make transparent the process of decision making was opposed by women since it cut down the possibilities of social mediation through elders.

Hence, we argue that rather than making normative assumptions of accountability and transparency enhanced through data transparency, we suggest that analysis of the role of technology in reconfiguring state-community relationship need to address questions of how it affects the claims of different groups in society and with what effects. It is imperative to examine the aspects of how digital information is produced, which type of information is released, who are the lobbies for open data, who or which levels of the state /non-state controls the production and management of database in inferring about the reasons for introduction of technology in different domains as an avenue of participation in the State.

Selection of technology : Costs, Scale and participation

Costs, capabilities of the State and laws influence several aspects of ICT development programmes including its design, quality and institutional arrangements (Rossel and Finger 2007). Cost of technology is a main factor that affects State decisions on the choice of technology, and, selection of vendors and implementers. Besides, the initial investments in technology and related infrastructure, there may be recurring costs in maintaining the infrastructure such as collating, organizing and uploading the data; periodic updating of the data; data storage in formats where it can easily be retrieved; and in archiving public data. Irretrievability of data over long periods of time owing to obsoleteness and advancements in technology is also an issue to be dealt with in many ICTD programmes (CASC, 7th Report). This is critical as costs may constrain the provision of temporally relevant data.

Relationships between the State and technologists may also influence the former's decision to introduce ICT in particular domains (Gatty 2009). E-governance is a growing market and technologists competing to expand into this market lobby to set the policy agenda and in shaping decisions relating to the state of technology (Singh et. al., 2005). Both technological capability of the state and the influence of technologists' lobbies shaped not only the domains in which e-governance was introduced but also the institutional arrangements for implementing such programmes (Singh et.al 2005; Gatty 2009).

While many studies on telecentres and e-governance programmes focus on the dynamics at the level of users and the State, very rarely questions about such programmes decision making process. Several questions arise about the socio-political factors that have a bearing on technical decisions. Some of these include: how is database supporting e-governance programmes created? To what extent and in what ways did technologists apriori relationships with the State influenced the choice of technology, institutional location of e-governance programmes, and the selection of vendors? In this research we have interrogated some of these questions in our attempt to move the debate on citizens participation beyond the narrow confines of user-state relationship.

1.5 Research Questions and Key Findings

We examined the relationship between communities, technology and participation and each of these concepts individually in the backdrop of the case of an e-governance programme called the Nemmadi Kendras (NKs) programme implemented in the State of Karnataka in South India to improve citizens' access to the State. The Government of Karnataka argued that the introduction of ICT interface between the state and citizens would enhance the State's efficiency, transparency and accountability. NKs were projected by policy makers as a progressive intervention which provides an alternative avenue for citizens to engage with revenue administration. It is a top down programme conceptualized by senior bureaucrats and actively supported by the technologists. A reading of many project reports indicate the administrative concern with dispersal of information and its control by lower level bureaucrats. ICT interface was introduced to reconfigure the relationship between citizens and front line workers. It was accompanied by changes in the decision making

process within the institution. The Nemmadi case was useful to critically examine policy makers assumptions of technological determinism, where technology is assumed to be an artefact outside the influence of human agency or the context in which it is embedded and whose influence can be predetermined.

Analysis of the ways in which citizens' participate in telecentres or e-governance programmes focus predominantly on their role as users or consumers of services delivered. Such a focus only tells us part of the story because unlike in traditional participation programmes, the use of information and the ability to benefit from ICT enabled programmes are not limited to any geographically bounded communities., in public-private partnership programmes such as Nemmadi,, citizens may engage in more than one way. \ For example, in their roles as economic actors, besides being a consumer of the service, they may lobby for introduction of ICT interface or expansion of the ptoramme in other areas. Given their complex and overlapping interests of communities participating in programmes like Nemamdi, each of the terms – accountability, transparency and responsiveness - may have differing meaning dependent on subject's positioning vis a vis the programme and the wider society. Therefore, we looked at the how Nemmadi impacted on different groups in order to conclude about the effects of participation. We examined to what extent and in what ways did Nemmadi Kendras influenced the patterns of state-community interactions and their relationships in this research and the ways in which such changes affected the claims of different groups.

Further, we argue that it is critical to broaden discussions on technology and participation that move beyond the relationship between user communities, kiosk operators and field bureaucrats only. , Bovens et.al (2002) suggest that introduction of a number of ICT applications while diminishing the influence of street bureaucrats, have led to the emergence of a new layer of bureaucracy, termed as the 'screen bureaucracy' and the system bureaucracy and that their role has been taken for granted. Bovens and Zouridis (2003) suggests that screen bureaucrats includes system analysts and software designers, who are the key actors in ICT companies that are partnering with the State. They control database development and translate legal rules into algorithms and decision trees. The accountability of these actors has rarely been examined. .

Another significant gap in existing studies is how and why a particular technology is

chosen or how a supplier is selected for procuring technology or for implementing e-service. Several questions arise in this regard: how are databases constructed and to what extent economic interests of the non-state actors involved in design or implementation of the programme influenced database design, and institutional arrangements for service delivery. Aspects of scale and costs of technology affects the manner in which information is reconstructed in these databases are usually missing from recent anthropological, sociological and policy-making accounts of ICT interventions, especially in India. Any reconstruction involves selection, which in turns involves omission of certain information. Such omissions relating to the forms in which land is held or details relating to history of claims may impact adversely the claims to land for some individuals and households.

In order to understand the role of technologists in shaping decisions relating to choice of technology and its adoption in everyday life, we explored the factors that impinged on technical decisions related to Nemmadi programme. We explored the relationship between the IT entrepreneurs involved in e-governance programme and the State in order to understand how social relations shaped technology.

This research explored the following questions in order to infer about the role of technology in shaping communities participation in the State. These are:

- What are the effects of Nemmadi?
- How do users engage with the State post Nemmadi? Whether and how did the programme influence citizens' relationships with the agents of the State?
- How were decisions on technical aspects such as software, database design, choice of vendors and database maintenance made?

Our findings highlight the following issues. First, a thorough analysis of the impact of information technologies in the realm of citizens participation in the State and state-citizen relationship need to focus on how technologies are embedded in specific administrative process, specifically, at what levels and why in order to infer about the role of technology in re-configuring the forms and avenues of participation in the realm of State-Citizen relationship necessitates paying attention to the larger processes within which the technology is introduced and embedded. When technology gets embedded within existing processes and systems and in the process additional layers of bureaucracy is created which citizens have to

navigate and negotiate before they can receive services and interact with their governments. Social relations including the influence of local politics, continue to determine access to revenue services and land records. Here, we suggest that the introduction of information technologies in a fraught and contested context adds more layers (in terms of bureaucracy and middlemen) which rural citizens have to navigate before they can actually attain the welfare services.

A consequence of centralizing decisions and information is the increased costs of securing claims via Nemmadi. This is a factor abetting the role of middlemen in securing certain types of via Nemmadi. Agents already embedded in revenue administration or village panchayat emerged as middle men – thus the status quo is maintained or at time the bargaining power of users has decreased because now these agents use Nemmadi as reasons for the delay or non-delivery of service. Finally, findings related to data transparency reinforces the findings on an earlier programme Bhoomi relating to who benefits from opening up certain type of information such as land (Benjamin et.al 2007).These findings raises questions about the effects of Nemmadi in improving accountability to the State and the politics of data transparency.

Second, we show in this research how considerations of costs, scale and social relations between technologists and senior administrators influenced decisions relating to database design, the choice of vendors and technology, and the everyday issues faced in implementation. Technologists' relationship with the State influenced to a large extent decisions on technical aspects - relating to choice of technology, vendors, scale and design of databases . This together with the politics within the revenue department shaped the rationality for introducing ICTs and the related centralization of decisions and information at higher scales of the State to which majority of citizens have limited access. We show in this research how technology and institutions mutually influence each other's evolution (Rossel and Finger 2007) and how the embeddedness of technology in particular domains, the capture of information generated through it and its adoption by various groups is shaped by their location in the wider socio-political fabric.

The report is organized in six sections. The next section (section 2) describes the case of Nemmadi Kendra, research questions, our reasons for focussing on NKs, and, the research methodology and methods deployed to unpack the research questions. The

following section (3) situates the political economic context in which Nemmadi programme is introduced in the State. Sections 4 and 5 summarises findings on the effects of Nemmadi programme and the manner in which it is appropriated on the ground. We engage with one of the widely debated theme about the use of to reconfigure the relationship between frontline officials or street bureaucrats and citizens. Finally, we consider the implications of these changes for the State's efficiency and accountability in order to understand about the effects of participation via Nemmadi. We looked at how decisions relating to technology are influenced by scale, technical aspects, scale are shaped. Our findings related to this aspect, presented in section 6 , show the intertwining influence of economic interests (Cost) of, and social relations between, technologists and the state and technical considerations on decisions relating to database design. We discuss this issue specifically in the context of database on land records. The last section on conclusion pulls together implications of our findings for policy and theory relating to technology, society and participation.

2 Research Methodology and Methods

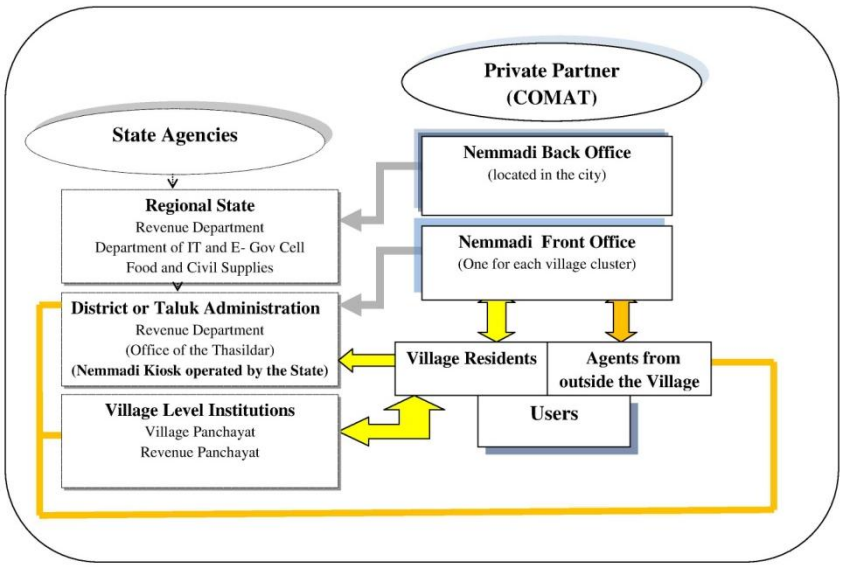
2.1 The Case of Nemmadi

Background

The Government of Karnataka (GOK) introduced the *Nemmadi Kendra (NK)* programme in 2006 to improve government-citizen interface, mainly to enhance the "transparency, accountability and responsiveness of the government to citizen needs" (Singh and Gururaj, 2009: 311). The programme is housed in the Revenue Department. NKs deliver two types of services namely the issuance of digitized land record or the Record of Tenancy and Crops (RTCs) and the Rural Digital Services (RDS which is linked to authorizing one's caste, income, birth status and claiming welfare benefits such as old age, widow and handicapped persons pensions. It is important to note that the various records relating to land and domicile information issued by the Revenue Department are vital for rural citizens to establish their claims on land and to avail of services provided by different arms of the State. It was introduced to continue and extend the rationale of an earlier e-governance programme called *Bhoomi,* which was widely hailed as a success story and best practice in transparent management and delivery of land records (Chawla and Bhatnagar, 2004; World Bank, 2006). Bhoomi (Singh and Gururaj 2009), was formulated as a pilot project in 1989 under a national programme called the Computerization of Land Records (Meena et.al 2005). Bhoomi delivered services relating to digitized land records viz., RTC and recording mutation. It was implemented to maintain a centralized database of land records (through digitization of existing land records) in order to regulate transactions relating to different types of lands that are linked to different types of institutions. In addition, *Bhoomi* was was also a means to align the different government departments in charge of revenue -related transactions and to bring them in line with the agenda of the State. The scope of ICT interventions was extended via Nemmadi programme to a range of welfare related services categorized under Rural Digital Services (RDS). Introduction of ICT tools allowed for instituting changes in institutional practices through centralizing Decision making process relating to dispute resolution and recording mutations. Besides providing information and aiding in service delivery, technological interface introduced via Nemmadi is expected to catalyze the socio-economic development of rural citizens (Oestmann and Dymond, 2001: 1; Ahuja and Singh 2006; Bhatnagar and Chawla 2006). We examined how these changes affected citizens? How did citizens pereceive Nemmadi and engage with the State post the introduction of ICT interface?

Nemmadi Kendras were established under a public-private partnership between the state government of Karnataka (GoK) and a private consortium led by a private company called the COMAT. Figure 1 illustrates the institutional architecture of the NK programme.

Figure 1: Nemmadi Organization



As shown in the Figure, there are three broad groups of stakeholders' viz., users, Comat and the State. NK operations are executed through front-end kiosks and a back-end office. The front-end Nemmadi kiosks were set up at the hoblis[ii] and taluk[iii]. At the hobli level, these kiosks were established in the headquarters or in locations deemed appropriate by the private company and/or the panchayat (body of elected representatives for groups of villages). The district administration controls the kiosk in its premises. The back-end kiosks were situated in the offices of district administration in each taluk. The back office operations are managed by both Comat and the district administration. Citizens can apply for their RTCs and RDS records at the front end kiosks. Their applications would be transmitted from the front-end to the back-end office where it is processed and finalized. The final records are sent back to the front end kiosks for delivery to applicant, shown in figure 2. ICT interventions in India are introducted with technical and financial support from the national government (Meena et al, 2005; http://www.urbanindia.nic.in/theministry/subordinateoff/tcpo/tcpo.htm). The National Informatics Centre, an autonomous body under the Government of India provided the software for RTC and COMAT developed the software for RTS services (see also http://202.138.100.134/case-study/nemmadi-rural-telecentres-aid-e-governance). Comat has also developed a Global Services Infrastructure (GSI) that provides a common platform to

deliver the diverse services. Once online, it's synced with the central database at the state data center.

Why focus on Nemmadi?

There is a limited focus on the micro-dynamics of Nemmadi Kendra programme (NKs). Existing reports and papers on NK are authored by decision makers who were closely involved in the implementation of Nemmadi programme (Singh and Gururaj 2009) or by technologists. Besides there are newsletters, published by technologists (Satwa connection). This research seeks to contribute towards this empirical gap. There are several studies on Nemmadi's predecessor Bhoomi. Many of these studies are authored by policy makers, technologists and bureaucrats who were involved with its implementation (Chawla and Bhatnagar, 2004; Meena et al., 2005; Lobo and Balakrishnan 2002, Hanstad and Lokesh 2001, Ahuja and Singh 2006, Bhatnagar and Chawla 2004; Gatty 2009), whose concern is about the , merits and demerits of different technology and administrative issues relating to the corruption. The latter discussion revolves around everyday interactions between ground level functionaries and citizens. Further, these studies assume normative values for concepts such as transparency and accountability. Consequently, discussions about these concepts are are delinked from the institutional contexts in which land and rural administration tend to be carried out. The few studies that have attempted to move beyond the official discourse explain how e-governance projects such as *Bhoomi* have impacted land markets in cities (Benjamin, *et al*, 2005) and have had social consequences for particular citizen groups (De, 2005, 2009; Gatty 2009). These studies also discuss how the roles of street bureaucrats and their relationships with rural citizens were reconfigured through *Bhoomi*, which is developed further in this study. This study thus adds on to the sparse research about *Nemmadi* and explores the role of ICTs in (re)configuring state-citizen relationship post-*Bhoomi*. This raises critical questions on who is able to access information but also, deploy it. Moreover, existing studies have not focused on the decision making process, particularly, those relating to technical aspects.

Research Sites

Nemmadi Kendras have been set up in all hoblis and taluks in the State of Karnataka. For the purposes of this study, we selected two taluks that are situated on the peripheries of Bangalore city, namely Annekal and Hosakote. There are four hoblis in Annekal and five in Hosakote and there is a Nemmadi Kendra in each hobli. We chose Annekal and Hosakote taluks for this research because of easy access from Bangalore city and also owing to the availability of a research assistant who aided in obtaining information about the villages and fixing interviews with different stakeholders. The location of these districts allowed us to do regular follow-up visits to the villages and conduct detailed interviews over longer periods of time. Future research need to target districts away from Bangalore where political cultures and economic activities are more diverse and how these factors influence people's engagement/non-engagement with ICTs. Earlier, we surveyed Tumkur district which is one of the few districts close to Bangalore. However, the extent of transactions via Nemmadi Kendras were fewer in Tumkur owing to the fairly stagnant land markets there. We were advised to choose areas where Nemmadi transactions were high in order to fathom the role of the technology in service delivery and state-citizen interface[5].

The large number of transactions in Nemmadi Kendras in Annekal and Hosakote can be attributed in part to the fact that these areas, which are located on the peripheries of Bangalore city, are gradually being assimilated in the Greater Bangalore region. Annekal district is fairly prosperous because of its location which has caused an upsurge in property values and property markets in the last decade. However, there are also pockets of extreme poverty in this district because migrant workers from different parts of India come here to work in the manufacturing industries and belts in this district. They range from daily wage labourers to mid-level executives. There is also a substantial population of bonded labourers and daily wage cultivators the agricultural belts of the district. Tribal groups also reside in some parts of Annekal district. The older generations of these groups have been engaged in hunting, gathering and cultivation activity. The current generations travel to Bangalore city for work in the Information Technology (IT) and garment industries. Some members of the present generation, based on historical practices in the tribe, engage deeply with technologies such as maps, websites and information databases to stake claims on the state and to raise

[5] Interview with a technologist formerly associated with Nemmadi. Interview conducted on 22nd May 2010. The interviewee wishes to remain anonymous.

awareness among the tribe regarding the entitlements that the state owes to them. The diversity of populations and the nature of conflicts and interactions with the state in Annekal taluk opened our perspective on a diverse range of issues which we have tried to address in this report.

Hosakote taluk is situated immediately outside the information technology corridor of Bangalore, namely Whitefield and ITPL (Information Technology Park Limited). Earlier, this area prospered because of voluminous property speculations and development here. However, in recent times, there has been a slump in the property markets here because of the stagnancy in the land values. This stagnation has occurred because of factors such as shift in the city's airport to North Bangalore, conflicts between land holders and claimants over ownership and use of properties, lesser building activity and large distance to the city centre and other urban hubs. Currently, most of the landholders in this region are small farmers.

We visited thirty four villages in total during the course of our research i.e., between May 2010 and August 2010 (see appendix 1) for data collection. In the villages in both these districts, there are conflicts between the landless and landholding groups. The composition, influence and resource bases of these landless and landholding groups have been shaped by historical trajectories of domination and marginalization as well as the nature and content of their current alliances with political parties, political groupings based on particularistic notions of identities (which can be encompassing as well), local leaders and elected representatives. Further, the roles and influences of land owners and landless labourers have differed from time to time, and continue to evolve, as users, mediators, political activists and lobbyists in land related conflicts as well in the procurement of services from the state and fulfillment of diverse claims. This dynamic shapes the interactions and hierarchies within the village 'community', thereby rendering each community heterogeneous and complex. These complexities, in turn, shape members' access to services, information and resources and the manner in which different groups within the same community interact with, or minimize the role of, ICTs in their everyday lives. The social composition of these villages has also undergone transitions from time to time owing to the inflow and outflow of various migrant groups which in turn has been configured by economic activity, developmental patterns and creation of infrastructure in different parts of the districts. In some villages, land has been acquired for allotment to SSIs (Small Scale Industries), for development of gated community premises or for inftrastructure programmes as early as mid-1990s. The land use, ownership

and acquisition related conflicts have played an important role in influencing users' perceptions of the importance of RTCs and RDS in their daily lives and mobilizations, and therefore their perception, use and appropriation of Nemmadi kiosks, discussed further in the section on social shaping of technology.

As our research involved seeking information on sensitive aspects relating to land claims and social relations at the village level, we relied on key informants to secure such information. via these agents, their tactical knowledge about the village, ability to build quick rapport and more importantly, the need to secure their trust were critical to secure information. Availability of personnel, who have worked on similar research (Bhoomi), have experience with using qualitative research techniques and intimate knowledge of the districts and villages covered by this research influenced our decision to restrict our focus to Bangalore.. Earlier, we surveyed Tumkur district which is one of the few districts close to Bangalore. The non-availability of research assistants in Tumkur also led us to conduct more in-depth research in Hosakote and Annekal. This together with the two researchers' previous knowledge of the filed influenced the selection of these districts. Given the time and resource constraints, we relied on a research assistant to aid us in data collection. We worked closely with the RA in the data collection process.

2.2 Research Methodology[6] and Methods

Qualitative Methodology and Social Constructivism

This research is informed by the episteme of social constructivism which views theories and concepts as 'multiple constructions' – '*constructed by the research out of stories that are constructed by research participants … trying to explain or make sense of their stories to themselves' (Corbin and Strauss 2008: 10).* It is inductive in nature and draws upon local and specific constructions of reality. It is underpinned by the notion that the structure and agency mutually influence each others' evolution. Individual make and constitute rules and institutions and conversely these affect their boundaries and forms of participation. Further, technology and institutions affect each others' contours and trajectory. We suggest

[6] The distinction between methodoloy and methods are as follows. Methodology is concerned with the episteme underpinning this research and methods is to do with the techniques and tools used for data collection (Denzin and Lincoln 2001).

that the effects of NK programme, vis a vis adoption of technology as an avenue of participation is to be situated in the specificity of the context and administrative processes in which technology is introduced

Qualitative research methods were adopted for this study because of the nature of our inquiry, which seek to understand 'process', 'relationships' and 'practices' (Bauer and Gaskell, 2000; Denzin and Lincoln, 2000; Strauss and Corbin, 1998; Miles and Huberman 1996).). We were interested in capturing the different views and experiences of citizens participating in the programme and their relationships with one another and with the agents of the State. As their perceptions and experiences may differ and are subjective, and their construction may vary based on subject position, our focus was not on measuring the effects of participation. We were also interested in understanding about the processes of participation and how these influence social relations.

Data Collection

We employed a range of methods to elicit data, which include participant observation, semi-structured interviews and conversations (Denzin and Lincoln 2001) with agents situated in different institutional, physical and social domains. We deployed the methods of non-participant observation and semi-structured interviews. We observed the workings of the front-end and back-end kiosks and subsequently, conducted interviews with kiosk operators, users and intermediaries.

Interviews were conducted both at the kiosks and villages where users reside. Apart from visiting the hobli and the office of district administration in the Taluk where the front-end kiosks are situated, we also visited other villages in each hobli to infer about users' knowledge, experience, and perceptions of NK programme. The following themes were covered in these interviews (see also Table 1): - (i) whether users are aware of the Nemmadi system, (ii) how they applied for services, (iii)the role/s that this technological interface played in people's interactions with government officials and institutions, the (iv) advantages and disadvantages of the Nemmadi system which users perceived and experienced (and accordingly how they appropriated the technological interface), and (vi) how their relationship with various arms of the state including the bureaucracy, judiciary and elected representatives had been reconfigured following the introduction and functioning of

Nemmadi.

We interacted with users from varying social and occupational backgrounds including farmers, shopkeepers, unemployed and retired persons, migrant workers, labourers, and self-employed persons, women, men and aged (see Table 1 for details). We also interviewed local leaders, former and current panchayat members, Village Accountants (VAs), Revenue Inspectors (RIs), members of political and social groups in the villages and members of other institutions in the villages who play a direct or indirect role in helping people to obtain services and advance claims related to land. We interviewed these **stakeholders** primarily to understand how the introduction of Nemmadi had transformed the dynamics and relationships between various institutions and between the State and Citizens. Specifically, how roles and responsibilities of officials had changed post Nemmadi and how citizens interacted with the State. In this light we explored an ongoing debate about the role of intermediaries before and after the the implementation of Nemmadi .

Although the locus of Nemmadi programmes is the revenue administration, information relating to land claims and census information authorised by RDS services of Nemmadi are constructed by different institutions at the village level. Their practices relating to creation, maintenance and retrieval of information vary. For example, census information relating to birth, death and age are recorded in the registers of village level day care centres or locally known as anganwadis. Anganwadi registers provide the basis for birth, death certificates issued via the Nemmadi kendras. Besides, the cooperative banks are critical for land owners as loans and subsidies are routed through them. However, they maintain their own records of citizens' information in a village. Hence, it was important to understand the various ways in which people and the institutions they interact with, constructed records of information, maintained, and used such information. How do these multiple institutional practices and their databases intersect with Nemmadi databases? It is for this purpose, we visited the offices of revenue administration at the village, hoblis and district headquarters to interview / converse with different agents in the hierarchy of revenue bureaucracy and the village panchayat. Besides, we conducted interviews and detailed discussions with agents in different institutions who record raw information or maintain databases of individuals and households in a village. We focussed largely on three institutions with which rural citizens engage intensively, namely the village panchayat, anganwadi centres and cooperative banks.

We interviewed government primary school teachers, teachers /managers of daycare centres[7], and bank managers[8]. This inquiry allowed us to comprehend the overall role of the Nemmadi databases and how these supplemented, complicated and/or deviated from other forms of records and record keeping practices. It also enable us to understand as to what is considered as authentic data, views of institutional actors about the authenticity of data, the importance they assign to various records.

We also interviewed technologists and decision makers within Comat Technologies which has implemented the Nemmadi system in Karnataka as well as programmers and persons involved in developing and maintaining different kinds of databases and technologies to examine how costs, scale and design of technologies impact society and shape the trajectories of the technologies themselves. the Their insights have helped us tremendously in making sense of technical as well as a political issues relating to the design and construction of database. It enabled us to understand issues of scale and costs of technology and how economic considerations and political alliances between technologists and decisions makers influenced technical decisions in the Nemmadi context. This is an aspect that is usually missing from recent anthropological, sociological and policy-making accounts of ICT interventions, especially in India. Their perspectives and insights also informed our analyses of the co-evolution of technologies and governance institutions.

About 102 interviews were conducted with different stakeholders as listed in table 1. Triangulation techniques were used to ensure the validity and reliability of the data. The interviews were conducted in English and the local language Kannada. Where possible, interviews were variously recorded, transcribed verbatim and translated. Translation of Kannada interviews was undertaken by authors along with the research assistant. The research assistant is a native of Karnataka and the authors are well versed in the local language.

[7] Locally known as anganwadi workers, teachers of day care centres are responsible for recording birth and deaths. They maintain these registers and information is passed to the revenue administration through the office of village revenue panchayat.

[8] Bank loans to agriculturists are routed through the cooperative bank at the village level.

Table 1: Summary of Research Themes, Methods and Informants (Knowledge, attitude and practices)

Field Research Questions (topic guide)	Methods	Informants
Background - Social and occupational background of respondents; - Land ownership; - History of the village and recent developments; **Users Experiences Post-Nemmadi** - Knowledge of Nemmadi Kiosk. - Practices of engagement with the kiosk (process of submitting applications and reasons). - Services procured through Nemmadi kiosks. - If yes, what types? If not, why? - Experience with obtaining RTC and RDS services . - Process description Time taken for submitting application; collecting supporting documents; obtaining the RTC and RDS Documents. - Views on Nemmadi. - Frequency of errors in RTC or RDS. - Experience with rectifying errors. - Relationship with ground level functionaries of Revenue department. - Relationship with elected members and officials in the village panchayat. **Users Experiences pre-Nemmadi** - Practices of obtaining RTC and Documents currently issued via RDS. - Experience of engaging with the officials of Revenue administration.	**Semi-structured interviews** at the following locations: - Kiosks; - Residence of users; - Community spaces (Savings and Credit groups) - State **Non-Participant Observation** at the Kiosks, field office of Revenue Administration and village council.	**Users (68) and Brokers (6)** Farmers Agricultural Labourers Non-agricultural labourers Men, women Youth and elderly persons NGOs (social workers) Brokers
Kiosk Operators (COMAT Front Office) - Characteristics of Clientele - Level of Demand for different services - Issues faced in delivering service (conflicts with Nemmadi clientele) - Links between the back office and front office functions - Pattern of interaction between kiosk operators and field officials of Revenue Administration	**Interviews and Non-participant Observation at** COMAT Front office (Kiosks)	**Private Partner (COMAT) (11)** - Kiosk operators;

Apart from interviews, we consulted secondary sources of information such as newspaper reports on Nemmadi and Bhoomi, reports on Nemmadi and Bhoomi written by bureaucrats, development aid agencies and the revenue department, Government of India (GoI)'s and GoK's policies on e-governance and information technologies, and reports on land administration systems and computerization of land records. We also surveyed literature pertaining to telecentres and ICT4Ds, including national and international experiences and experiments. We also relied on government census data for population composition estimates in the villages we surveyed and the occupations of people there.

Data analysis

The techniques of "*frame analysis"* (Ritchie and Spencer, 2003) and "*laddering of data"* (Miles and Huberman, 1994) were deployed to analyse qualitative data. Each interview was analysed for the themes that emerged which then provided the basis for the second round of data collection. Upon completion of data collection, the researchers revisited all the interviews to review crosscutting concepts and to build relationships between these concepts to generate a theory. We also employed the technique of 'constant comparison' (Corbin and Strauss 2008), which involves a dialogue between the literature debates and our own findings and the insights. We compared the findings accrued from field research by examining literature on e-governance, service delivery, participation, databases, land administration systems, everyday state-citizen interactions, state-society interfaces, community informatics, social construction of technology and social shaping[9].

In the subsequent section, we describe the political economic context in which Nemmadi was introduced in order to highlight how politics at different scales influenced the introduction of this programme.

[9] We are grateful to Prof. Rahul De, Hewlett-Packard Chair Professor in ICT for Sustainable Economic Development at the Indian Institute of Management (IIM) – Bangalore, for drawing our attention to the literature on social shaping and prodding us to consider the material from this literature for analyzing our findings. We are also grateful to Dr. Richa Kumar for pointing out literature on the very insightful literature about social construction of technologies that was written in the early periods of the 1990s decade.

3 Political Economy Context of Nemmadi

In explaining the political economy context of the *Nemmadi* programme, we primarily focus on two aspects: first, the land dynamics in the context where *Nemmadi* and its predecessor *Bhoomi* were introduced. Both Bhoomi and Nemmadi programmes have been implemented in contexts that are fraught with social and economic inequalities. The realms in which these programmes are introduced viz., land management and provision of welfare services are intensely contested where certain lobbies and actors attempt to control some other actors, processes and/or resources within the State. Second, the institutional dynamics of the revenue department where senior bureaucrats in the department and policy-makers at the national level desired to curb the influence and control of frontline workers over land records. Both Rural and land administration are highly complex and political domains because governance bodies, elected representatives and bureaucrats compete with each other to develop their own constituencies among people and to enforce loyalty. In the context of land and rural administration, three institutions are significant namely the Revenue Department, Village *Panchayats*[10] and the Department of Surveys and Land Records.

Real Estate led Development and Nemmadi

ICTs were introduced in revenue administration at a time when there was a growing emphasis on land as source of economic development in India. In the 1980s, Government of India (GoI) shifted its focus from land reforms to computerisation of land records when the Ministry of Rural Development of GoI announced the Computerisation of Land Records (CoLR) Scheme to "streamline the maintenance and updating of land records" (Ahuja and Singh, 2006: 69). However, this programme was implemented in the Revenue Department. Historically, the Revenue Department has been a powerful agency. During the pre- and colonial times, it was responsible for collecting land taxes which constituted the main source of income for governments at that time (Bannerjee and Iyer, 2005: 1192). In the colonial period, the Department maintained records of all types of land. Goyal and Deninger (2010:6) point out, that until the eighties, the revenue department relied on- *"... land records were a fiscal instrument that focused on use rather than ownership ..."* (Goyal and Deininger, 2010:

[10] *Panchayats* are the basic unit of village administration. It is a form of rural local government.

6). It was in the interests of the administrators and the establishment at that time to maintain land records in order to maximize revenue collection. The importance of land taxes as a source of income for state governments paled into insignificance as successive national governments emphasized on redistribution of land and other land reforms in the first two to three decades following independence. At that time, there was less incentive for state governments per se to maintain land records through periodic surveys and other modes of updating. Revenue departments therefore continued to maintain "textual databases" for rural land records and focused attention and resources on priority functions other than maintenance of land information (Goyal and Deininger, 2010: 6). The emphasis on real estate led development since mid 90s was to change both the ways in which land records are viewed and the role of revenue department.

Digitized RTCs was elevated to the the status of the 'only' document which can prove ownership and therefore possession of the land. There was a change in the State's approach to recognizing the claims of those who physically occupy or use plots or in Smith (1996:103) terms 'occupancy' tenants and those of 'tenants at will' (ibid: 103). In addition, there was also a shift in what is recognized as 'legal' titles. After the introduction of digitization programme, digitized titles alone were accepted in courts as a proof for one's claims to land. While on the ground, occupiers of a particular parcel of land used a variety of documents to establish their claims.

Support for 'clear titles' that assign a single owner to a parcel of land /plot gained strength on grounds of attracting inward investments from several quarters. The World Bank advocated it for the functioning of land markets in emerging economies. Technologists within the State too lobbied for clarifying titles. However, the complexity of establishing claims to a parcel of land in the Indian context as elsewhere stems from imperfect information regarding land claims, diversity of land types and tenure forms, and the underpinning institutional and legal regimes. It was argued that digitization of land would iron out these complexities and that it is essential for establishing 'property rights' to facilitate efficient working of the market. Failing to do so would hamper development and that the country will miss out. Moreover, the financial logic of IT corridors and mega infrastructure projects is linked to realising real estate gains. These projects require large parcels of land, which the state often has to acquire either under public-private partnership arrangements or on demands made by big corporations or by the State's own developmental agencies. Corporate groups have

lobbied for a long time to digitize land titles, to licence real estate market to eliminate what they see as run of mill developers and to streamline revenue administration (Benjamin and Bhuvaneswari, 2011). In this light, creating a unified database on land information and situating it in a centralised manner in the State was both timely and necessary. Even in villages, subdivisions and assimilations of land parcels were actively taking place in the 1990s as owners of land parcels and real estate brokers (who were often *Panchayat*[11] members and local leaders) were capitalising on the boom around land. Advocates of computerisation also argued that maintaining land information was critical for the state government and the revenue administration to ensure that people were registering their transactions and that there were no leakages in the incomes that ought to have accrued to the State through stamp duties and registration fees. It is also a time when the State departments were relying on land based finance to finance their operations (Benjamin and Bhuvaneswari 2005). It is in this complex sphere of heightened political and economic activity around land that some senior civil servants' calls for introducing ICT in land administration gained support. Their calls were supported by IT entrepreneurs (Meena et al., 2005). Thus, the broader political-economic shift towards real estate led development propelled policies and projects for surveys, GIS mapping and digitization of land titles via e-governance programmes.

Institutional Dynamics

Besides these land dynamics, the impetus for introducing ICTs in rural administration are closely linked to the politics within the Revenue Department. Reforms of land administration and introduction of digitized titles depended on curbing the influence of front line workers over the creation and maintenance of land records (Chawla and Bhatnagar 2006).

Both RTC and RDS documents issued through Nemmadi Kendras affect the lives of rural citizens significantly. While RTCs are an important means to stake claims on land (Bhatnagar and Chawla, 2005), RDS documents are a means to strengthen one's citizenship claims. When rural citizens have to interact with diverse agencies such as the horticulture and

[11] *Panchayats* are the basic unit of village administration. It is a form of rural local government.

sericulture departments, social welfare, health and public works department, among others, they need both RDS and RTC documents s in order to make requests/applications for services/benefits provided by these departments. The Karnataka state government has made it compulsory to produce and update documents such as caste, age, and income certificates[12] for admission of children in schools and colleges, to claim benefits under government schemes, and even to contest *Panchayat* elections. Further, registering births and deaths and acquiring the necessary certificates has become incumbent to prove the ownership lineage of the land parcel in case of property disputes. These documents must also be produced during surveys that the government is now conducting to update information about land.[13] Moreover, some of the RDS documents have acquired mandatory status under the laws of revenue administration and state government even though it is widely known and acknowledged that the information contained in most of these documents is false even when it is supposedly verified by revenue department[14]. Therefore, RDS has acquired added importance in recent times. Given the criticality of RTCs and RDS, it is clear that the delivery of these services is highly political and involves resolution of multiple claims.

Revenue administration is organized around a hierarchy of officials headed by the principal secretary, a senior civil servant, who often hails from the Indian Administrative Services (IAS) cadre. Under him are the deputy commissioners who are also civil servants from either the IAS cadre or the Karnataka Administrative Services (KAS). Under them are the assistant commissioners, Tahsildars, deputy Tahsildars followed by frontline workers such as Village Accountants (VAs) and Revenue Inspectors (RIs) at the lowest end of the hierarchy. The Revenue Department's offices are located in different places i.e., in the individual villages, headquarters of village clusters (*hoblis*), sub-districts (*taluks*) and districts (*zillas*). The geographical scales at which these offices are located also shapes the social and political distance between citizens and the State, which accordingly makes it easier or more

[12] RDS documents have acquired mandatory status under the laws of revenue administration and state government even though it is widely known and acknowledged that the information contained in most of these documents is not accurate despite having been verified by revenue department officials. For instance, incomes of applicants recorded in an income certificates, , is known to be underestimated because people prefer to declare lesser incomes in order to avail of government benefits and subsidies. Further, the process of verifying incomes is not foolproof. (Interview with officials of Agricultural Bank and Panchayat members, July 2010)

[13] Interview conducted with a member of a village council on 2nd July 2010.

[14] Interview with Nagraj (bank manager at Jigani) on July 2010). Also explain the context from the footnote from where I wrote this paragraph.

difficult for villagers to approach these offices for their specific needs. With increasing scales, such as those of principal secretary and deputy and assistant commissioners, it becomes difficult for most rural citizens to approach these officials directly because not only are the offices of some of these senior bureaucrats located far away from the villages; there is also a substantial difference in the socio-economic status between these officers and the villagers which in turn makes the latter apprehensive about directly approaching the former. Hence, citizens must make appeals to these officials through intermediaries. This does not mean that at the lower geographical scales there is no need for intermediaries to mediate the relations/transactions between frontline officials and rural citizens. In fact, at scales such as the village, the sub-district or the district level, it is easier for villagers to approach officials because the former are connected to various social, political and economic networks that embed/include the latter. VAs were earlier typically operating from the village *Panchayat* offices. RIs have offices at the hobli (cluster of villages) level. The offices of Tahsildars (sub-district officers) are situated in the central town of the *taluk* or sub-district. Assistant Commissioners (ACs) operate from the sub-divisional (group of taluks) level, Deputy Commissioners (DCs) from the district (group of sub-divisions) level, Divisional Commissioners from the divisional (group of districts) level and the Principal Secretary has offices in the state capital i.e., Bangalore.

Ordinarily, rural citizens interact with frontline workers of the revenue department - VAs, the VA's assistants and RIs - in addition to local leaders, *panchayat* members and various kinds of middlemen, for securing RTC and RDS documents and to effect mutations and changes in RTCs. These frontline workers, also referred to as "street bureaucrats" (Lipsky, 1980: IX, 3), are the main interface between officials in the revenue administration hierarchy, villagers and other political agents in the rural society. Therefore, although frontline officials occupy a lower position in the revenue administration hierarchy, they influence several aspects of the lives of rural citizens. Hence, they are powerful agents at the village level (Gatty, 2009).

Prior to the introduction of *Nemmadi* and *Bhoomi*, village accountants and revenue officials had extensive power and control over the process of creation, issuing, and maintenance of RTCs as well as census data the village level. They maintained records relating to different types of land transactions (including mutations resulting from sale, subdivisions, transfers, fragmentation, assimilation and changes in ownership of land and its

use), records of the crops grown on different land parcels, and registers of births and deaths. VAs also derived their power from their tacit knowledge on the local situation which they acquired through their role in everyday administration. Further, VAs had wide discretionary powers not only in issuing land records, but also in deciding how to prepare records under different circumstances and for diverse purposes (Gatty, 2009). During situations of floods and disasters when farmers need verification regarding the extent and nature of their losses in order to claim government welfare, it is the VA who decides on the actual situation vis-à-vis the differential claims advanced by farmers, and assists the farmers in representing their claims before the concerned state authorities. They are also responsible for announcing new government schemes.

VAs also arbitrated in situations of conflicts over claims on land, either solely or with the support of elected representatives, local leaders, village elders or political groups. VAs and their assistants maintained various records relating to RTC and mutation of land and crop history in each land manually before these information were digitized under the Bhoomi programme. The manual mutation was done by writing and rewriting over the same record not only transactions which took place within the framework of law, but also the 'extra-legal' claims that were negotiated among family members, between identity groups, and other members of the rural community. In effect then, manual maintenance of land records and mutation registers endowed frontline officials with information and systemic power to act as arbitrators to resolve conflicts involving multiple claims, and disputes over different land parcels in the village.

The concentration of information and control over land records in the hands of VAs and their assistants was a concern for senior bureaucrats in the revenue department. This concern is evident in various reports and papers authored by these bureaucrats, policy-makers and technologists closely connected with e-governance initiatives (Ahuja and Singh, 2005; Bhatnagar and Chawla, 2005; Rao and Bhat, 2005: 80; Singh and Gururaj, 2009). Essentially, higher-level bureaucrats mark the manual maintenance of land records and VA's role and relationships at the village level as inefficient, corrupt and lacking in accountability and transparency (Bhatnagar and Chawla 2005; Ahuja and Singh 2005; Rammohan et al 2005). It is also suggested that access to the VA is rarely direct and is often facilitated by influential persons and bodies in the village, thereby complicating government-citizen interface. Besides, as records are maintained in different registers, it is difficult to mine the data from

these disparate sources. This also undermines the potential for attracting investments and taking advantage of opportunities to raise finance through sale of records to the private or other state agencies (Bhatnagar and Chawla, 2005). Senior bureaucrats attribute the problems of the revenue department to the absence of a centralized records management system and the 'monopolistic' control of RIs and VAs (Mohan and Bhat, 2005: 80) over other revenue administration processes (Singh and Ahuja 2005; Bhatnagar and Chawla 2005).

Earlier, digitization of land records and computerization of the mutation process under the *Bhoomi* programme was introduced to curb the powers and influence that the VAs had over the process of creating and maintaining land records and facilitating mutations. Implementation of *Nemmadi* extended computerization to the delivery of Rural Digital Services (RDS) documents as a way to bring VAs and their seniors - the RIs - in line with due process in service delivery. ICT interface was adopted to reduce opportunities for direct interactions between citizens and the frontline workers (Singh and Gururaj, 2009), and thereby, to strengthen the state's mechanisms of accountability and transparency towards its citizens. Several benefits were believed to accrue from the introduction of technology in revenue administration. First, senior administrators would be able to monitor the work of field bureaucrats and hold them accountable for their actions (Gatty, 2009: 34; Meijer and Bovens, 2005). This would ensure that frontline workers followed the mandated organizational procedures for issuing RTC and RDS documents without skipping any of the steps in the procedures (ibid). Secondly, it was presumed that automation of the workflow process and decision-making would restrict the use of discretionary powers by frontline officials (Bovens and Zourdis, 2002). Third, by creating centralized databases, information scattered in different records at the village level could easily be retrieved by senior administrators which, in turn, would aid in planning and therefore attracting investments (Ahuja and Singh 2005; Bhatnagar and Chawla 2005). Thus, ICT interventions such as *Bhoomi* and *Nemmadi* were expected to eventually transform the bureaucratic landscape by replacing 'street bureaucrats' with 'screen bureaucrats', mainly ICT kiosk operators. Adoption of technology would help reach the "zenith of Weberian bureaucracy" (Bovens and Zourdis 2002: …) where interactions and relationships with citizens would proceed in accordance with principles of neutrality and adherence to the rule of law.

Upon its introduction, *Nemmadi* was made into a single window system. This meant that applicants could no longer apply for RDS documents directly from the taluk offices or

through other avenues[15]. All requests and applications now have to be submitted to the NK front-end kiosks, and procedures must be tightly followed. Thus, a slew of regulations for issuing RDS and RTC documents, centralizing databases was implemented and the powers to decide on disputed titles, recording changes to one's RTC (or mutation) is moved up from the levels of Revenue Officers and Thasildars in the district administration to Deputy Commissioner of Revenue department headquartered in the city. In these ways, *Nemmadi* programme sought to curb the influence of field bureaucrats and reconfigure their patterns of interactions and relationships with citizens. The following section explores the effects of these changes on users.

[15] RTCs are available from NKs and also from the registrar's office in the *taluk* headquarters. Additionally, private kiosks authorised by the government also deliver RTCs.

4 Effects of Nemmadi

This section discusses the effects of Nemmadi programme. A rationale for Nemmadi was that, "in the context of IT, there is reduced need for ex-post accountability as ex-ante control is tightened because bureaucrats can no longer skip organizational procedures" (Gatty, 2009: 34). In addition, introduction of private service provider would further weaken the influence of frontline workers over rural citizens. Technology interface was expected to pave way for the creation of a new generation of 'professional bureaucrats and service providers whose actions will be guided by weberian ideals of 'neutrality' and rationality in their interaction with citizens (Gatty 2009). In contrast, our findings show that securing services via Nemmadi has become more costly and time consuming for a dominant group of small and medium farmers with relatively less economic or social power in society. A consequence of this is that they have to navigate an additional layer of bureaucracy and intermediaries to secure services via Nemmadi. It also raises questions about the purported claims of enhanced accountability and benefits of data transparency.

It is difficult to categorize Nemmadi's effects in a linear frame of ills and benefits because citizens' experiences with NKs (and therefore their perceptions of ICTs) vary - as users of its services, as service providers and decision makers by virtue of their location in COMAT or the Revenue Administration. Their relationship to Nemmadi can neither be confined to any one particular functions nor are citizens using the services confined to to any particular geography or institutions. In addition, user perception and experience of the programme differ depending upon their social positioning, including the resources they have and can garner for applying documents at NKs and the social, political and economic networks they can mobilize for expediting the delivery of documents/services. For instance, daily wage labourers are positioned much lower down the socio-economic hierarchy. Not only do they have less time and money to visit government offices for obtaining official documents, they also have less access to resources and networks which can provide them with information on how to procure government records and claim state welfare. It may be presumed that the introduction of Nemmadi would have made it easier for daily wage labourers to get income and caste certificates as well as avail pension schemes. However, interviews with government education officers, panchayat members and local leaders revealed that landless/daily wage labourers did not necessarily benefitted with the introduction of Nemmadi and they were not aware that such a programme existed. On the other hand, real estate developers, local politicians and relatively well off groups seem to

have benefitted from the programme, particularly from the opening up of land related data.

Overall, although 40 services are provided through Nemmadi (Singh and Gururaj, 2009), most users visited NKs to obtain caste and income certificates, RTCs and submit applications for pension schemes. Users' perceptions of Nemmadi also differed depending on which services they are seeking and which state institution they are interacting with via Nemmadi.

A dominant view was that while Nemmadi has made it easier for users to procure RTCs i.e., RTCs without any errors are delivered within a day's time, rectifying mistakes in names and/or extent of land parcel in the digital RTCs is highly cumbersome.

Post Nemmadi, it has become more expensive to correct mistakes and record mutations in the digital RTCs. This is because following the introduction Bhoomi and then Nemmadi, the authority for authorizing corrections and mutations in digital RTCs has been removed from administrators at the sub-district level and handed over to Assistant Commissioners (ACs) and Deputy Commissioners (DCs) whose offices are centrally located in Bangalore city. This change has increased the social and political distance between the users and state agents, necessitating therefore the increased employment of brokers and payment of higher amounts of bribe for obtaining sanctions for changes in the digital RTCs. Bribes are now centralized at the level of the office of ACs and DCs and are charged on the basis of an acreage. Most users explained that after the implementation of *Bhoomi,* it takes a minimum of six months and more than Rps 10,000 to correct records. If the error is of a serious nature, for example, rectifying area recorded in digitized title, it is incumbent on the applicant to submit sixteen types of records along with their application. Each of these records are held in different offices at the district and the city level and involve negotiations with several administrations before they can be procured. The cost of bribe also go up with the type of errors and the location of the plot in question.Some respondents stated that the high cost of bribes in the event of referrals to ACs office created new opportunities for Special Deputy Commissioner and the Thasildar at district level to bargain with farmers for higher payouts. Our respondents experience show that even after more than a year of applying for correcting errors, they have not managed to resolve the issue. Many farmers fearing the time and cost involved in the process have not attempted to correct errors or

record mutations. Apart from time and cost involved, the complexity of negotiation influences land owners to refrain them from rectifying their records. This poses a significant risk of losing their land particularly among small and medium farmers as real estate developers with easy access to RTC records were targeting such plots in localities of high end real estate (see Benjamin 2005 for more details). One farmer summarized other farmers' experiences with corrections and mutations through Nemmadi in these words: "*The digital system is an unjust system. It is unjust for small farmers who do not have the money or the influence to make changes in their RTCs and who can therefore lose lands because of errors in their names or extent of their lands.*"

Official discourse states that digitizing mutations is another significant feature of Bhoomi programmes (Chawla and Bhatnagar 2006). However, it was discontinued after a brief period (Gatty 2009). According to a technologist involved in the implementation of Nemmadi, the mutation process was never rolled out through the *Nemmadi* system because the revenue department did not have the confidence in the software infrastructure for rolling out the mutation process at the *hobli* level.[16]

Similarly, the process of obtaining RDS documents, through Nemmadi continued to be ridden with bureaucracy. Interviews with users, *panchayat* members and brokers revealed that the process involved in applying for RDS documents and services is more bureaucratic now than it was prior to *Nemmadi*. In general, it was found that the application procedures for RDS documents were cumbersome and expensive for poorer villagers because they have to obtain affidavits and legal proofs for each application.. For this, they must travel to the revenue courts in the *taluk* headquarters. Apart from the costs involved in procuring these legal documents, they often miss out on their earning and thus the opportunity cost adds to the overall expense of application under *Nemmadi.* Consequently, users spend either more time or money or both to get the documents in the first place. The emphasis on providing proofs of domicile and identity with each application further marginalizes users such as landless and migrant labourers whose citizenship status tends to be highly contentious. Such persons and groups have to seek the assistance of middlemen, political activists and support groups in villages to get the necessary proofs in order to procure RDS

[16] Interview with a technologist who was involved with implementing e-governance projects in India. Interview conducted on 22nd May 2010.

documents and to claim government benefits accordingly. We also found that groups such as bonded labourers are so poor that the very process of applying for pension schemes and government benefits via *Nemmadi* is expensive enough to discourage them from applying for welfare schemes

On the other hand, economically affluent users and panchayat members who were also involved in the real estate economy mentioned that they found the Nemmadi system to be more convenient. They explained that after first time application, their records had been entered into the RDS database which minimized the need for identity verification on subsequent applications for the same documents. These users recounted their experiences with Nemmadi as 'correct' and 'modern', suggesting that the introduction of ICTs was beneficial for them. However, it is important to note that these users do not represent the experiences of majority.

Further, demand for some services tends to be greater than that for others during certain periods of the year, which in turn also shapes users' perceptions of efficiency and transparency enforced through technology. During the months of April and July, when school and college admissions take place, the demand for caste and income certificates is high because these documents are necessary for the admission procedure. In this period, users may seek the assistance of brokers to expedite the verification procedure and receipt of the documents. Similarly, the demand for caste certificates increases exponentially among candidates contesting elections in sub-districts. During this period, brokers regularly frequent the Nemmadi back offices in the sub-districts and mobilize the operators to quicken the delivery of caste certificates.

*Transparency: Opening Data for whose benefit**?***

Nemmadi sought to improve the transparency of the state in two ways viz., placing in the public domain, information on land records and processing of application relating to RTC and RDS. The visibility of the land records is expected to widen the participation of citizens in land markets. Data made visible and accessible through Nemmadi is used by a range of publics including land owners, those seeking to claim benefits to that of other citizens like developers, investors from outside the community boundaries interested in land related information. For example, RTC services are as much sought by land brokers and real estate

dealers as much as by small and marginal farmers. These real estate brokers and dealers viewed the opening up of land records data by making it available on the Internet and the digital delivery of RTCs as a positive move and associated the Nemmadi programme with transparency. Their sentiments are reflected in the following statements:

> "*The advantage is that you can see the records on the Internet if you know the survey numbers. You can also see details such as the name of the owner of the land parcel, whether the plot is north-facing, south-facing, east-facing, etc. It is a very open system. So from anywhere in India, if you know the survey numbers, you can see this information. There is no objection as to who can see this information."*
>
> (Interview with Panchayat members, 15th July 2010)
>
> "*... Nemmadi is good. We can sit here and see the details of the land anywhere in Bangalore"*
>
> (Interview with broker, 7th July 2010)

In contrast, below is the view expressed by a community member belonging to a socially disadvantaged caste which problematizes the transparency ushered by opening up land data:

> "*K gate has become developers paradise ...this whole thing of anybody going and getting a RTC is really problematic... even if a owner does not want to sell, (developers) can mobilize force to pressurize to part with their land ... So if you have information on one hand and ability to mobilize muscle power and money, the land is yours."*
> (Interview with Dalit Sangarsh Samithi president, 29th June 2010)

Our findings on Nemmadi corroborates Benjamin et al (2005) suggestion that transparency of land information in contexts such as Bangalore can accentuate existing social and economic inequalities and can weaken the claims on land of relatively weaker groups in society. The reflection of the activist from Dalit Sangarsh Samithi quoted above draw attention to the fact that despite the apparent myth of uniform access to information, there are differences in terms of their ability to capture this information. Specifically, when it comes to land, it is not only about having information but also the power to displace / disposses current occupiers. Thus, power between different users affect their ability to capture this information to their advantage but more importantly, such visibility can pose new risks to the claims of relatively weaker groups. Proponents of data transparency fail to make the distinction between access to and the capture of information and the risk posed by opening up certain types of data. Based on our preliminary observations we suggest that

there is need to differentiate between the types of data that is made public and the political economic context in which such information is made public. Our findings suggest the usefulness of further research on this aspect.

Moreover, not all users have the inclination or resources to make use of the information made transparent through *Nemmadi*. For example, in securing digitized maps, an applicant has to be supported with 15 documents proofs, which are maintained by different institutions at different places. As a result of the high cost involved with travel, time and cash in securing these document, this facility is used predominantly by large farmers. Nemmadi facilitated the flow of information that was once dispersed to real estate developers, state agencies particularly to aid in land acquisition.

Official reports on Nemmadi and Bhoomi cite the volume of RTC transactions as an indicator of the success of the programme. In contrast, the above accounts suggest that the volume of RTC transactions or its timely delivery does not necessarily reflect Nemmadi's success in terms of improving citizens' relationship with the state. Rather, the type of users seeking RTCs raises questions about who benefits from the reconfiguration of citizens' relationship with the State and realignment of decision-making powers and authority within the State. Similarly the effects of making land data open are not similar for every group in society. Moreover, not all users have the resources to avail of every service under Nemmadi. For example, to secure digitized maps, an applicant has to get 15 kinds of documentary proofs, which are maintained by different institutions at different places. Consequently, application for digitized maps involves high costs of travel, time and money. It was found that large farmers and developers predominantly used this facility. In summary then, Nemmadi has facilitated the centralized flow of information that was once dispersed among various agencies. This process has benefitted real estate developers and state agencies mainly in relation with land acquisition.

The rationale for computerizing workflows discounts the specificities and politics of the contexts in which documents are requested as well as the inequalities that prevail among different citizen groups in accessing services and the state. Nemmadi sought to homogenise service delivery in a context characterised by pluralistic legal and institutional practices. Citizens draw on various kinds of institutional and social arrangements for delivering services and their alliances in different parts of the same state to claim resources or welfare. These plurality of institutional and legal practices emerge in contexts like Bangalore in response to

the contestations on the ground, and which is illustrated by the findings of several studies on Indian State and political dynamics in cities, where the State terrain is an important site for enacting these contests (Benjamin 1996,2001; Chatterjee 2002; Corbridge 2005; Harris and Fuller 2001). Benjamin's (2001) finding on the circuits of citizens' engagement and alliances with the State is critical here. Relationship and alliances with frontline workers is useful to rural citizens secure land records or welfare services, and to secure information about the State actions. Their circumstance is one of staking their claims to land or welfare in a contested arena dominated by powerful economic and political elites from outside their localities. Thus, the variety of institutional practices and relationship that emerge on the ground cannot be simplistically read off as attempts to circumvent regulations. These arrangements derive their legitimacy and acceptance through repeated invocation and usage over time. When technologies are introduced to make procedures uniform, they introduce yet another slew of regulations which people then have to navigate in order to access services as in the case of Nemmadi. The introduction of technology in the realm of service delivery is also an attempt to de-legitimize such practices. As mentioned above, such intentions lead to freezing of conflicts in favour of one group over another without fundamentally addressing the inequities in society. In sum, the introduction of NKs has not removed the inequalities that prevail in the socio-economic structure of society. Instead, new layers of bureaucracy and regulation have been added in citizens' relationships and interactions with the revenue department officials. In the following section we explore how citizens negotiate this additional layer of bureaucracy to understand how technology gets appropriated on the ground. We showed how the changes in institutional practices influenced the emergence of a range of intermediaries between citizens, Nemmadi kiosks and the State. Rather than simplifying the process for citizens to participate in the revenue administrative process, Nemmadi has contributed to increasing the distance to the State – both spatially and politically.

5 Appropriation of Technology: Citizens Relationship with State post Nemmadi

This section highlights the manner in which technology is appropriated on the ground. A significant development post Nemmadi is the emergence of various intermediaries or middle men between users, Nemmadi Kendras and the State. Their role is perpetuated by the complexity of negotiating the state due to centralization of decision making and the shifting relationship between frontline workers and users as discussed below.

Cost of Participation

Through *Nemmadi*, an attempt was made to decentralize the delivery of RTCs and RDS by setting up kiosks in the headquarters of every hobli in the *taluk*. However, such decentralization did not always guarantee efficient delivery of service because the location of the kiosks is not always convenient for residents of some villages. Villagers explained that in some instances, the *taluk* headquarter offices may be geographically closer for them and that it is a more familiar institutional space where they have networks through which they can negotiate for certain types of RDS and RTC processes. We also observed that the increased physical and social distance of *Nemmadi* front-end kiosks influenced the decisions of some villagers to employ the services of brokers to submit their applications and subsequently to follow-up on its progress. Further, women applicants, especially those who have to care for little children at home, rarely visited these kiosks because of the time involved in travelling to the kiosks, difficulty of access owing to poor public transportation facilities and lack of knowledge regarding application and follow-up procedures. To other small and medium farmers, travelling to the kiosk involves both time and cost.

Erosion of Social Accountability

Another critical issue is the emerging relationship between street bureaucrats and rural citizens. Computerization, however, occupies a very minor role in the overall process of creating, verifying and delivering RTS and RDS services. The role of computerization is simply to provide the status of the application and facilitate digital delivery of documents. The crucial functions of verification and authorization of applications must still be done by VAs and RIs. Earlier, villagers would pursue the VA in their own village to issue these documents. The latter accountability was enacted through face to face interactions in everyday life, social norms and conventions. Following implementation of *Nemmadi*, VAs

rarely visit and survey the villages. They have transferred the accountability in delivery of records and documents to the computerized system because institutionally as well as legally, they are no longer directly in charge of providing the same. Their non-availability makes it necessary for applicants to approach brokers and mediators.

The Role of Brokers

The complexity of RDS application process and the process of recording changes to land ownership or correcting mistakes in the digitized RTC, described in the last section, catalyzed users' reliance on brokers. The prolonged negotiation process to correct errors, involving actors embedded in institutitions of different scale and their physical location also influences some users decision to negotiate via brokers. One example is the manner in which users seek to rectify mistakes. According to an ex-panchayat member, errors in digitized titles relating boundary, area and mutation are yet to be resolved. In his view, Nemmadi database is erroneous as it was developed from existing manual records, which were not accurate. The survey was not updated and thus disputes over boundary or ownership are not resolved via Nemmadi. Consequently, local residents still rely on VAs and ex-panchayat members to rectify records held by the village level institutions including those of Revenue department. Most villagers cannot directly approach the offices of the AC who authorizes the corrections because of the physical distance involved in travelling to Bangalore city. Further, they are unfamiliar with the processes involved. Owing to the paucity of time, senior bureaucrats such as the AC rarely spend time with applicants to explain which details are missing in their applications (Gatty, 2009: 157). In the absence of mediators who are familiar with the process and rules, users have to keep going back and forth before they can submit a proper application in the first place.

The tediousness of the hierarchical process under *Nemmadi* is compounded during specific periods in the year, such as between April and July, when there is a flood of applications for caste and income certificates necessary for children's school and college admissions. During such times, the need for brokers to follow-up and expedite the verification and signature process becomes even more crucial given the urgency of the situation. Middlemen are also important in such periods because they can either directly or through their networks approach revenue department officials to request for exceptions,

favours and use of discretion in certain cases. In one instance, during participation observation, a user wanted to the RI to look into his income certificate application in a way that would make it easier for his son to apply for a reserved category seat in medical colleges. Since as per the regulations and working of the NK system such requests are not legitimate, brokers assisted him in preparing a separate covering letter that explained his situation to the RI and agreed to follow-up on his application. In this way, citizens have to access/approach officials through mediators and middlemen and bypass the regulatory barriers introduced by technology interface.

Actors with connections to state institutions and local politics such as *panchayat* members, local leaders and political activists to access VAs and RIs act as intermediaries. Besides, front-end kiosk operators have emerged as another set of brokers. These operators are employed by Comat, but users perceive them to be government employees performing public service functions. Operators are either already part of the local political system by virtue of being members of political groups or by being related to landlords and local leaders. Or, they may get integrated into the dynamics over time as a result of their relationships with VAs and RIs, which they must cultivate and maintain as part of their executive responsibilities. They can therefore request these officials to quicken procedures for users who pay for hastening/bypassing the process. Sometimes, operators also perpetuate the belief that they have direct access to the network architecture and servers from which certificates and records are electronically transmitted to the front-end. We found that the servers from where information is transmitted between *taluk* offices, NKs and the state data centres are usually inaccessible because of traffic and poor infrastructure.[17] Therefore, operators often ask users to wait or to come back another day to collect their documents. Over time, inaccessibility of the server is cited as an excuse to extract extra payments from users in delivering certificates.

Appropriating Ambiguities

Further, owing to the large-scale rollout of the system, ambiguities regarding the first time process, procedure for subsequent applications in case of failure to update RDS documents at periodic intervals, and modifications in processes when new government

[17] Interview with a technologist who was involved with implementing e-governance projects in India. Interview conducted on 22nd May 2010.

policies and regulations are announced for different regions/districts in the state, continue to prevail across board. An example is the attempt to issue ration cards via Nemmadi. Nemmadi Kendras were deputed to distribute ration cards prior to state elections and national elections in 2008 and 2009. Nemmadi Kiosk operators in some locations used this opportunity to sell insurance packages and mobile phone connections. Nemmadi's non-state partner Comat was then responsible for carrying out these surveys. However, these ration cards were later revoked by the Election Commission on grounds of malpractices by political parties to create vote banks at the time of elections. One version is that the number of cards issued via Nemmadi far exceeded the census households in the area. Moreover, Although COMAT's central office stated that ration card issuance was an one time activity, there is still considerable confusion on the ground. in some of the kiosks, we found operators accepting ration card applications whereas in others, operators told us that ration card applications were not part of the services that Nemmadi delivers. Following protests by users, temporary ration cards have been issued via Nemmadi but there is still confusion among card holders about the role of Nemmadi vis a vis the ration card service. When the issue was discussed with COMAT, senior official acknowledged that ambiguity about COMAT's role exist on the ground because of the companies past and ongoing involvement with the programme. They pointed out that Nemmadi Kendra involvement in ration card issuance is linked to its earlier organizational legacy. In 2005, when the state of Karnataka, introduced the Akshya project and as part of it organized surveys. Comat was commissioned by the Food and Civil Supplies Department to re-distribute ration cards in the state of Karnataka.

The ration card case is an interesting instance of how rules are interpreted / appropriated by different attempts to make the delivery of a service uniform leads to variations on the ground. despite the implementation of a policy and a programme, legacies and former practices continue to keep the space open for maneuvering and negotiations. A consequence of these complexities and confusions result in processes and rules being adapted and modified locally[18], thereby leading to appropriations and subversions of the technology by middlemen, users, government functionaries and kiosk operators alike. as Sally Falk

[18] We also found that Comat has modified the process of delivering RDS certificates to first-time applicants in some districts. Applications are verified by checking against the database which the company developed when redistributing ration cards in Karnataka state. This process helps the company and its operators to expedite the delivery of RDS by bypassing the mandatory verification and authorization by VAs and RIs on first time applications. It was also mentioned to us that DCs and Tahsildars have the powers to modify processes/regulations and adapt these to local circumstances in the districts.

Moore (1976) argues, compliance to rules and adherence to law fundamentally stem from practices, social conventions, relationships and norms that already prevail among people and that form part of the arrangements/interactions between government agencies and different citizen groups. Thus, policies on paper differ and those implemented at large scales are usually appropriated in very different ways on the ground. Technical decisions and its consequences are thus not an outcome of an inherent logic but are influenced by differing interests of and relationships between actors embedded in the state and society. To illustrate further our argument about the social shaping of technology, we explore how factors such as scale and costs of technologies, and social relations influenced technical decisions relating to databases supporting the *Nemmad*i programme.

6 Social Shaping of Technology: Data base Design, Scale, and Technologist Relationship with the State

A recurring theme in our discussion with small and medium farmers is that of mistakes / errors in the digital database. As discussed in the section on effects of Nemmadi users reported a high cost involved in rectifying mistakes in digitized titles. In order to understand the reasons as to why these errors occur we explored the factors influencing design of *Nemmad*i databases. Discussions with technologists connected to e-governance programme bring to fore the influence bureaucratic and economic logic on database design and management.

Database Abstraction and Reduction of Information

Digitization effectively means copying all the information on manual records and inputting it into the system. In reality, data entry from manual records into digital system proved to be a cumbersome and contentious process. RTCs issued through Nemmadi kiosks rely on a database system, created by the National Informatics Centre of the Government of India, for the Bhoomi programme. It is designed to store information contained in land records from year 2000 onwards. Bhoomi database is designed to standardize land information across the entire state of Karnataka. The columns and tables designed for the Bhoomi database tried to enforce a standard format of recording and managing land information, whereas there were considerable inter-regional variations in the type of information contained in the manual records (Ahuja and Singh, 2005). Consequently, technologists faced a challenge in developing a standardized format for digitizing titles due to the diversity of land tenure and administrative regimes in Karnataka.

A unique factor in Karnataka was that the state was created by combining four different regions, each of which had its own administrative and political systems. The systems of recording and managing land information were therefore diverse in terms of measurement systems used to record the extent of land parcels in each of these regions. The Bhoomi software, however, uniformly recorded land extent in gunthas.19 Data entry operators therefore had to calculate and convert different measurement denominations into

[19] Forty gunthas equal one acre.

the metric system20. Consequently, errors have crept into the digital records. Secondly, errors in spellings of names of owners have been attributed to the poor record keeping practices and illegible handwriting of VAs. While this may have been the case, it also remains that data in land records were stored in multiple languages such as Kannada, Urdu, Tamil, Hindi, etc. Converting spellings from all these languages into a common language naturally results in errors because names spelt in one way in one language can be spelt in multiple ways in another language.21 Moreover, in the process of creating a standardised database, it was arbitrarily decided to leave out information pertaining to tenure history.

The tendency on the part of software companies to abstract information results in reduction of information. Consequently, there is a mismatch between what is happening on the ground and what is coded for the database. Although in theory it is possible to customize databases to local contexts, economic and political logics of the software companies and the State perpetuate the tendency towards abstraction.

Cost of Database

Although technologists whom we spoke to were aware of the problems in Bhoomi database, they opined that companies implementing e-governance programmes tend to continue with the bad system because it is cumbersome and expensive to develop a new database from scratch.

> *If the system is so broken than you can no longer put band-aids on it, you already answered this issue of scale negatively. Then you have to do a hard-nosed cost benefit analysis where you have to decide whether you will be ready to plug into a new system given the old. The problem with plugging into a new system is the hazards of change, training personnel all over again, etc. It is hard for anyone sitting*

[20] Source: Circulars issued by Revenue Secretary Mr. Rajeev Chawla dated 10th July 2003 available at stg2.kar.nic.in. Last accessed on 27th July 2010.

[21] We are grateful to Gautam John, Project Manager at Akshara Foundation, Bangalore for sharing this insight with us based on his experiences with maintaining digital databases. Interview conducted on 9th July 2010.

outside of this monolith to say whether this is a hard choice or not. But often costs overrides these decisions[22]*...*

The process of data entry itself is cumbersome and expensive. To weed out errors as far as possible, entries have to be done at least twice and cross-checked independently by two different operators.[23] The costs of data entry consistently concerned revenue department officials during the implementation of *Bhoomi* as a result of which services of VAs were eventually secured to enter data into the digital system. Moreover, technology gets outdated rather quickly but governments cannot afford to keep up because software and licenses are expensive to build and purchase. Besides, software companies looking for new markets prefer to abstract information so that the database can be tailored and can be generically applied to more than just land records, as reflected by the following narrative, The outcome is a system that has abstracted many of the differences/heterogeneities on the ground[4].

" *... software companies, generally, like to abstract things away. You make systems that generically you could apply as much to land records as to other things. For instance, Bhoomi – there is a lot of talk about repurposing Bhoomi for demographic data as well2]*.

In our interviews with technologists, it was pointed to us that deciding between abstraction and customization is not an easy choice.[24] Heavy customization is also expensive in terms of development and maintenance but large scale abstraction ignores the specificities of the contexts on the ground and veers towards enforcing highly structured and rigid application of policies, laws and procedures as was the case, as explained above, with the legalization of digital land records under Bhoomi. The competitive tendering process also reinforces the trend among Software companies to reduce costs associated with database construction. Very rarely they highlight the problems of abstraction to the State when tendering/pitching for e-governance projects.

Besides the issue of cost, the politics within the State department too perpetuate continuation with a faulty system, though recognised by bureaucrats. As one technologist

[22] Interview with Alok and Gautam John conducted on 9th July 2010

[23] Interview with Gautam John conducted on 9th July 2010.

[24] Interview with Alok Singh conducted on 9th July 2010.

commented, "*... you just had to continue working with this faulty system... (the concerned senior bureaucrat's_ biggest problem was that if he did not deploy it, he would lose credibility and power inside the State ... For him, he had promised everyone that he would computerize the entire revenue system. So it was not possible for him to say that this is not working and I will not deploy it."*

Effect of Scale on Database Design

The scale of the programme also has a bearing on decisions about the extent to which databases can be customized. According to one of the technologist interviewed, "*... governments harp on large scale because they are the only entities which can guarantee the implementation of initiatives and policies at that level".* The problem with the government's approach, in his view, was that they search for a standard solution without taking into account specificities on the ground and try to implement it in one go rather than experimenting with a database and scaling it up gradually. Technologists within Comat too agreed that the programme's problems with database errors is due to its scale, of rolling the programme quickly across the state before the databases could tested on smaller scales.

Technologists Influence over the State

Technologists have significant influence over the introduction of Nemmadi and Bhoomi programme. In our interview with a senior official of COMAT, he recounted the organisations director's role in conceiving Nemmadi and lobbying for it.

> *Nemmadi was the brainchild of RR who had written the background note for Nemmadi earlier along with bureaucrats. RR developed this concept note based on Comat's experiences with e-governance projects in the 1990s... We have a long history of implementing e-governance in the State... we are lobbying with 32 young district commissioners, all young IAS officers, clued to technology to extend e-governance to other domains*[25].

Databases of Nemmadi and Bhoomi programme are usually designed and constructed by software companies with sweeping directives from government officials and policy-

[25] Interview with Shailendra Nadige, General Manager, Operations, COMAT

makers. Construction of databases is therefore fundamentally linked to the choices that technologists and decision-makers in governments make regarding standardization and customization. Technologists who work closely with e-governance programme or the application of ICTs in governance assess government officials' understanding and capabilities of information technology to be poor in India[1]. Consequently, the state relies on a select group of software companies and individuals to design, develop and maintain ICTs, which, in turn, gives these companies and individuals the power to influence both the design and the costs of technology. Technology lobbies are influential in bringing the agenda of e-governance to the table, the domains in which they must be introduced as well as in defining the terms of e-governance contracts[26]. These lobbies being a handful of influential agents also bid for e-governance technology contracts via their respective agencies. As a result, their quality of work goes unchecked.

> *... the e-governance systems in general, and in particular in Karnataka are all developed by software companies. They are not developed by experts from the revenue department. Since they are developed by external experts whose time is any way valuable, they cannot sit and address every issue that comes up with data management. There is a process by which the design is developed... That is flawed to begin with. So they (the software developers) make a lot of choices simply in the interest of time. You have fixed time, fixed money. Get it done, that's all. The other thing is software companies, generally, like to abstract things away. You make systems that generically you could apply as much to land records as to other things. For instance, Bhoomi – there is a lot of talk about repurposing Bhoomi for demographic data as well. While the users of the system are usually the people who know what the system should do (for them).[2]*

In the view of a e-governance specialist, the domination of select group of companies is also perpetuated by the State. Government officials tend to think of technology only in relation to few companies and their products. For instance, databases are associated with Oracle while software is predominantly associated with Microsoft/Windows. A technologist opined thus:

> *I am not saying that with Microsoft and Oracle, you cannot get a working system – of course you can. But if you decide on a company first... and then search for a working system, then you have got it wrong.*

[26] Conversation with ex-employee of COMAT, dated 11th August 2010.

Opacity of Decision Making Process

According to a technologist, the division of labour relating to database design and management between different software companies has resulted in serious gaps in accountability.

> *The way (Nemmadi System) is designed ... it is completely different (companies or consultants). It is thus a collaboration of entities that are responsible for various parts of (designing and maintaining) system. And because the process says that you have to go through each of these steps for smooth operation of Nemmadi, and each of these different steps is controlled by different entities, they always insist that it is somebody else who has not done it right. So the actual process bypasses all of these guys which means it is no longer by the book... For example, if you take just RTC alone, now the software was written by NIC (National Informatics Centre). NIC is not responsible for making sure that it works. They only do software development. They are not responsible for deployment. They just write some software, give you the code and say it is your problem now. So whose problem is it? The next level is the Bhoomi consultant. So what the government did was that they hired individuals on their own basis as contractors and made them responsible for the upkeep of the system. So the Bhoomi consultant is a designated official or a contractor whose job is to go to the taluk office and train people in using the programme, whose job is to talk to NIC and get it, and so on. So these guys do all kinds of odd jobs besides technical design. But they are not responsible for the actual upkeep of the system either. They are responsible for taking something for Bhoomi and taking it somewhere else. So the next step is fixing the data centre. There is a server sitting in the data centre. Now this server is owned by Reliance. Reliance rents the room in which the server sits. Reliance is not responsible for what goes on inside this room. So they are responsible for making sure who is allowed inside the room and out of it. So the operations within the room are managed by Satyam. Satyam is responsible for making sure that all these computers are online, they are connected to each other and so on. Satyam is not responsible for the software. They have nothing to do beyond making sure whether the internet connection works or not on these machines. And Reliance is responsible for providing the connections outside the room and the connection that goes inside the room. There are more layers still. The maintenance of the software on the computer is done by CMC (Computer Maintenance Corporation). So CMC's salary comes from Comat. So 3% of all of Comat's profits go to CMC as per the contract. So CMC is responsible for making sure that the software is running. But CMC did not build the software. So they have no idea how the software works and what to do if something goes wrong. So if there is a problem with the database and it is not writing records, CMC can't do anything. They call the Bhoomi consultant. The Bhoomi consultant calls NIC and says there is a bug in the software. NIC says no, you did not deploy it correctly. So you try to get these guys into a room and say that something is not working. Which of you is responsible? None of them will take blame for it.*

In the present system, the design of database is controlled entirely by the National Informatics Centre, which by virtue of its quasi-governmental status obtains all the contracts for design of database. They also own the source codes but the private companies who are implementing the programme too have access to source codes and thus can benefit from the information. The everyday management of databases – including operation of software and maintenance of hard ware are with different private companies. The overall supervision of the private companies and consultant involved has also been contracted out. Consequently, when there is a problem in the system, no one take responsibility, an issue highlighted by the above interview. In order to oversee the work of the various private companies involved in the programme, the State brought in an international consultant PriceWaterHouse Coopers as an overarching project manager now. According to an ex-employee of COMAT, PWC brought in their own bureaucracy which rather than solving the problem was slowing things down.

Similarly, decisions relating to selection of technology or vendors are highly opaque. As mentioned earlier, RTC records of Nemmadi relies on a database prepared for an earlier programme Bhoomi, which is web based. Whereas the system for delivering RDS is based on work flow process and it relies on a Microsoft protocol called the Microsoft Messaging Queue, which comes with Windows XP. The choice of this protocol means that implementing agency such as COMAT is compelled to use a windows based system. When the concerned vendor was lobbying the State to adopt this protocol, it was still in the experimental stage. Moreover, the software was not designed for low bandwidth conditions and consequently, there were problems in processing the applications. However, companies like COMAT have no say over such technical matters as the choice of protocol or the vendor was made by a senior bureaucrat on cost considerations rather than for its technical capabilities. According to some technologists, IT companies like Microsoft calls the shots as there are not enough technical capabilities within the State.

> *(the company) calls the shots when it comes to deciding which technologies should be used. This is because NIC has no expertise for building something this large. So NIC will do what somebody tells them to do. And C chose (the company) because (they) gave this all for free. If the whole process has gone through the tender process, then (one) would have to deal with competition... (the company) offered to help (the senior bureaucrat) set up all of this at a time when nobody else was willing to get into e-governance, back in the 1990s. So they gave him completely free advice. For (the*

company) it makes sense because if they give it away for free, but for Comat it is costly as it is paying for all the licenses (when it buy) those Windows XP machines[27]

Ironically, e-governance programmes including Nemmadi and Bhoomi is rationalized on grounds of making the 'lower levels of the State' transparent, remains highly opaque at the higher levels. Specifically, the relationship between the technology companies and the senior bureaucrats of the State is a key factor affecting decisions but till date remains a black box. Therefore, we suggest that Nemmadis focus on rendering the lower levels of the State transparent need to be situated within the wider political economy, discussed in the earlier section. For technology companies also seeking to hedge their risks in land, e-governance is not only an economic opportunity but also a way to capture political and institutional space of the State.

Technical Rationality to Unsettle Claims?

Technologists' explanations of current problems with the databases supporting Nemmadi programme to that of absence of robust data entry processes and failure to customize technology to local contexts. While these explanations are valid, they overlook the fact that land information is often incomplete. This incompleteness stems not simply from intent but also from which accounts and histories of land ownership gain precedence over other competing narratives. The contested nature of claims on land renders land information imperfect by nature (Haila, 2002; World Bank, 2007). Therefore, in practical terms, it is difficult to co-relate one owner to a single land parcel. This runs counter to the logic of programmes such as Bhoomi and Nemmadi which are instituted to create clear titles assume that ambiguities in claims stem from human errors, corrupt behaviour and design issues. However, what is sought to be achieved through e-governance programmes is to limit claims through actually freezing it in favour of particular groups but does not resolve the underlying contestations.

[27] Interview with Kiran, ex-employee COMAT and software entrepreneur, dated August 2010

7 Conclusions

This report explored the question, whether and how technology interface introduced by the State influenced citizens 'engagement in the State and on their relationships with agents connected to different agencies of the State. We explored this question using the case of Nemmadi Kendra (NK) telecentre programme introduced by the Government of Karnataka in Bangalore to reform revenue administration. NK delivered two types of services namely the provision of Record of Tenancy and Crops (RTC) and Rural Development Services (RDS). These records and services are vital for citizens to access various resources for their livelihoods and their welfare entitlements as described in the sections 2 and 4, on the political economic context of Nemmadi programme. Architects of Nemmadi Kendra Telecentres described the programme as a progressive intervention that will usher in a new mode of interaction between the state and citizens. It will change the ways in which state conducts its business to make more efficient, transparent and accountable. Nemmadi programme hinges on assumptions of technological determinism, in that technology interface will automatically result in shifting the patterns of citizens' interaction in the State and their relationship to State agents. We explored this assumption in this research. Drawing on the perspectives of social shaping of technology, this research illustrated the influence of social relations in shaping design of technology and the ways in which different groups appropriated. We explored these assumptions in this research.

This study adopted a qualitative research method described in section 2, to infer about the extent to which and the manner in which the introduction of technology interface led (re)configuration of state- citizens relationship. Our analysis is informed by principles of social constructivism, which lends itself to developing multiple constructions about the world around us. We adopted a qualitative method for this research due to the nature of this research inquiry focussing on meanings, perceptions, processes and experiences (Denzin and Lincoln, 2001). This research does not test hypothesis which is characteristics of studies informed by positivist methodology. Our approach to theory construction is informed by grounded theory strategies articulated by Strauss and Corbin 1969. The use of literature by grounded theorists is to help in developing an analytical framework to unpack the research questions (Corbin and Strauss 2008). In developing an analytical framework to unpack this question we reviewed the questions relating to 'who', 'how' and 'why' of citizens

participation in state programmes in different sets of literatures. We considered the literature on participatory governance in development studies, e-governance, telecentres and technology. Based on this review detailed in section 1, we identified the following broad themes for further enquiry.

- Effects of Nemmadi programmes on different groups in socieity
- Appropriation of Technology: Users engagement with the State post Nemmadi particularly their interaction and relationship with frontline workers of the State?
- Social shaping of technical decisions

Section 3 described how the wider political and institutional dynamics provided an impetus for introducing Nemmadi. Findings relating to the above themes are summarised in sections 4-6. Findings presented in these sections illustrate the intertwining influence of technological aspects, structure and agency in shaping decisions relating to technology and institutional architecture in Nemmadi programme.

Findings of this research show that the consequences of ICT interventions have compounded the difficulties of interaction with the State, particularly, for citizens with relatively weaker economic and social power. Institutional changes introduced as part of ICT interface has resulted in the creation of new layers of mediators and regulations which citizens have to navigate before they can access government institutions. The reconfiguration of the role and influence of front line workers, has made it more difficult for different citizen groups to negotiate certain kinds of disputes with government functionaries. The cost (actual as well as opportunity cost) associated with securing RTC and RDS has increased post Nemmadi. Several factors added to the costs of securing RTC and RDS services, which include, the reification of procedures due to its automation, shifts in decision making power, and the spatial location of kiosks. Users predominantly rely on intermediaries in their responses to adapt to the changed situation, adapting and appropriating the new technology. At the same time, technology gets reconfigured and appropriated in specific ways on the ground by government functionaries, citizens and intermediaries. Findings of this research reinforce the observations (Benjamin et.al 2005) and De (2009, 2005) of earlier studies on *Nemmadi's* predecessor about the effects of reconfiguring citizens relationship with street

bureaucrats and those in the higher rungs of bureaucracy. It differs from Gatty's (2009) observation about the nature of shift in relationship between citizens, kiosk operators and street bureaucrats. The problems identified with *Bhoomi* programme by Benjamin et.al (2005) and De (2005, 2009) persists in *Nemmadi*. Our research have added to these studied through a comprehensive exploration of the relationship between street bureaucrats, kioks operators and rural citizens. While both studies have alluded to the potential adverse effects of reconfiguring relationship between rural citizens and street bureaucrats, they have not expanded on the specific ways in which e-governance programme reconfigured state-citizen relations.

A contribution of this research is in terms of broadening the analysis of citizens participation to include not only relationship between users and the State but also, between technologists and state agents. Analysis of citizens' participation in the state in the literatures on development studies or e-governance is often focussed on citizens as users or consumers of services and information provided by the State. The conception of citizen is limited to that of a community bounded in a specific place. For example, the various official reports and few academic papers on Nemmadi allude to communities participating in the programme as that of 'rural' citizens. Whereas, citizens participate in Nemmadi programme may not be confined to any specific geography. The type of services provided through programme like Nemmadi shapes the flexible boundaries of 'citizens'/ communities. For example, the RTC information provided by Nemmadi is consumed by citizens who own land, those involved in real estate transactions and those interested residing outside the locality or at time country in investing in land in a particular place. Similarly, citizens seeking RDS services may live outside the village but draw on their previous residential status in applying for such services. Besides being users, technologists and entrepreneurs among citizens are involved in this programme as service providers. Similarly officials of the State are also users and may have economic interests outside the state. Besides the engagement of citizens in different roles, their institutional locus may also overlap. Therefore in understanding the forms, avenues and effects of participation via Nammadi, we differentiated between three broad groups viz. users, service providers and decision makers. This research provided new insights through bringing to light the ways in which technological aspects and social relationship between technologists and state decision makers influenced the design of Nemmadi programme.

Another contribution of this research is in the findings on social factors influencing technical decisions. Earlier studies by policy makers as well as research have not focussed on this aspect. These findings presented in section 6, illustrate the need to study technologies by embedding them in the institutional, political, societal and regulatory contexts in which they are introduced and situated. Such an approach moves away from normative assumptions about the impact of technology and allows for more nuanced understandings of how technology reconfigures institutions, processes and interactions between government functionaries and citizens. This understanding is crucial for re-conceptualizing technology, governance and politics as intricately linked to material bases and practices. The embedded approach also challenges notions of technological determinism where technology is viewed as the final solution to problems of ambiguities, illegibility and inefficiency. Instead, we advocate an approach that focuses on how human actors are embedded in the system and how technology transforms their stakes, interests and behaviour of these actors and in turn gets appropriated in very complex ways. All these factors have an impact on the organization of the system and how the state will manifest before its citizens.

Areas for further Study

This study is limited in its analysis of the reflexive influence of social aspects and technical factors on decisions relating to the forms and content of technology in e-governance programme. We have analyzed one aspect of technology, viz., the database design. Further research is needed on the aspects of technological considered, reasons for selecting a particular technology and the choice of vendors. It is also useful to compare the relationship between technology and governance across different domains and different models of e-governance implemented in India. In addition although this research mentions about the inter-organizational influence on land and rural administration, the analysis is confined to the role of revenue administration. It will be useful to focus on the effects of technology adoption on inter-organization dynamics.

Bibliography and References

Ahuja, M. & Singh, A. P. (2005a). 'Appraisal of Computerization of Land Records in West Bengal'. *In:* Habibullah, W. & Ahuja, M. (eds.) *Land Reforms in India Volume 10: Computerization of Land Records.* New Delhi: Sage Publications.

Ahuja, M. & Singh, A. P. (2005b). 'Computerization of land records in Punjab'. *In:* Habibullah, W. & Ahuja, M. (eds.) *Land Reforms in India Volume 10: Computerization of Land Records.* New Delhi: Sage Publications.

Ahuja, M. & Singh, A. P. (2005c). 'Computerization of Land Records: Inter-state variations'. *In:* Habibullah, W. & Ahuja, M. (eds.) *Land Reforms in India. Volume 10: Computerization of Land Records.* New Delhi: Sage Publications.

Ahuja, M. and Singh, A. P. (2006). "Evaluation of Computerisation of Land Records in Karnataka: A Study from Gulbarga District". *Economic and Political Weekly*. Vol. 41 (01): 69-77.

Bailur, S. (2008). *Deconstructing community participation in telecentre projects*, Working Paper Series no. 31. Manchester: Development Informatics Group, Institute for Development Policy and Management, University of Manchester

Bakker,L. Nooteboom,G. and Rutten,R. (2010). Localities of Value: Ambiguous Access to Land and Water in South East Asia. *Asian Journal of Social Science 38:167–171*;

Bauer, M. W. and G. Gaskell (2000). *Qualitative researching with text, image and sound : a practical handbook*. London, SAGE.

Bayat, A. (1997). Street politics: Poor People's Movements in Iran. New York, Columbia University Press.

Benjamin, S. (2000). Governance, Economic Settings and Poverty in Bangalore. *Environment & Urbanization* 12(1): 35-56.

Benjamin S., Bhuvaneswari R., Rajan P., Manjunath B., (2005) *Bhoomi*: 'E-Governance', Or An Anti-Politics Machine Necessary to Globalize Bangalore? Bangalore: International Institute of Information Technology.

Bhatnagar, S. & Chawla, R. (2005). *Bhoomi*: Online Delivery of Record of Right Tenancy. *In:* Habibullah, W. & Ahuja, M. (eds.) *Land Reforms in India. Volume 10 : Computerization of Land Records.* New Delhi: Sage Publications.

Bijker, W. & Law, J. (1992). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge MA, London: MIT Press.

Bijker, W. (1995). Of Bicycles, *Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change.* Cambridge, MA: MIT Press

Bovens, M. & Zouridis, S. (2002) From street-level to system-level bureaucracies: How information and communication technology is transforming administrative discretion and constitutional control. Public Administration Review, 62, 174-184.

Chatterjee, P. (2002). The Politics of the Governed. New York, Columbia University Press.

Chawla, R. & Bhatnagar, S. 2004. Online Delivery of Land Titles to Rural Farmers in Karnataka, India. *Scaling up Poverty Reduction: A Global Learning Process and Conference.* Shanghai: International Bank for Development and Reconstruction / The World Bank.

Cleaver, F. (2001). Institutions, Agency and the limitations of participatory approaches to development. In Participation, the New Tyranny (Cooke, B. and U. Kothari eds). London: Zed. pp 36-55.

Cleaver, F. (2004). 'The Social Embeddedness of Agency and Decision making'. In S. Hickey and G. Mohan (eds.) *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation in Development*. London: Zed Books.

Corbin, J. & Strauss, A. (2008). *Basics of Qualitative Research : Techniques and Procedures for Developing Grounded Theory*. Los Angeles, SAGE.

Corbridge, S. (2005). *Seeing the State: Governance and Governmentality in India,* Cambridge: Cambridge University Press.

Dasgupta,P. and Serageldin, I. (2000). Social Capital: A multifaceted Perspective. Washington: The World Bank

Davies, T. (2010). Open data, democracy and public sector reform. A look at open government data use from data.gov.uk. M.Sc Dissertation, Social Sciences in Internet, University of Oxford. http://practicalparticipation.co.uk/odi/report/wp-content/uploads/2010/08/How-is-open-government-data-being-used-in-practice.pdf

De, R. (2005). E-Government systems in developing countries: Stakeholders and conflict. *In:* Wimmer, M. A., Traunmiller, R., Grounland, A. & Anderson, K. V. (eds.) EGOV, Heildelberg. Springer, 26-37.

De, R. (2009). Caste Structures and E-Governance in a Developing Country. *In: Proceedings of the 3rd International Conference on Theory and Practice of Electronic Governance.* Bogota, Columbia. ACM International Conference Proceedings Series.

Denzin, N. K. & Lincoln, Y.S. (2000). 'Introduction: The Discipline and Practices of Qualitative Research'. In N. K. Denzin and Y. S. Lincoln (eds). *Handbook of Qualitative Research* London, Sage: 1-28.

Flyvberg, B. (1998). Rationality *and* Power*: Democracy in Practice*. Chicago: The University of Chicago.

Fuller, C. J. & Hariss, J. (2001). For an anthropology of Indian State. *In:* Fuller, C. J. & Veronique, B. (eds.) The *Everyday State and Society in Modern India.* London: Hurst & Company.

Gatty, N. (2009). Information Technology for Governance Reforms: Land Records Computerization in an Indian State. United Kingdom: Institute of Development Studies, Sussex.

Gaventa, J. (2004). Towards participatory governance: assessing the transformative possibilities. In S. Hickey and G. Mohan (eds.) *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation in Development*. London: Zed Books.

Gaventa, J. (2001). 'Exploring Citizenship, Participation and Accountability'. IDS Bulletin 33 (2):1-11.

Gaventa, J. (1999). 'Participation, Citizenship and Local Governance' Background paper. Conference: Strengthening Participation in Local Governance. Brighton: Institute of Development Studies, Sussex.

Gil-Garcia, J. R. & Martinez-Moyano, I. (2007) 'Understanding the evolution of e-government: The influence of systems of rules on public sector dynamics', *Government Information Quarterly* 24, 266-290.

Grindle, M. S. and Thomas, J. W. (1991) *Public choices and policy change: The political economy of reform in developing countries*. London: Johns Hopkins Press.

Gupta, A. (1995) Blurred boundaries: The discourse of corruption, the culture of politics, and the imagined state. *American Ethnologist,* 22**,** 375-402.

Gurstein (2007). Editorial. *Community Informatics and Systems Design.* 3(1).

Haila, Anne. (2007). ' The markets as the new emperor'. *International Journal of Urban and Regional Research.* Vol. 31, No. 1. pp. 3-20

Heeks, R. and S. Bailur. 2006. Analysing eGovernment Research: Perspectives, Philosophies, Theories, Methods and Practice. iGovernment Paper No. 16. Downloaded from: http://www.sed.manchester.ac.uk/idpm/publications/wp/igov/index.htm

Holston, J. (2008). Insurgent Citizenship: Disjunctions of Democracy and Modernity in Brazil. Princeton: Princeton University Press

Jackson, P. (2001). Public Sector Added Value: Can Bureaucracy Deliver? *Public Administration* 79(1):5-28.

Johnson, E. and Kolko, B. (2010). Between the big brother and the digital utopia: e-governance in a totalitarian space. *Digital Icons: Studies in Russia, Eurasian and Central European New Media.* Issue 3.

Komito, L. (1999). Political transformations: Clientelism and technological change. In J. Armintage & J. Roberts (Eds.), *Exploring Cyber Society conference proceedings Volume II*. Retrieved July 2003, from http:// www.ucd.ie/lis/staff/komito/

Lipsky, M. (1980). *Street-level bureaucracy: Dilemmas of individuals in public services,* New York, Russel Sage Foundation.

Madon, S. (2006) IT-based government-reform initiatives in the Indian state of Gujarath. *Journal of International Development,* 18**,** 877-888.

Masaki,K. (2004). 'The transformative unfolding of tyrannical participation: the corvee tradition and ongoing local politics in Western Nepal'. In S. Hickey and G. Mohan (eds.) *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation in Development*. London: Zed Books.

Meena S.D., Thakur V., Shukla D R., Sisodia O P. (2005). 'Computerisation of Land Records: National Perspective'. In : Habibullh W. & Ahuja M. (eds.) *Land Reforms in India Volume 10: Computerization of Land Records*. New Delhi: Sage Publications.

Miles, M. B. and A. M. Huberman (1994). *Qualitative data analysis : an expanded sourcebook.* Thousand Oaks, Calif, Sage.

Mitchell, R. K., B. R. Agle, and D. J. Wood. 1997. Toward a theory of stakeholder identifi cation and salience: defining the principle of who and what really counts. The Academy of Management Review 22(4): 34.Nagar and Leitner 1998

Norris, P. (2001). *Digital Divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge: Cambridge University Press

Nuitjen,M. & Lorenzo,D. 2006. 'Moving Borders and Invisible Boundaries: A force field approach to property relations in the commons of a Mexican Ejido'. In: Beckmann, F. V. B., Benda-Beckmann, K. V. & Wiber, M. (eds.) *Changing Properties of Property*. New York :Berghan Books.

Oestmann, S. & Dymond, A.C. (2001). "Telecentres: Experiences, Lessons and Trends" in Colin Latchem & David Walker (eds) Telecentres: Case studies and key issues (1-15). Vancouver: The Commonwealth of Learning.

Oldenburg, Philip. 1976. *Big City Government in India: Councillor, Administrator, and Citizen in Delhi*. Tuscon: University of Arizona Press.

Parycek, P. & Sachs, M., 2010. Open Government – Information Flow in Web 2.0. European Journal of ePractice, (9). Available at: http://www.epractice.eu/en/document/313345 [Accessed May 23, 2010].

Raman, Bhuvaneswari. (2010). Street traders, place and Politics: A case study of Bangalore. PhD Dissertation, London School of Economics and Political Science.

Rao, A. R. M. & Bhat, P. V. (2005). *Bhoomi*: A Case Study. *In:* Habibullah, W. & Ahuja, M. (eds.) *Land Reforms in India Volume 10: Computerization of Land Records.* . New York: Sage Publications.

Riley, C.G. 2003. The Changing Role of the Citizen in the E-Governance & E-Democracy Equation: Commonwealth Centre for e-Governance. September 2003 (ed.)

Ritchie, J. and J. Lewis (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London, SAGE

Rossel, P. & Finger, M. (2007). Conceptualizing e-Governance. *Proceedings of the 1st international conference on Theory and practice of electronic governance held in Macao, China*: ACM International Conference Proceedings Series.

Sanoff, H. (2000). *Community participation methods in design and planning*. New York: J. Wiley & Sons.

Schlossberg ,M. & Shuford,E. (2005). Delineating "public" and "Participation" in PPGIS. Journal of the Urban and Regional Information Systems Association 16, 15-26.

Singerman, D. (1995). *Avenues of participation.* Berkeley: University of California Press

Singh, V. & Gururaj, J. (2009). *Nemmadi* Telecentre Project. *In:* Bagga, P. K. & Gupta, P. (eds.) *Transforming Government – e-Government Initiatives in India.* ICFAI University Press. Pp. 311-326.

Stern, R. (2009). Diversity: A Challenge to Urban Governance. Toronto: APSA Toronto Meeting Papers.

Strauss, A. L. and J. Corbin (1998). *Basics of Qualitative Research : Techniques and procedures for developing grounded theory*. Thousand Oaks, SAGE.

Thomas, J. C. 1995. Public participation in public decisions: new skills and strategies for public managers, 1st ed. San Francisco: Jossey-Bass Publishers.

von Haldenwang,C. (2002). *Electronic Government (E-Government) and Development: Does the Digital Divide Contribute to the Governance Divide?* A paper presented at EADI-conference in Ljubljana.

von Benda Beckmann, F and K (2010). Multiple Embeddedness and Systemic Implications: Struggles over Natural Resources in Minangkabau since the Reformasi. *Asian Journal of Social Science 38:172–186.*

Waddington, M. and Mohan, G. (2004). 'Failing Forward: going beyond PRA and imposed forms of participation'. In S. Hickey and G. Mohan (eds.) *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation in Development*. London: Zed Books.

Weiner, M. 1991. *The Child and the State in India*, Princeton University Press, USA.

William, R & Edge D (1996). The Social Shaping of Technology. *Research Policy* (25):856-899

[ii] Hoblis is a cluster of village
[iii] Taluk refers to a district