View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by AIS Electronic Library (AISeL)

Association for Information Systems
AIS Electronic Library (AISeL)

ICIS 2008 Proceedings

International Conference on Information Systems (ICIS)

2008

The Dynamics of Corruption and ICT Projects: Case Study from the Public Health System in India

Sundeep Sahay
University of Oslo, sudeeps@ifi.uio.no

Satish Puri
University of Oslo, puri_sk@yahoo.com

Follow this and additional works at: http://aisel.aisnet.org/icis2008

Recommended Citation
Sahay, Sundeep and Puri, Satish, "The Dynamics of Corruption and ICT Projects: Case Study from the Public Health System in India" (2008). *ICIS 2008 Proceedings*. 51.
http://aisel.aisnet.org/icis2008/51

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

THE DYNAMICS OF CORRUPTION AND ICT PROJECTS: CASE STUDY FROM THE PUBLIC HEALTH SYSTEM IN INDIA

Dynamique de corruption et projets informatiques : étude de cas du système public de santé en Inde

Completed Research Paper

Sundeep Sahay
University of Oslo
Postbox 1080 Blindern
0316 Oslo
Norway
sudeeps@ifi.uio.no

Satish Puri
University of Oslo
Postbox 1080 Blindern
0316 Oslo
Norway
puri_sk@yahoo.com

Abstract

Corruption, as a research topic, because of its very nature, tends not to be explicitly discussed. Further, empirically it is not easy to get "data" on, as respondents rarely discuss this topic, and neither would it be discussed in formal reports and presentations. It is thus elusive but still permeates widely and arguably significantly shapes the trajectories of ICT projects in developing countries. Often, from the West the view taken is that officials and bureaucrats in developing countries are corrupt and responsible for failures of ICT projects. Arguably, this is an incomplete view, as there are "networks of corruption" in play involving international donors, ICT vendors, politicians and other actors. Dynamics within these networks give voice to corruption within particular contexts. In this paper, the dynamics of corruption, including the "macro-micro" linkages are traced in the context of a ICT project (based on free software and implemented by a not for profit NGO) for the public health sector in an Indian state. In trying to understand some of these dynamics of corruption, the paper contributes to research in IS in developing countries in 2 ways: practically tracing the implications of corruption on project implementation; arguing for a more explicit consideration of corruption by researchers interested in building a richer contextual understanding of ICT project implementation in developing countries.

Keywords: IS, politics, power, Corruption, LDCs, India, health management.

Résumé

La corruption est peu étudiée même si elle façonne fortement les projets de TIC dans les pays en voie de développement. Le point de vue occidental voit la corruption des bureaucrates comme source d'échec des projets. Cette vision est incomplète, du fait de l'existence de « réseaux de corruption » impliquant de nombreux acteurs. Ce papier étudie la dynamique des réseaux de corruption dans le contexte du secteur hospitalier d'un Etat indien.

Introduction

The often used statement "information is power" is especially relevant in the contemporary context of Information and Communication Technology (ICT) mediated interventions in our everyday lives. It is therefore no surprise that issues of politics and power impinging the design and use of ICT based applications have been widely articulated and analyzed in IS and organizational studies research (Markus 1983; Franz & Robey 1984; Lyytinen & Hirschheim 1987; Nielsen 2003; Checkland & Scholes 1990; Orlikowski 1996; Hirschheim & Smithson 1998; Walsham 2001; Jasperson et al. 2002; Sahay & Avgerou 2002; Walsham & Sahay 2006).

In this paper, we argue that corruption, monetary or otherwise, while constituting an important aspect of power and politics, although recognized by IS researchers (Keen 1981; Avgerou 2000; Keen et al. 2000; Heeks 2001; Ciborra 2005; Krishna & Walsham 2005), is rarely explicitly discussed. Corruption is a social phenomenon, shaped by societies' diverse norms and cultures (Philp 1997), and also with the disciplines of study such as political researchers and social scientists (Xin 2004; Warren 2005; Heywood 1997; Schmidt 2007). Kurer (2005) argues that definitions of corruption vary with public opinion, public office and public interest. A simple and practical definition in the modern era is inimical corruption arising from unsuited policies. Unsuitable policies usually result as decision makers, politicians and other owners of public offices deliberately distort economic policies to support and carry forward their own personal interests (Jain 2001), and compromise and infringe impartiality principles for realizing personal benefits (Kurer 2005).

Corruption is a critical determinant of development projects (Scott 1972; Vanaik 1990; World Bank 1997; Waltzer 1999; Evans & Rauch 2000; Varma 2004; Transparency International 2006), and crucially so in ICT projects in the public sector in less developed countries (LDCs). Contributing to this are reasons such as the weak systems of accountability in governments, the asymmetries of power and resources exercised by funding agencies, and the ambiguity of expertise where technical decisions are typically made by administrators. Mechnisms of corruption varies from "hard" to "soft" forms with various shades in between. "Hard" corruption could involve the passing of money between two parties for the undue grant of a favor. Softer forms could involve for eample a senior decision maker in a developing country favoring the adoption of a particular technology over another, in exchange for a trip to a foreign country from where the technology is sourced, sponsored by the international funding agency (Rothstein & Teorell 2008).

Corruption, while being an important contextual condition shaping the trajectory of ICT based projects in LDCs, yet has been studiously avoided by researchers (Heeks 1998, 2007; Byrne 2004). Further and arguably, the use of free and open source software (FOSS) in ICT projects may have quite unique implications on corruption processes. On one hand, the "freeness" of FOSS may help break some of the existing shackles of corruption by eliminating some of the money from the transaction equation. On the other hand, purchasers of software may resist this very elimination leading to the construction of other forms of corruption. The manner in which FOSS impinge on the dynamics of corruption remains an unexplored empirical question in the context of ICT projects in developing countries. Within this backdrop, the aim of this paper is to understand the dynamics of corruption in the context of FOSS based ICT projects in LDCs. Specifically, our empirical focus is on understanding how the processes of corruption shaped the trajectory of implementation of a FOSS based health management information system (HMIS) within the public health sector in an Indian state.

The rest of this paper is organized as follows. In the next section, a brief overview of research related to the prevalence and impacts of corruption in LDCs is presented. A brief outline of the empirical approach is outlined in Section 3, followed by the case study description in Section 4. The case analysis, focusing on the resistance offered to overcome corruption and the eventual failure of these efforts is described in Section 5, followed by some brief conclusions.

Literature Review: Impacts of prevailing corruption in LDCs in ISD settings

The World Bank describes corruption as the abuse of public office for private gains (World Bank 1997). Till recently, the World Bank, as well as several other prominent international donor agencies *formally* ignored highlighting of corruption concerns. For example, World Bank officials were officially refrained from using the word "corruption" in their official communications as well as other relevant project documents (Fritzes 2007). It was

around 1996 that these formal orders were cancelled and corruption started to be more explicitly discussed. The sources and conditions of corruption vary, such as the chasm between formal rules and actual practices, the political pressures within which administrators operate, and corruption being something that is informally seen as institutionally legitimate (Fritzen 2007). Ogus (2004) argued that the high level of corruption in LDCs is culturally embedded, and often not curtailed due to political associations of most law enforcement agencies.

In the Indian public sector, corruption can be seen as a historical product of the British colonial legacy and the constructed bureaucratic structure led by the Indian Civil Service (ICS). This structure created a highly centralized system that was paternalistic in approach, considering the local communities to be ignorant and their institutions backward and inefficient. Drucker (1988) described this governance structure to be "flat," where the country was divided into provinces with districts, each being headed by an ICS officer, called the District Collector (DC) responsible primarily for maximizing revenue collection and maintaining law and order. The "steel frame" of the British Raj created ICS structure was post-independence retained through the Indian Administrative Service (IAS) whose members typically came from the elite group of society (Brown 1985). The IAS "retained the structure and style of its elitist forerunner" (Frankel 1978, p. 81) which even strengthened the policy of increasing state control over development processes (Mitra 1992), including in the health sector. In independent India, in which both the central and state governments are involved in development management and administration of more than 600 districts, the flat organizational structure of colonial times has since given way to a system of top-down, hierarchical and compartmentalized governance (Walsham & Sahay 1999).

Analysts like Pfeffer (1992) have argued that a key aspect contributing to institutional politics is the struggle over centralization and decentralization, the ambiguity around what goals are in question, and the inherent power asymmetries. Centralized efforts to introduce ISD in state and district work settings, including in the health sector, are often resisted by the line departments who have hitherto managed independently and see this as an effort to increase control and surveillance. Such centrally driven institutional approaches to promote ICTs tend to discourage efforts to make sense of locally meaningful ways of management, including in health services (Avgerou 2000). While international donors may espouse participatory and bottom up approaches in their planning documents, in practice efforts tend to be top down and centralized because of the requirements of the donors, the power of the bureaucracies, and various other issues such as infrastructure and capacity (Ciborra 2005).

Over the years, IS researchers have emphasized the role of contextual conditions, such as of politics and social and to some extent of corrupt practices (Heeks 2007) in ISD implementation (Keen, 1981; Standing and Bavington 1995). Corruption is diversely applied by politicians, high level administrators and business, "in which society is made a prey for the personal enrichment of the powerful few" (Sturges 2004, p. 1). In the context of ISD projects in the public sector of LDCs, Heeks argues that public servants make decisions "in their own interests rather than in the interests of the public," leading to IS failures due to "centralisation, which make decision makers too remote and unaccountable from the locus of decision information and action (Heeks 1998, p. 2z).

Heeks (2007) further argues the contextual conflicts between design setting and user perspectives on IS often cause failures of anti-corruption interventions due to the cultures and objectives of public servants embedded in these situations. Political interventions in these settings are frequently carried out under the disguise of formal bureaucracies (Avgerou 1990; Varma 2004). In post-independence India, the legislatures in the states as well as the centre have severely worn down the non-partisan nature of the bureaucracy (Vanaik 1990). Markus's (1983) analysis of power and politics implicated in ISD implementation is relevant for the analysis of corruption in LDCs. Specifically relevant is the political strand of her interactionist theory which argues that "resistance is explained as a product of the interaction of system design features with the inter-organizational distribution of power, defined either objectively, in terms of horizontal or vertical power dimensions, or subjectively, in terms of symbolism" (p. 432). Politics and power inherently modulate the acceptance (or rejection) of ISD outcomes (Markus & Robey 1983, 1988), which in a public sector context are dominantly shaped by structures around government practices (Aitken & Michel 1995), and "corruption is entrenched in the system" (Krishna & Walsham 2005, p. 135).

Furthermore, software in itself adds unique dimensions to issues of corruption and politics. Firstly, in the act of acquiring software, we run into the usual intrigues of interests, procurement systems of tenders, financial benefits, pressures of donor communities, and vendors often promising more than what they can offer. There are further concerns around the deployment and use of the software tied up with issues around who will host it, who will control its use, where will the software be physically located, what kind of data gets entered and who has access to

it, and other such issues inherently linked with issues of power and control. FOSS may further intervene in these issues in interesting ways such as by challenging existing tender based systems of procurement and by providing freedom to users to adopt the software without the usual costs of proprietary systems and their licensing restrictions. Whether FOSS based applications actually provides freedom from corruption or will the purchasers of software find other ways to exercise corruption, is an empirically open question.

As governments and policy makers are rapidly jumping on the bandwagon of FOSS to help bridge the digital divide, it is urgent that we empirically understand how such applications are accepted or not by government systems (of procurement, capacity building, valuing expertise etc). Power is inherently elusive (Jasperson et al. 2002), as its nuances are closely associated with evil and corruption (Keen 1981) and thus not explicitly discussed. Our analysis takes the view that corruption is an integral constituent of power and politics in organizations, and implicated in the interests and practices of government bureaucrats, international agencies, vendors and others. The public health sector in LDCs is especially prone to these processes (Braa et al. 2004) given the extreme involvement of donors, vendors and the circulation of money and ICTs. The field of public health informatics and particularly so FOSS based, is relatively new and inadequately comprehended by bureaucrats now responsible for taking significant investment decisions in this regard. The research aim is to understand how the dynamics of corruption are implicated in issues of power and politics within the context of a FOSS based Health Management Information System (HMIS) implementation for the public sector in India.

Research Methods

The case study involves the efforts of an Indian NGO (anonymously called INGO) to design, develop and implement a FOSS based computerized HMIS package (anonymously called F-HMIS) in the primary health care sector in Pradesh (a state in India). Pradesh is one of the most backward states in the country in terms of health indicators, physical and ICT infrastructure, and is also known to be politically unstable with a poor record of governance. Field work involved the deep involvement of the authors along with the state INGO implementation team comprising of about 50 members starting in early 2006 with a situation analysis in a pilot district (an administrative unit of a state in India). After successful evaluation of the pilot, the project was extended to all the 24 districts in the state. The project continued right through till about August 2007, when it was terminated by the state.

The primary research initiative comprised mainly of research and action (Braa et al. 2004) aimed at understanding and shaping complex processes of ICT-enabled change in a public health setting of a developing country and their impacts (Baskerville & Wood-Harper, 1998; Baskerville 1999). The action research approach helped us to gain deeper understanding of the various processes including the appropriate design of the application, dealing with infrastructure constraints, capacity building of both the INGO team and of the staff from the health services, and developing political advocacy to gain buy in from the state administrators and politicians for the initiative.

At the field level (called Primary Health Centres and Sub Centres[1]), our emphasis was to seek participation of the peripheral health staff to develop more appropriate systems that reflect their needs, and reduce the drudgery of huge amounts of manual work relating to processing routine data. Typically about 10-15 Primary Health Centres and 50 Sub Centers are included in a district, and at the district level the action focus was to ensure that data from all its facilities flowed regularly to it, and the processes of aggregation and reporting were carried out. Attempts were also made, especially in the more proactive districts, to encourage the analysis of collected data so as to take more informed decisions to support health program delivery. At the state level, to where the district data was transmitted to, the focus was nearly entirely on encouraging the use of information, and more broadly to spread awareness about the value of information for health program management.

---

[1] *Subcentre is the grassroots level health facility for every 5,000 rural people that is manned by two basic healthworkers. There is one mini PHC for every 20,000 rural people that has a medical team with one/two basic doctors.In addition, for every 80,000-1,00,000 rural people, there exists a Block PHC/CHC (a first level referral centre)having in-patient services and specialist doctors.*

In the first phase of the project (October 2006 to August 2007), 12 districts were covered with a plan to cover the remaining 12 districts in the second phase. The entire process of capacity building, implementation support, hand holding and building political endorsement at various administrative levels (of the state, district and sub district) was carried out by a multi-level team set up by INGO comprising of about 5 staff (either from informatics or public health background) per district, and a 3 member state team for overall technical and administrative coordination. The participatory approach adopted was operationalized through the district level teams and involved continuous meetings, discussions, and informal spending of time together with the field staff. This helped the INGO team to develop closer relationships and a sense of being an "insider" within the Pradesh health system. This insider status helped to provide a unique position to understand the action needs, and in collaboration with the health staff be able to carry out interventions (such as required training programs) and review and revise its consequences. This status also helped to gain access to the rumors and stories that circulated in the health department, typically laden with political and power overtones. While rumors remain rumors and their authenticity can never be completely verified, the important point was the manner it was given social meaning by the participants, and often acted upon. For example, we heard from the staff about a competing HMIS project initiated by an international agency and the improprieties (in vendor selection) that underlined it.

While it is difficult to describe our research process in terms of traditional cycles of action research (Susman & Evered 1978; Reason & Bradbury 2001), building trust with staff (especially at the field level) was an important basis for the action interventions carried out, often in organic circumstances, and sometimes interrupted through political events and conditions beyond our control. The explicit and tacit knowledge (Walsham 2001) gained through the participatory action research process was especially useful on the following counts:

1. The design and development of the HMIS application which could be easily used by the field staff, many of whom were computer illiterate.
2. To help develop locally improvised solutions, such as formulating alternative schedules for training to deal with the extreme level of power cuts.
3. The development of locally relevant capacity building approaches such as providing a high focus onthe basics of computers.

Data Collection Methods

Data collection during the research process was carried using multiple approaches (Walsham 1995), such as through field engagements, study of existing documents such as reporting formats, conducting capacity building of staff, communicating with other members of INGO over e-mails, participating in software prototyping, and various informal discussions. Field work commenced with the situation analysis in the pilot district in February 2007, in which a 2 member INGO team was deployed. There was extensive engagement with the field staff including medical doctors and nurses, during which the team tried to understand the different reporting formats, the flow of data across the different administrative levels, and the constraints experienced by the staff in carrying out their various information processing activities. The INGO team participated in the monthly meetings where the district officials met the field staff to discuss the HMIS reports, and through this gained a sense of how the reports were used for planning purposes. Participant observations (Whyte 1997) were also conducted during training sessions which helped to strengthen the contextual understanding of specific issues, such as the value of traditional data sources for improving primary health services. We also provided our comments on the quality of the HMIS such as the poor use of health indicators, which was appreciated by the medical doctors and with it helped develop a broader awareness of the value of the HMIS.

Semi-structured interviews were conducted with state and district staff including of senior bureaucrats, a state Minister for parliament, members of concerned NGOs in the state, and IT consultants. For example, we discussed with the Minister about the broader political dynamics in the state, and how these influence the posting of senior officers like the health secretary. Through these discussions, he also inquired about our project, its progress, and the problems we experienced. Subsequently, he "spoke on our behalf" to the officials to support our project, which provided further legitimacy to our ongoing action interventions. This was an example of how we tried to use the data collection process also as mechanisms for spreading awareness about the project and to enroll other actors in our "networks of action" (Braa et al. 2004). During the course of our project spanning nearly 2 years, we enrolled many such willing actors such as field health staff, medical officers, NGOs and other entities working in the area, and also

the Minister. However, we must admit, similar enrollments could not take place of the health program staff at the state level.

Data Analysis

Data collection and its analysis proceeded together in interpretive research modes, with no clear demarcation between these processes (Myers & Avison 2002), and reflecting the interaction of theoretical concepts with empirical data. With increased exposure, and deeper insights into the event under investigation, specific themes start to emerge and others started to go into the background. To give an example, starting off the research, we had anticipated issues of infrastructure and capacity would be the major challenges we would need to try and address. Over time, while we could find some kind of workarounds to these problems, issues of power, politics and the underlying corruption started to stare at us in the face. Conceptualizing such issues took us to the literature recognizing the deeply entrenched nature of the Indian bureaucracy (Jain & Dwivedi 1990; Montgomery 1974), which however does not explicitly consider the issue of corruption. Empirically, these issues became more apparent to us as the project went on, and we started to experience and reflect upon the sheer "irrationality" of some of the decisions with respect to our project. In order to discern pertinent themes, based on our empirical experiences, we documented our individual takes on the issues that we felt were shaping the project. The issue of politics and corruption stood out dominantly in our discussions. Within the theme of corruption, trying to understand the "why" of it, we started to elaborate on other issues such as related to FOSS, American aid agency dominance, the legitimized practices in the bureaucracy of taking favors for gaining support for the project, and similar such reasons. Various events kept taking place, such as the transfer of a visionary Health Secretary who was supporting our project which coincided with the change of the state government. This made us wonder about the link between the bureaucracy and the politicians.

Later we understood, these events were linked as the official was seen to be "sympathetic" towards the outgoing government. The ongoing saga of the non-payment of project costs by the health department to INGO, and the dynamics around it further helped us to understand systems of legitimized practices in the health department, and the manner in which corruption seemed to be institutionally legitimized and embedded. These analytical insights were further enrichened through readings, both the popular press and academic literature. For example, an eminent economist writing an article in a leading newspaper summarized the larger face of corruption in the country. "*Ostensibly to help farmers, the 11th five-year plan allocates nearly $50 billion to surface irrigation… This will be a huge waste of money on obsolete, ineffective irrigation concepts dating from the19th century … India must abandon its exiting strategy … This will disappoint crooked politicians and bureaucrats used to getting huge kickbacks …"* (Aiyar, Times of India, May 4, 2008, New Delhi).

In summary, data analysis involved a process with multiple facets. Firstly, was our ongoing fieldwork, and joint discussions with team members and also health department staff on these experiences, which continued to give various insights. Secondly, was discussions with members of the broader civil society such as politicians and NGOs that helped us to gain an understanding of the broader context and how deep rooted issues of corruption were. Engaging with ongoing events, such as non-payment and change of governments, in a sense provided us with "on-line" insights that gave great sharpness to the data analysis process. Readings of popular press (magazines and newspapers) was especially useful, and we found the academic literature to be generally wanting on the explicit treatment of this topic.

The Case Study

The case study is set in Pradesh (an anonymous name of an Indian state), amongst one of the poorest states in the country, with very weak infrastructures of roads, computers and electricity, a high percentage of illiteracy, and a public health system where many a times even buildings and basic sanitary, water and other conditions are not available in many of the health facilities. Pradesh is also reputed to have a rather unstable political structure with frequent changes of power, and a bureaucratic system that is reputedly corrupt with institutionalized systems of demanding payments of a percentage of project costs as bribes for obtaining official sanction. Systems of political and social patronage, a product of the historically existing feudal system in the state, were dominant in many spheres such as recruitment, transfers of staff, obtaining official permissions, and in procurement. As a historical response to

this feudal structure, Pradesh has over the years also seen the growth of quite a strong insurgent movement that is armed and which obstensibly seeks to fight for the rights (especially land related) of the poor and marginalized.

Within this context, the initial efforts to commence HMIS in the public sector of Pradesh came when one of the authors of the paper (who originally belonged to Pradesh) approached the Health Secretary there and expressed his desire to explore the possibility of introducing computer based HMIS in the state. In this meeting, this author (who was representing INGO, a not-for-profit NGO) explained about the origins of the F-HMIS (Free- HMIS), an initiative originating from an European University in 1994, and its current spread to more than 15 countries in the developing world, including India. Further, it was bought to the attention of the Secretary that this project was based on FOSS, and currently was also ongoing in some other Indian states. The Secretary was a very enlightened person and a visionary, and quickly saw the value of the proposal, especially the global knowledge and best practices which could come in through the F-HMIS network. He provided permission to develop a pilot project in one district nearby the state capital, the cost of which would be borne by INGO. So, quite in contrast to how commonly projects were initiated in Pradesh, this project was selected on its technical merits and the potential global knowledge it would bring in to a marginalized state. For this, the visionary health Secretary could be credited.

Following the permission provided by the Secretary, a pilot project was initiated in which two project employees set up base in the pilot district, and over the next 4 months made a detailed study of the health information flows from the community to the state through the various intermediate levels, the infrastructure available and other constraints. A prototype HMIS was quickly created by the team based on a FOSS application, and quite rapidly the health staff started to be trained on entering their data and generating reports. When the evaluation of the pilot was carried out after 4 months by the health secretary, he was pleased by the fact that for the first time during his tenure he could see data from the lowest level (of the sub centre) of service delivery, and that the data entry had been carried out by the health staff, and not through external and contracted data entry operators as was normally the case. This bore good signs for future sustainability of efforts for the project in the state. Based on this positive evaluation, a 5-year memorandum of understanding (MOU) was signed between the health department of Pradesh and INGO. As per the MOU, the 24 districts in the state were to be covered in two phases of 12 districts each, with the first stretching over 9 months, followed by the next cohort, and a period of joint consolidation. The hardware supply responsibility was that of the State, and INGO had the responsibility to provide services towards software customization and support, capacity building and implementation support. Ninety percent of the budgeted costs were towards paying salaries to the trainers who were to be hired by INGO for developing capacity of the health staff, and the rest 10% towards organizational maintenance and overhead expenses. Such a budgeting model was made possible because of the use of FOSS, and stood in stark contrast to typical HMIS computerization projects where about 90% of the costs are towards hardware and software and the rest on capacity building (Raghvendra & Sahay 2006).

After the signing of the MOU, the first efforts of INGO were to create a team of about 60 system facilitators who would be responsible for capacity building of the health staff at the facilities, and providing all kinds of implementation support and hand holding. Given the backward status of Pradesh and that many of the young educated people would go away to Delhi for employment opportunities, finding such people was not an easy task. However, we were determined to find and train this group as we felt that would be a very big incentive for Pradesh more broadly (not just the health sector) to create this pool of trained entrepreneurs who then on could more broadly contribute to bridge the "digital divide" in the state and strengthen socio-economic development processes. Further, in this team we consciously tried to incorporate a fair percentage of women in the team, again with the broader aim of contributing to women empowerment. Politically, that was our approach to be locally embedded and not to be seen as "outsiders."

Once the team was in place, we requested for a letter from the state office addressed to the different health facilities (including 102 PHCs[2] that were to be covered in the first phase) that the F-HMIS project had been initiated, and that the System Facilitators would be assigned to particular facilities, and the department should provide full support to them. The state was responsible for the installation of the hardware in the facilities, and as per the MOU this had to be done within one month from the signing of the agreement. However, given the eisting bureaucratic systems of procurement in the department, there were huge delays in the process, and the facilitators who were already now in the facilities started to become impatient waiting for the computers to arrive. To tide over this problem, and also to help give the facilitators a better sense and feel of what HMIS is about, we created paper formats in which all the data items that needed to be collected were listed (this ran into more than 10 pages), and columns were designed to enter data for the 12 months of the financial year (from April 2006 to March 2007). We then asked the facilitators to

take one set of this format to each facility and in collaboration with the staff there, obtain the paper records of the health data for the last 12 months and fill it in the created format. This process started, and served as a useful site for mutual learning, for the health staff to understand about the project and build trust with the INGO team, and for the facilitators to gain insights into the working of a health facility, the nature of the data that constitutes the HMIS; and understand problems in the existing data.

A health facility typically collects data on about 1500 data elements per month, so trying to find all the manual records, entering it in the structure of the paper sheets for various months was an extremely time taking task lasting many months. This was achieved only through the extreme cooperation of the health staff and the deep dedication of the F-HMIS team who were personally committed to contribute to the development of the state. In the meanwhile, the F-HMIS state level team kept following up with the officials there on the supply of the computers. Reasons such as the official requirements of a tendering process etc. were cited for the delay, and always we were assured it would be done soon. Finally, about 3 months into the project, the HMIS consultant of the state found 32 unused computers in the state warehouse and took the initiative to have them dispatched to 32 facilities (out of the designated 102). Many of these machines were not as per the specifications for the hardware that had been specified in the MOU, and many of the supplies were incomplete (without the UPS or the printer for example). While of course we lodged our note about these issues officially with the state, we were at least glad that in 32 facilities' training could be started for the facility staff using the computers. For the other facilities, we used locally improvised solutions to meet the gaps, such as using the district machine for training of the PHC staff or by renting a machine. We found many willing district offices, and took permission from the Chief Medical Officer (CMO) there to install the software, and start to conduct training programs. The CMO in nearly all cases were extremely willing for this as they were excited that computers would be used for their district. In some districts where the computers did not exist, we on our own initiative hired computers to help initiate similar processes there.

Response from the state on further supply of computers continued to be one of procrastination, and as was the practice in the state, we carried on to write official reminder letters to place the issues on record. In the meanwhile, our mixed approach to data collection (combination of facility and district based training) was moving very well, and about 6 months into the project, we had collected nearly 90-95% of all the required paper data, and started to enter that into the computers. Different means were used for data entry, either through the staff in the facilities, or through the INGO system facilitators, and in other cases through contracted data entry operators. Ideally, we would have wanted all the data entry to have been done by the health staff, for reasons of sustainability as had been demonstrated in the pilot, but circumstances did not allow us.

On issues of money, as per the MOU, a first installment had to be paid to us with the signing of the agreement, and subsequently quarterly payments were earmarked. We got the first installment as scheduled, and as the time came for subsequent payments, we started to write official request letters. It should be pointed out that the health secretary who had initiated the project was transferred soon after the signing of the MOU. This transfer came about because there had been a political change in the ruling party, and the secretary who was seen aligned to the party now out of power, was transferred from health to a more remote department. That was a real blow to the project, as in him we had found someone who was visionary and to whom we could clearly express the issues we faced. Adding further confusion to the question of leadership was the fact that in the following 3-4 months, there were at least 3 different secretaries who were posted to position and soon rapidly transferred due to political reasons. There was thus a complete and repeated disruption in the project, and with it we found no action being taken on our request for installment payments or the supply of computers. Further, we also found no one in the state to whom we could demonstrate the field implementation progress, and to take state level ownership. As months started to pass, and our resources more depleted, we begun to become worried about how we would pay the salaries of our staff, who were now slowly becoming more agitated.

As we built trust with many of the health department staff, we started to gain access to rumors and stories about the "gory HMIS arena" in the state, and also the dominating influence of a large North American international donor on various affairs of the state. We heard that some years ago, the then health secretary had contracted an American agency for the development of a HMIS application in one district, and the cost of which was about twice of ours even though we were covering 24 districts and over a five year period. We were also told that a large sum of the contracted amount had already been paid to the agency even though the work had not been completed. On a separate visit to the district where this agency had worked, we could not find a working system, or users of the system.

People alluded to comments of others "yes, I think something is going on, but not sure what." We later came to understand why in our MOU, only 24 districts were included and not 25 since the 25th (which incidentally was the capital of Pradesh) was seen to be within the purview of the American influence and the prior secretary. Incidentally, we had been in touch also with the Minister of Parliament (MP) from the state, whose political constituency interestingly corresponded to this 25th excluded district. He was happy that our global project on a missionary zeal was being implemented in his state, but kept asking us to also deploy the systems in the health facilities of his district. When we told him the reasons why we could not, he wrote a letter to the Chief Minister and Health Minister of the state asking for an explanation why his district had been excluded from the project. No response was ever received on this. In the meanwhile, our resources were now completely depleted, and we could not even pay the salaries of our staff for more than 4 months. The staff because of their commitment to the project, and desire to make it succeed, continued to work unflinchingly in the field even without their salaries. In the meanwhile, our continued approaches through letters and personal meetings with the concerned officials bore no results. The department staff used various time wasting measures to put us off, for example by asking reports of work done (even though they already were given in many times). At one point, it was told to us that our project was not legal as the health department had signed the MOU with INGO without due process – implying that no tendering process took place and also no approvals of the governing council were taken. We argued those issues were the department's internal issues nor our problems, and that we were acting on a legal MOU signed between us and them, and had delivered as agreed.

Through the Member of Parliament mentioned earlier, we requested him to intervene in the matter. After extreme pressure being put on the health officials, they invited us to make a presentation of the overall project to the governing council. Given the severity of the issue (that now 60 facilitators had not been paid for 4 months), one of the authors came from Europe to make this presentation. In the meeting, various issues were discussed, and the meeting was completely dominated by the American representatives. By the time it came to the INGO presentation, the Secretary said he needed to leave, and instead said that an "expert committee" would be delegated to examine the status of our project and submit a report to him in one week and he would then take necessary action. As things turned out, the setting up of the committee, their analysis and submission of report took close to two months. But the report unanimously applauded the success achieved by the project, and strongly recommended that it should be quickly expanded to the whole state and all back payments should be made. Despite this, no payments were paid, and more innovative methods of delays were constructed. For example, they even went to the extent of asking for an audit statement of the money that was due to us. To this we responded that it was illegal for us to provide audited statements of money that had not been received. Then they asked us again to give them the soft copy of the data, which we again provided. In the meanwhile, through various informal sources and rumors we were encouraged to offer a bribe to the department, as there were fixed percentages (15%) which needed to be mandatorily paid if any payment was to be received. We decided not to do that for both moral reasons, and also we did not trust that the department would pay us even after receiving the bribe.

Then we were told that the financial year ending was coming and we would need to be paid now or never. One day before the year ending (30th March 2008), we received a fax saying that our project was being terminated and a new tender would be issued. We were told to collect our payment for work done till June 2007, and no explanation was given on how June was marked as termination date. Interestingly, it was written also in the letter that because of the conflicts between two past health secretaries, it was not possible to continue the project. In aftermath, the story was that the health secretary who initiated our project (say HS 1) was in public conflict with an earlier health secretary (say HS2) who had given the contract of one district to the American firm mentioned earlier. However, after HS1 left the health department, HS2 became the Chief Secretary (head of all Secretaries), and apparently opposed our project since it originated from HS1. In the meanwhile, HS1 filed corruption charges against HS2 for various cases (including involving the HMIS project of the 25th district). This conflict between HS1 and HS2 gained headlines in the national press with HS2 being charged. Anyway, the repercussion of that has been our project was closed, and still our due money (not even the partial amount deemed payable by the end of the year fax mentioned earlier) was not paid. The file currently languishes in the drawer of the official who has to sign the cheque, apparently waiting for some "incentive" before the signing takes place. INGO is now in the process of initiating legal proceedings against the State Health Department.

Case Analysis

As described in the case study, an expert committee set up by the State Health Secretary evaluated the INGO HMIS implementation in Pradesh as a success and recommended its urgent scaling up. Some of the medical officers in the districts also wrote to the State department expressing their appreciation of the INGO project and the need to strengthen support to it. Apart from these formal notes, various health staff and medical officers from PHCs, CHCs and districts, with whom we had established close working relations, were extremely pleased with the improvements brought in, especially in streamlining their monthly health data management processes. Earlier, the manual reporting systems were not only fragmented but also functioned sketchily. The field data was frequently "modified" at various levels by the health staff (PHC, district etc) to show that targets had been met, and similarly the state officials would convey to the concerned bureaucrats and politicians (at the central level) the successful functioning of their state health programs. In the 12 districts covered by the project, as the computer based HMIS began to replace the manual reporting systems, the technical security features of "locking," made it difficult to create "modifications" to the data.

The above-mentioned "success" was achieved by INGO despite the extremely adverse circumstances such as delayed and non-supply of hardware of appropriate quality. Out of 102 PHCs, PCs were set up only in 32 facilities, of which some were unserviceable right from the beginning. The PCs were out of warranty period, and with no AMC. There was also the lack of Internet connectivity, and hence data transfers had to be carried out manually starting off from PHCs through CDs, manually carried by the INGO team members. Power supply was extremely intermittent and the generators often were earmarked for use only for medical emergencies. Dealing with this condition required creating schedules for training, sometime outside normal working hours, to take advantage of available power supply.

Non-payment of dues was another major problem, with 40% being released at the very start, and no further funds as stipulated in MOU were ever made available to INGO. This long overdue non-payment severely impeded progress of work as since May 2007 neither the facilitator salaries could be paid nor travel in the field could be supported. Although, INGO attempted to transfer minimal funds on loan from their ongoing projects in several other states, this had to be stopped because all projects were taken up *not-for-profit*. Another key problem was the lack of ownership assumed by the State health authorities who seemed to express an attitude to somehow abandon this project and re-tender it, probably to gain larger financial support from international funding agencies, like the American one currently active in the state. The magnitude of the project cost that the State paid to implement a HMIS in one district (the 25th one described earlier) provides insights into "what is in store" for the officials provided the "right" agency is allocated a state-wide IS project. The success of F-HMIS was also informally confirmed by the IT consultant working in the state health department, on whose laptop the health databases were being installed and regularly updated. While he privately applauded the achievements of the project, he had little power to influence decision making at the top. Firstly, he himself was a consultant on a temporary contract and thus could not dare rock the boat in fear of his own job. Two, he was seen as a technocrat, while the locus of decision making was centered within the administrative circles.

Our analysis emphasized that there is a deep and irreconcilable chasm between the political and technical domains, as seen from the perspective of the state and their evaluation of the project. The technical success of the project seemed to have no influence on the political decision makers, whose primary motivation seemed to come from other sources. Scholars like Beck et al. (2004) have analyzed the continuation of the digital divide amongst marginalized communities in LDCs, for example, through reasons of lack of access to the Internet and human capacity. Beck et al. (2004) further argue that this acute divide does not exist merely because of the above reasons alone but also due the lack of abilities amongst poor people to innovate and effectively use ICTs in their local circumstances, and being linked to local issues and concerns. Our case points to some other reasons. Yes, there are infrastructure constraints, but these are not insurmountable, and with team work and local innovation, problems can be addressed, though not in technically optimal ways. Further, we showed that the capacity to innovate and find local solutions are really present in marginalized communities – because they need it most to find improvised solutions all the time to deal with the historically deprived circumstances in which they live.

Contributing to the shaping the trajectory of the project in Pradesh were a number of conditions ranging from inadequate infrastructure, weak human resources capacity, poor governance, and a highly volatile political and administrative structure. While acknowledging the above, we have primarily focused our analysis to the issue of corruption as we see it significant, affecting other issues, and yet largely ignored from discussions and action. We use the term of "networks of corruption" to emphasize the interlinked nature of these processes and the manner in which they are institutionally embedded.

This network comprises of various actors including the administration, the political structure, the international donor agencies, the IT vendors, and others. Network linkages take place through different mechanisms, some of which we discuss here. The first concerns "hard corruption," involving the transfer of money to decision makers for promoting a particular project. In bureaucratic systems like in Pradesh, corruption is a historical legacy of the feudal system and the civil and administrative services, and over time, this form of hard corruption has become a deeply embedded institutionalized practice, and one which is nearly impossible to dislodge. The second concerns the use of FOSS, which seems to be resisted because there are no apparently financial strings attached to its purchase and uptake. The cost comparisons of the F-HMIS project in 24 districts with the American agency project in one district provides a clear evidence to this point.

Thirdly, corruption is not just a state subject but is something that is promoted and maintained by international agencies who have their fingers in "many pies." The American agency in our case had been active on various kinds of health related projects in Pradesh, including HMIS. Since they have the state health officials within their grasp, their influence is exercised through many means, such as granting favors to the agency they want. In this way, a corrupt nexus gets created involving international donors, state officials, and local vendors, and built around the use of proprietary systems. Reinforcing these above identified issues is the extremely unstable political structure which leaves little room for accountability. Projects are started, undue favors are received, project outcomes not evaluated on technical merit, and failures brushed under the carpet as the bureaucrat who has initiated the project has been moved to another setting. The frequent changes of the political parties have direct repercussions on the bureaucracy, further contributing to this ambiguity. These changes have sometimes the effect of moving out good officers, and in other cases, the opposite. In summary, the macro level politics and corruption are deeply and intricately intertwined with the micro-level project dynamics, with significant implications. In this paper, we have tried to trace some of these macro-micro linkages. The issue of FOSS and the "not for profit" form of INGO in our case, empirically was seen to be something that invited resistance because of the lack of monetary benefits associated with it.

Discussions and Conclusions

Corruption, within the context of ICT projects in LDCs, is no simple matter of an "improper" transaction between two individuals, but is situated within a "network of corruption" with both inter-connected structural and process features. Through our analysis, the following linkages are identified:

1. Systems of international funding create structures of asymmetrical relations and dependencies between the recipient and donors contributing to corrupt practices. For example, a vendor favored by the donor had to be given a contract for a HMIS project in one district at an exorbitant cost by the health department.
2. Structures of governance in which the bureaucrats are often subservient to the politicians means that officers are often transferred at the whims and fancies of the politicians. This adversely influences the continuity and sustainability of ICT projects.
3. Structures of procurement in government have delays and procedures in built in them, and going around them to speeden implementation inevitably requires the exchange of undue favors.
4. There are institutionally legitimized structures of paying a "% fee" in return for project related payments. Failure to adhere to this practice, as in the case of INGO, meant that their payments were held up, leading ultimately to the closure of the project.

Corruption, as a research topic, because of its very nature, tends not to be explicitly discussed. Further, it is not easy to get "data" on, as hardly will ever respondents discuss this topic, and neither would it be stated in formal reports and presentations. It is thus elusive but still permeates widely in the context of health sector projects in LDCs. Often, from the West the view is taken that the officials and bureaucrats in LDCs are corrupt and responsible for the failures of ICT related projects. But, we argue that this is an incomplete view, as what gives corruption a voice is the "networks of corruption" that take shape, and its structural and process characteristics. Viewed in this perspective, international donor agencies can be seen to be equally responsible as the local government officials in promoting a corrupt practice. These networks include aid agencies, government officials, technology vendors, which often find patronage through politicians. In trying to understand some of these dynamics of corruption, the paper contributes to research in IS in LDCs by firstly trying to practically trace some of its implications on projects, and secondly, by providing a richer contextual understanding of a FOSS based HMIS project.

References

Aitken, S. C., and Michel, S. M. 1995. "Who contrives the "real" GIS? Geographic Information, Planning and Critical Theory," *Cartography and Geographic Information Systems* (22:1), pp. 17-29.

Aiyar, S. S. A. 2008. "Wasting $50 bn on major irrigation," *Times of India*, May 4, pp. 26.

Avgerou, C. 1990. "Computer-based information systems and modernization of public administration in developing countries," in *Information Technology in Developing Countries*, S. C. Bhatnagar and N. Bjorn-Andersen (eds.), North-Holland, Amsterdam, 243-250.

Avgerou, C. 2000. "Recognising Alternative Rationalities in the Deployment of Information Systems," *The Electronic Journal on Information Systems in Developing Countries* (3:7), pp. 1-15.

Baskerville, R. 1999. "Investigating Information Systems with Action Research," *Communications of The Association for Information Systems* (2:19).

Baskerville, R., and Wood-Harper, A. 1998. "Diversity in Information Systems Action Research Methods," *European Journal of Information Systems* (7:2), pp. 90-107.

Beck, E., Madon, S., and Sahay, S. 2004. "On the Margins of the "Information Society": A Comparative Study of Mediation," *The Information Society* (20), pp. 279-290.

Braa, J., Monteiro, E., and Sahay, S. 2004. "Networks of actions: Sustainable health information systems across developing countries," *MIS Quarterly* (28:3), pp. 337-362.

Brown, J. M. 1985. *Modern India: The Origins of an Asian Democracy,* Oxford University Press, New Delhi.

Byrne, E. 2004. *A Participatory Approach to the Design of a Child-Health Community-Based Information System for the Care of Vulnerable Children*, Ph.D. thesis, Western Cape.

Checkland, P. B., and Scholes, J. 1990. *Soft Systems Methodology in Action*, John Wiley, Chichester.

Ciborra, C. 2005. "Interpreting e-government and Development: Efficiency, Transparency or Governance at a Distance?" *Information Technology and people* 18(3), pp. 260-279.

Drucker, P. F. 1988. "The Coming of the New Organization," *Harvard Business Review*, January-February.

Evans, P., and Rauch, J. E. 2000. "Bureaucratic Structure and Bureaucratic Performance in Less Developed Countries,"*Journal of Public Economics* (75), pp. 49-71.

Frankel, F. R. 1978. *India's Political Economy, 1947-1977*, Princeton University Press, Princeton.

Franz, C. R., and Robey, D. 1984. "An investigation of user-led system design: rational and political perspectives," *Communications of the ACM* (27:12), pp. 1202-1209.

Fritzen, S. A. 2007. "Crafting performance measurement systems to reduce corruption risks in complex organizations: the case of the World Bank," *Measuring Business Excellence* (11:4), pp. 23-32.

Heeks, R. 1998. "Information Age Reform of the Public Sector: The Potential and Problems of IT for India," *Information Systems for Public Sector Management Working Paper Series, Working Paper No. 6*, IDPM, University of Manchester, Available: http://idpm.man.ac.uk/publications/wp/igov/igov_wp06.pdf.

Heeks, R. 2001. "Understanding digital government project failures," *IEEE Computer* (34:2), pp. 34,

Heeks, R. 2007. "Why anti-corruption initiatives fail: technology transfer and contextual collision," in *Corruption and Development: The Anti-Corruption Campaigns*, S. Bracking (ed.), Palgrave Macmillan, Basingstoke, pp. 258-272.

Heywood, P. 1997. "Political Corruption: Problems and Perspectives," Political Studies (XLV), pp. 417-435.

Hirschheim, R. A., and Smithson, S. 1998. "Evaluation of Information Systems: A Critical Assessment," in *Beyond the IT Productivity Paradox,* L. Willcocks and S. Lester (eds.), pp. 381-409.

Jain, A. K. 2001. "Corruption: A Review," Journal of economic Surveys (15:1), pp. 71-121.

Jain, R. B., and Dwivedi, O. P. 1990. "Administrative Culture and Bureaucratic Values in India," *Indian Journal of Public Administration* (36:3), pp 435-450.

Jasperson, J., Butler, B. S., Carte, T. A., Croes, H. J. P., Saunders, C. S., and Zheng, W. 2002. "Review: Power and Information Technology Research: A Metatriangulation Review," MIS Quarterly (26:4), pp. 397-459.

Keen, P. G. W. 1981. "Information Systems and Organizational Change," *Communications of the ACM* 24(1), pp. 24-33.

Keen, P., Balance, C., Chan, S., and Schrump, S. 2000. *Electronic Commerce Relationships: Trust by Design*, Prentice Hall.

Klein, H. K., and Myers, M. D. 1999. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly* (23:1), pp. 67-93.

Krishna, S., and Walsham, G. 2005. "Implementing Public Information Systems in Developing Countries: Learning From a Success Story," *Information Technology for Development* (11:2), pp. 123-140.

Kurer, O. 2005. "Corruption: An Alternative Approach to Its Definition and Measurement," Political Studies (53), pp. 222–239.

Lyytinen, K., and Hirschheim, R. A. 1997. "Information Systems Failure: A Survey and Classification of the Empirical Literature," in *Oxford Surveys in Information Technology* (4), P. I. Zorkoczy (ed.), Oxford University Press, Oxford, pp. 257-309.

Markus, M. L. 1983. "Power, politics, and MIS implementation," *Communications of the ACM* (16:6), pp. 430 444.

Markus, M. L., and Robey, D. 1983. "The organizational validity of management information systems," *Human Relations* (36:3), pp. 203-226.

Markus, M. L., and Robey, D. 1988. Informational technology and organizational change: Causal structure in theory and research. *Management Science* (34: 5), pp. 583-594.

Mitra, S. K. 1992. *Power, Protest and Participation: Local Elites and the Politics of Development in India*, Routledge, London.

Montgomery, J. D. 1974. *Technology and Civil Life: Making and Implementing Development Decisions,* MIT Press, Cambridge, Mass., and London.

Myers, M., and Avison, D. 2002. "An Introduction to Qualitative Research in Information Systems," in *Qualitative Research in Information Systems*, M. Myers and D. Avison (eds.), Sage Publications, Gateshead, pp. 3-12.

Nielsen, R. P. 2003. "Corruption Networks and Implications For Ethical Corruption Reform," Journal of Business Ethics (42:2), pp. 125-149.

Ogus, A. I. 2004. "Corruption and Regulatory Structures" *Law & Policy* (26: 3-4), pp. 329-346.

Orlikowski, W. J. 1996. "Improvising organizational transformation over time: A situated change perspective," *Information Systems Research* (7;1), pp. 63-92.

Pfeffer, J. 1992. *Managing with Power: Politics and Influence in Organizations*, Harvard Business School Press, Boston.

Philp, M. 1997. "Defining Political Corruption," Political Studies (XLV), pp. 436-462.

Ranjini, C. R., and Sahay, S. 2006. "Computer-based Health Information Systems: Projects for Computerization or Health Management? Empirical Experiences from India" in *Information Communication Technologies and Human Development, Opportunities and Challenges*, M. Gasco-Hernandez, F. Equiza-Lopez and M. Acevedo-Ruiz (eds.) Idea Group Publishing, Hershey, pp. 266-292.

Reason, P., and Bradbury, H. 2001. "Inquiry and Participation in Search of a World Worthy of Human Aspiration," in *Handbook of Action Research: Participative Inquiry and Practice,* P. Reason and H. Bradbury (eds.), Sage, London, pp. 1-14.

Reason. P., and Torbert, B. 2001. "The Action Turn: Toward a Transformational Social Science," *Concepts and Transformations* (6:1), pp. 1-37.

Rothstein, B., and Teorell, J. 2008. "What Is Quality of Government? A Theory of Impartial Government Institutions," *Governance: An International Journal of Policy, Administration, and Institutions* (21: 2), pp. 165-190.

Sahay, S., and Avgerou, C. 2002. "Introducing the Special Issue on Information and Communication Technologies in Developing Countries," *Information Society* (18:2), pp. 73-76.

Schmidt, D. 2007. "Anti-corruption: What Do We Know? Research on Preventing Corruption in the Post-communist World," *Political Studies Review* (5:2), pp. 202–232.

Scott, J. C. 1972. *Comparative Political Corruption*, Englewood Cliffs, Prentice Hall, NJ.

Standing C. and Bavington, A. 1995. "A systems perspective using a structured information systems development methodology," *Proceedings of Australian Systems Conference*, pp. 84-97, Perth, Australia.

Sturges, P. 2004. "Corruption, Transparency and a Role for ICT?" *International Journal of Information Ethics* (2:11), pp. 1-9.

Susman, G., and Evered, R. 1978. "An Assessment of the Science Merits of Action Research," *Administrative Science Quarterly* (23), pp. 582-603.

Transparency International. *Global Corruption Report*, 2006 Available: http://www.transparency.org/publications/gcr.

Vanaik, A. 1990. *The Painful Transition: Bourgeois Democracy in India*, Verso, New York.

Varma, P. 2004. *Being Indian*, Heinneman, London.

Walsham, G. 1995. "The Emergence of Interpretivism in IS Research," *Information Systems Research* (6:4), pp. 376-394.

Walsham, G. 1993 . *Interpreting Information Systems in Organisations*, John Wiley, Chichester.

Walsham, G. 2001. *Making a World of Difference: IT in a Global Context*, John Wiley.

Walsham, G., and Sahay, S. 1999. "GIS for District-level Administration in India: Problems and Opportunities," *MIS Quarterly* (23:1), pp. 39-65.

Walsham, G., and Sahay, S. 2006. "Research on Information Systems in Developing Countries: Current Landscape and Future Prospects," *Information Technology for Development* (12:1), pp. 7–24.

Waltzer, M. 1999. "Deliberation, and What Else?" in *Deliberative Politics. Essays in Democracy and Disagreement*, Macedo, S. (ed.), Oxford University Press, Oxford.

Warren, M. E. 2004. "What does corruption mean in a democracy," *American Journal of Political Science* 48(2), pp. 328-342.

Whyte, W. F. 1997. *Creative Problem Solving in the Field: Reflections on a Career*, AltaMira Press/Sage Publications, Walnut Creek, CA, and London.

World Bank. 1997. *Helping Countries Combat Corruption: The Role of the World Bank*, The World Bank, Washington, D.C.

Xin, X. and Rudel, T. K. 2004. "The Context for Political Corruption: A Cross-National Analysis," *Social Science Quarterly* (85:2), pp. 294-309.