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Information Systems and Public Sector Accountability

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Table of Contents

Abstract.....	1
1. THE CONTEXT OF PUBLIC SECTOR REFORM.....	2
1a. Components of Public Sector Reform.....	5
2. DEFINING ACCOUNTABILITY.....	6
3. ACCOUNTABILITY OUTCOMES ASSOCIATED WITH NEW COMPUTERISED INFORMATION SYSTEMS	8
3a. Essential Support for Accountability.....	8
3b. Support for Less than Accountability.....	9
3c. Alteration of the Balance of Accountabilities	10
3d. Undermining of Accountability.....	14
4. FACTORS DETERMINING ACCOUNTABILITY OUTCOMES	17
4a. Information Technology	17
4b. Wider Systems Design.....	18
4c. The Process of Information System Design.....	19
4d. Organisational and Environmental Factors.....	20
5. CONCLUSIONS.....	21
5a. IT, IS and Accountability	21
5b. Achieving Accountability	22
5c. Implications for Information Systems Design.....	23
REFERENCES	25

Information Systems and Public Sector Accountability

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Abstract

Increased accountability is a key component of public sector reform. This paper investigates the relationship between accountability and both information technology and information systems. It concludes that IT has had a very mixed impact, supporting accountability in some cases, but also skewing or undermining it in others. Information systems - computerised or not - are an essential part of public sector accountability. However, new IS have a flexible impact, with accountability outcomes being determined mainly by management decisions and by wider organisational and environmental factors. As such, the broader context must be conducive to accountability before accountability IS initiatives will work.

1. THE CONTEXT OF PUBLIC SECTOR REFORM

Public sector reform is, if generally defined, change within public sector organisations (PSOs) that seeks to improve their performance. As such, public sector reform has been an ongoing process since the inception of institutions that we might now label 'public sector'.

However, public sector reform is typically defined more narrowly. It is seen as a process that grew up particularly from the 1970s for which three overarching (and interlinked) causes may be identified.

Crisis in the public sector

If all had been well in the public sector, no consistent trend, let alone ideology, of reform would have emerged. However, a perception of problems with the public sector, even of crisis in some countries, emerged during the 1970s. The perceived problems were focused on:

- *Inputs.* In a number of countries, the public sector was seen to require unsustainably large and/or unsustainably increasing public expenditure.
- *Processes.* There was concern about examples of waste, delay, mismanagement and corruption within the public sector, all of which contributed to inefficiency in the conversion of public expenditure into public services. In particular, public servants were seen as sometimes making decisions in their own interests rather than in the interests of the public. That they were able to do so was seen as a twin failure. First, of centralisation, which made decision makers too remote from the locus of decision information and action. Second, of unaccountability, which made decision makers too remote from those outside the organisation who were affected by their decisions.
- *Outputs.* Finally, there was a perceived problem with outputs. Concerns were widespread in a number of countries that the public sector was not delivering what it should, from adequate defence and control of crime through support for agriculture and industry to health, education, housing, social welfare and a hundred other responsibilities.

The sense of difficulties came to cover both *what* the public sector was doing (the public sector's role) and also *how* it was doing it (public sector organisation and management).

A renewed ideology

If there had been no ideological peg on which to hang many of the trends of change within the public sector, reform measures would have been less clearly recognised and probably less strongly promoted. Such a peg emerged slowly after the Second World War and with gathering pace from the 1970s in the form of 'neo-liberalism'. Neo-liberalism is a resurgence in the ideas of liberalism that can be traced back to John Locke and Adam Smith in, respectively, the seventeenth and eighteenth centuries. It provides a substantial theoretical framework that can be used to justify a set of public sector reforms.

In its crudest form - 'market good, government bad' - neo-liberal thinking emphasises what it sees as the economic efficiency of markets and the forces of competition and individual decisions. It also emphasises what it sees as the inefficiency of governments and the forces of collective, planned intervention. Three particulars flow from this viewpoint:

- that, wherever possible, there should be a 'rolling back of the state'; in other words, the replacement of the state with privately-owned institutions
- that the main justification for the continued existence of the state is its role in helping markets to function more efficiently
- that, where state institutions remain, they should, wherever possible, be opened up to true or quasi-market forces of competition.

Neo-liberalism therefore had something to say not just about the role of the public sector, but also about the way in which it might be organised and managed.

Political will and power

A sense of crisis and an ideology of reform are necessary, but not sufficient conditions for reform. There must also be a third element: that of the political will and power to enact reform. Three main components of the political economy in most countries can be identified that influence this.

- *The populus at large* has often borne the brunt of public sector crisis, has typically longed for reform, but has had only limited political capacity to have those reforms enacted.
- *Politicians and public servants* have often been divided, with conflict between those supporting and those resisting reform.
- *Local and global capital* has sometimes been divided but has more generally sought reform in the belief that this will reduce business costs and increase transaction speed.

In some countries, particularly the developing and transitional economy countries, there has been a fourth component of political economy:

- *International organisations* have often been a powerful - sometimes the most powerful - driving force behind public sector reform. These agencies have the political power to pursue reform because many countries, struggling with both international trade and domestic spending deficits, have had to request external sources of financial assistance. Since the 1970s, such requests have often been met with 'conditionalities'. These are requirements by international finance organisations for changes in the recipient country's economic and institutional structures. In return for agreement to begin implementation of such changes, financial assistance is provided.

These agencies have the political will to pursue reform because they are largely driven by a neo-liberal agenda. Reform measures concerned with government policy include: removing trade barriers, encouraging foreign investment, floating the local currency, privatising government-owned enterprises, and so on. Other measures - often falling under the wider heading of 'good governance' - are basically those of public sector reform outlined below in section 1a, which aim to improve the internal workings of the public sector.

The political economy of every country is different. However, one stereotypical outcome of these various forces has been a process of reform that is driven largely from outside the public sector, whilst being resisted by at least some portion of public servants.

1a. Components of Public Sector Reform

Where public sector crisis prompted the call "Something should be done", neo-liberal ideology provided the response "Something can be done" and, in some situations, political driving forces demanded that "Something will be done". This "something" has come in the form of various measures that fall collectively under the heading of 'public sector reform'.

There is no consistent menu of elements that make up a programme of public sector reform. Typical components, however, include:

- *increased efficiency*: improving the input:output ratio within the public sector; the rationale of such reforms is to address the large size of public sector expenditure and/or the inefficiency of many of its processes
- *decentralisation*: the transfer of decision making to lower, more localised levels of the public sector; the rationale of such reforms is to reduce the costs of centralised decision making, and to create more flexible and responsive decision making
- *increased accountability*: making public sector staff more accountable for their decisions and actions; the rationale of such reforms is to increase the pressure on staff to perform well, to make them more responsive to recipient groups, and to reduce corrupt practices
- *improved resource management*: increasing the effective use of human, financial and other resources; the rationale of such reforms is clear from their definition
- *marketisation*: increasing the use of market forces within the workings of the public sector; the rationale of such reforms is that market relations will drive costs down and increase efficiency and/or effectiveness.

In this paper, we will look at the third element: accountability.

2. DEFINING ACCOUNTABILITY

The interest in accountability within public sector reform was defined above as a desire to make public sector staff more accountable for their decisions and actions. In more detail, this means:

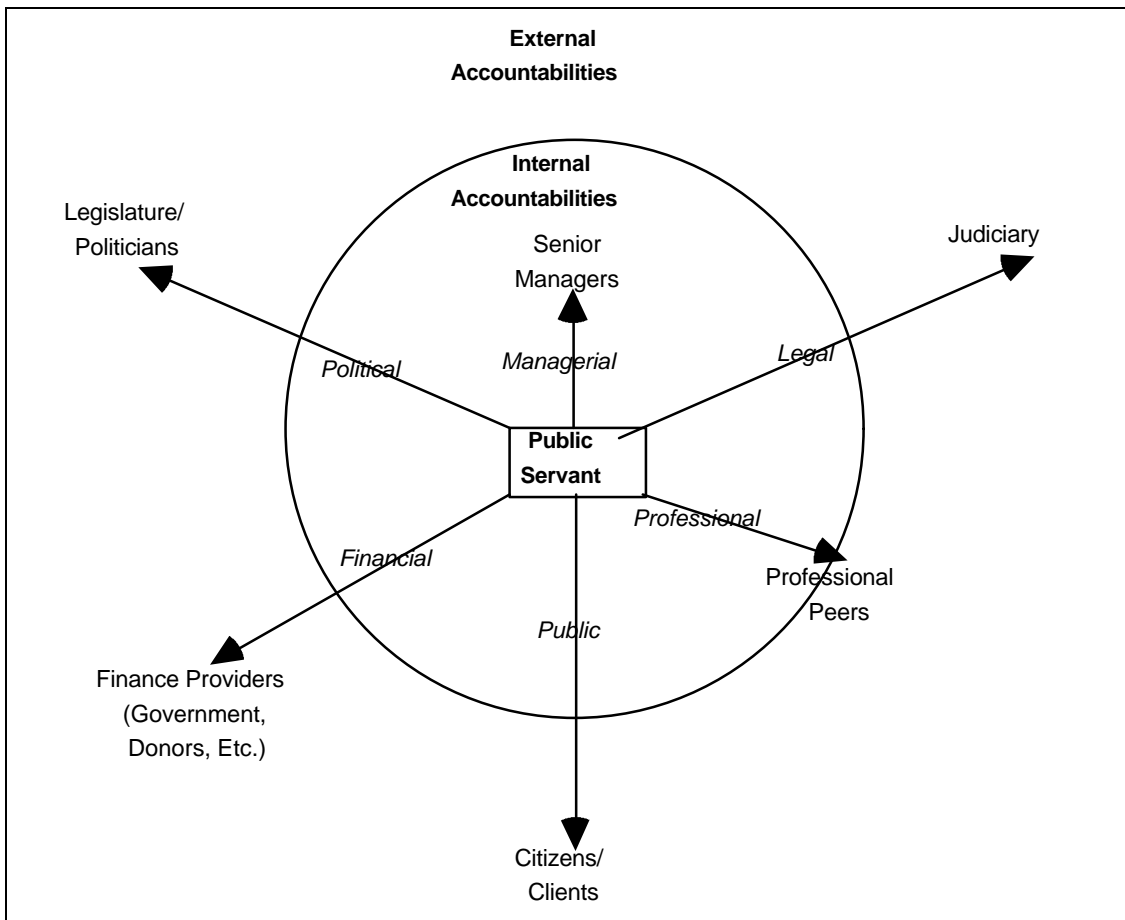
- that some set of recipients receives information about the outcomes of decisions made by identified individuals who are source decision makers
- that those sources can be made to explain their decisions
- and that some sanctions can be imposed if the explanations are unsatisfactory.

But to whom should public servants be accountable? There is a broad set of accountabilities in the public sector, including:

- *Managerial accountability*: to senior managers within the organisation. For example, public servants may be held accountable by their immediate boss for their attendance record.
- *Political accountability*: to those institutions that provide the political legitimacy of the organisation. For example, PSO senior managers may be held accountable by politicians for the overall achievements of their organisation, or for particular projects that have been implemented.
- *Financial accountability*: to those institutions that provide the financing for the organisation. For example, project managers may be held accountable by a funding organisation for the expenditure on their project.
- *Public accountability*: to citizens outside the organisation. For example, a Minister or Permanent Secretary may be held accountable by the public for corrupt activities within their Ministry. This is a combination of:
 - ultimate political accountability, since public institutions are supposed to derive ultimate legitimacy from the citizenry, and
 - client accountability, since citizens are normally the intended recipients of the services a PSO provides.

Other accountabilities (Lawton & Rose 1991) include the *professional accountability* of staff to their professional peer group (e.g. social workers to other social workers); and *legal accountability* to the judiciary. All of these accountabilities are illustrated in figure 1.

Figure 1: Accountabilities in the Public Sector



Within public sector organisations, accountability is often that of the individual for decisions made. Where accountability runs *outside* the organisation to other recipients, accountability is often aggregated to the level of the whole organisation. In other words, the whole organisation is somehow seen as accountable for the actions of its staff. Even in this case, individual senior staff may be held accountable by the external recipients. Those senior staff, in turn, may hold more junior individuals responsible within the organisation for externally-reported decisions and outcomes.

3. ACCOUNTABILITY OUTCOMES ASSOCIATED WITH NEW COMPUTERISED INFORMATION SYSTEMS

To what extent can the use of new computerised information systems support these various accountabilities? Evidence is drawn here from a number of cases, from which emerge four principal accountability impacts associated with information systems, particularly computerised information systems:

- essential support for accountability
- support for less than accountability
- alteration of the balance of accountabilities, and
- undermining of accountability.

These will now be investigated in turn. In each case, an attempt will be made to disentangle the broader role of information systems and the narrower role of information technology.

3a. Essential Support for Accountability

The creation of new information systems is an essential component in the creation of accountability. When a decision is taken, information about that decision and its outcomes must flow to all those to whom the decision maker is accountable. Without such an information flow and without the information system to carry that flow, there can be no accountability because there can be no knowledge of the decision.

"Essential to effective accountability for results (as well as good management) is credible, timely and relevant information on the performance of services and programs."

(Treasury Board Secretariat 1994:53)

Accountability information systems are basically management information systems. They provide for the monitoring of decision performance, and are intended to assist in the control of that performance. As well as enabling new accountabilities, they can also improve existing ones through provision of more timely, consistent and formal information about performance.

In some cases, use of information technology forms an almost essential element of these new information systems. In one Asian railways information system, for

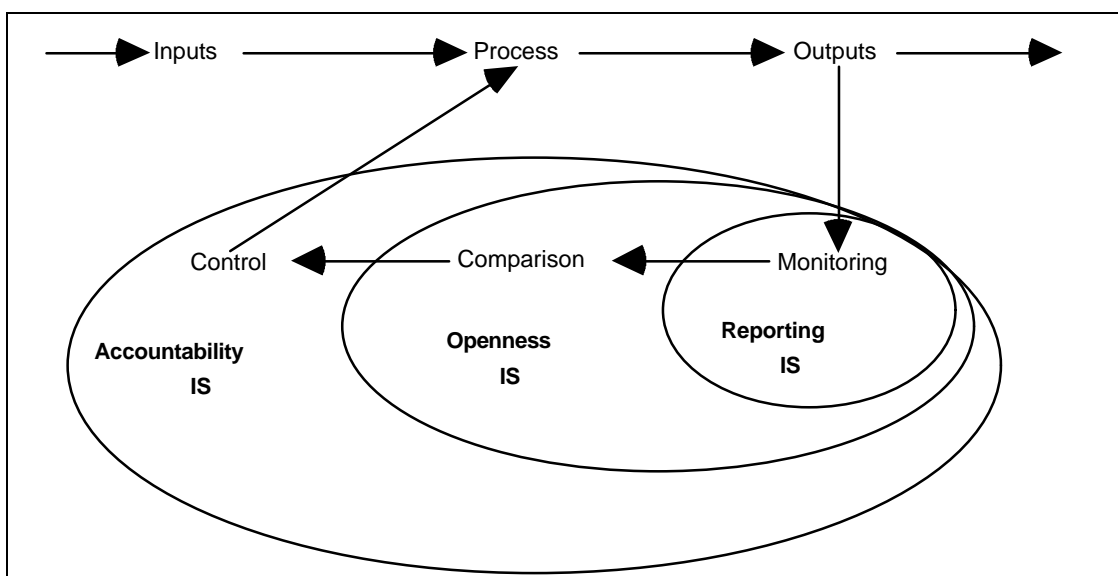
instance, computerisation provided automated monitoring and comparison functions that would have been very hard to achieve using a non-computerised system (Heeks 1995).

However, computers are by no means always needed. One system of bringing local government officials in India to account used paper copies of financial statements pasted up in a public place, with no computers involved (Bajaj & Sharma 1995).

3b. Support for Less than Accountability

Three possible types of accountability information system can exist, as illustrated in figure 2.

Figure 2: Types of Accountability Information System



Those information systems with just a monitoring mechanism merely support *reporting*: recipients have information on decisions and outcomes but cannot judge them. Those with monitoring and comparison mechanisms merely support *openness*: recipients can judge whether decisions and outcomes meet acceptable performance standards but can do nothing with this information. Only those information systems that provide monitoring, comparison *and* control mechanisms can be said to truly support *accountability*: allowing recipients to take actions that affect the source decision maker.

For example, in India, a new (paper-based) public information system was created with the intention of improving accountability on rural development projects (Roy 1996). However, it only supported openness: citizens were able to monitor reported expenditure on local projects and compare it with actual project outcomes, thus identifying discrepancies in which public servants had embezzled funds. What the system did not do is provide a mechanism for actually holding decision makers accountable.

Information technology has tended to be used mainly to help create reporting or, to a lesser extent, openness information systems. It is rarely possible for IT to be applied in a full accountability system that automates control.

3c. Alteration of the Balance of Accountabilities

New information systems can expand the scope of accountability by delivering accountability information to new recipients. However, the effect in practice has been uneven. Those groups or institutions with the financial and political power to impose new information systems on public sector organisations are those to whom greater accountability has accrued.

This result has been seen particularly in the case of new information systems that are information technology-based and of powerful groups that are external to the PSO, such as:

- *Central government.* As central governments seek to enact reform measures, they seek greater control over, and accountability of, other parts of government. They have often used new computerised information systems in this effort. In Brazil, for example, the Ministry of Economics and Finance introduced a centralised, computerised financial administration information system (Reinhard & Zwicker 1996). This reported, and sanctioned payment for, the financial transactions of most government agencies. The effect was to increase the accountability of those agencies to central government.

- *Donors.* Funding agencies have been particularly active in formalising accountability relationships through the introduction of new computerised information systems:

"Many donors now increasingly look for mechanisms for effective project management, particularly financial management to be available. This is seen as providing the necessary feedback and control information to ensure managerial accountability over project implementation. ... That donors require this type of information from projects has led to their undertaking a programme of micro[computer] introduction to facilitate it." (Charlton 1988:8)

Evidence indicates that such computerised systems will tend to drive out other information systems and channels (Burns 1984, Avgerou & Mulira 1996, Sahay 1996). This occurs for a number of reasons:

- *Attention:* human attention capacity is limited. Where a recipient attends to formal computing information, s/he must necessarily remove attention from other information systems and channels. (This applies to any type of information system, IT-based or not, and means that some of the shifts described below can occur with or without computerisation.)
- *Information channel speed:* recipients select information channels mainly on the basis of speed and convenience rather than quality of information (Hardy 1982). Once installed, IT-based accountability systems will have a tendency to be relied on more and more because of this, again driving out other information systems and channels.
- *Personal preference:* some recipients prefer to receive information from inanimate objects. They will tend to focus increasingly on computerised information systems to the exclusion of other sources.
- *The mask of objectivity and data quality.* Insofar as computer-mediated communication channels are given greater (and often undue) credibility than other channels, the former will tend to drive out the latter. This issue is discussed again below.

The result is often a shift in the balance of information flows and accountability *from* citizens *to* central government and/or donors. This, in turn, leads PSOs to become more responsive to the demands of central government and/or donors, and less responsive to the needs of client groups.

There may also be a shift in focus from internal management to external groups. This has long been a problem with the external reporting of information in the public sector: that it consumes a large amount of internal resource, yet tends to undermine internal information systems and internal management processes (Rathore 1977, Lucas 1994). Internal information needs may be forgotten or, at best, be satisfied only where they overlap with the provisions of these external information systems.

This overlap between external information provision and internal information needs may be limited. Public sector systems for external reporting of accounts, for example, generally have to adhere to specified strict accounting principles, many of which are not relevant to internal needs. More than this, as noted below, there are frequent pressures to falsify externally-reported information.

Some public sector organisations have been driven to maintain two separate information systems: one for external consumption, and the real figures for internal use. Examples have been presented to the author from the public sector in one East African and one South Asian nation. In the former case, senior civil servants used one set of information for their own management purposes. A different set of information - mainly personnel and financial - was used to provide donors with a 'rosier-than-reality' picture of the progress of public sector reform.

In other cases, the situation might be reversed. The imposition of information systems may derive internally where, for example, a powerful senior manager pushes through their introduction. Again, there is likely to be a growing imbalance of accountability in these situations, in this case away from external groups and institutions towards internal senior management.

Three scenarios have therefore been described that result from the introduction of new information systems, each of which leads to a shift in accountabilities:

- between external groups
- from internal management to particular external groups
- from external groups to internal management.

In all three cases, there is a process of polarisation in which the public at large - as both citizens and clients - are the 'accountability losers'.

As noted, these shifts can take place without the introduction of information technology. However, many of the new information systems are computer-based, and computerisation seems to give a boost to the imbalances of accountability that develop. This is ironic since much has been made of the potential for IT to create a greater direct accountability of PSOs to the public. There are, for instance, systems that provide public sector information via the Internet in many countries. Yet the information provided in such systems often consists of details about how to apply for public services; regulations governing business; and rose-tinted press releases ('cyberganda'). The presence of all this information helps divert attention from the fact that only rarely do such systems provide the type of information that allows public servants to be held to account.

Where accountability information *is* provided online, it can still reinforce inequities of accountability because of the accessibility barriers that computerised information systems raise (Cottrill 1995, Stoll 1995). Recipients must have access to the technology, and must have the skills and confidence to access and interpret the information provided. Central government and donor organisations have the resources to ensure they can overcome these barriers. This is the case for only a minority of public citizens in all countries.

When accountability information is available on paper, accessibility barriers are lower. Even here, some barriers remain, for recipients must generally be word-literate and statistically-literate to read and interpret the output. Citizens are still likely to be at a greater disadvantage than central government or donor organisations, though the 'disadvantage gap' should be less than with computerised systems.

This imbalance against the public is unlikely to be redressed unless the mass media plays a role (Roy 1996). This role must be that of receiving, interpreting and publicising accountability information, and then of pressurising public officials on behalf of citizens.

3d. Undermining of Accountability

From the previous sub-section, we may conclude that information systems in general can skew the balance of public sector accountabilities. *Computerised* information systems seem especially likely to contribute to this skew. Continuing the specific focus on information technology, potential impacts are discussed below which may sometimes undermine the whole process of accountability.

Loss of paper record

Computerisation may be associated with a loss of paper records, and this can have a significant impact on accountability. As Cain (1996) points out, computerised records currently provide a far poorer basis for accountability than paper-based records because of their intangibility and malleability. Unless there is a concerted and continuing effort to maintain paper records, accountability can be undermined with the advent of computerisation.

The mask of data quality

Where they know they are being judged by others on the basis of the data provided, sources will tend to provide inaccurate data (Whetton 1986, Chambers 1996, Chepaitis 1996). The expectation is therefore that large amounts of the information provided by accountability information systems cannot be relied upon.

The problem with computerisation is that the introduction of IT *per se* has little effect on data quality. Worse, the - often inaccurate - data within computerised accountability systems is given credibility because of the perceived objectivity of computers. Computerisation can lead recipients to believe in inaccurate accountability information, thus undermining the process of accountability.

Even if the data is accurate, there may be problems because of the way in which computerised systems tend to drive out other information channels. Where accountability IS are computer-based, recipients may increasingly take the accountability IS data at face value and may base accountability decisions on it alone. Where recipients ignore other information channels and fail to cross-check via informal consultations, the validity of the accountability process is likely to suffer.

Increased opportunities for corruption

In an African public works department, computerisation of the payroll system allowed a computer operator to enter the details of 'ghost workers', whose wages he was able to collect (Heeks 1995). Computerisation undermined accountability in this case by opening access to corruption opportunities for computing staff, whilst reducing the ability of non IT-literate managers to monitor and control the payroll system.

Loss of human input

Separate from the issue of the accountability information systems themselves is a problem raised by the introduction of other computerised information systems into public sector organisations. Such systems automate human labour and thus reduce human inputs to the decision-making process, sometimes to the extent of removing them altogether.

This leads to a confusion and undermining of accountability, because it produces the question: "Who is to be held accountable when computerised information systems are involved in decisions and subsequent actions that are judged to be sub-standard?". This question keeps thousands of lawyers busy worldwide in liability lawsuits.

Although one might look forward to the day when PCs are locked up in jail for their misdemeanours, information technology cannot be held accountable for its actions. Mistakes are frequently and conveniently blamed on 'computer errors' or 'software bugs' but, in law and in current reality, this is not reasonable. Such mistakes can almost always be traced back to a human root.

The problem for accountability, to the delight of the lawyers, is the difficulty of which human root to trace it back to. A faulty decision outcome arising from use of a typical management support system (MSS) could derive from many sources, including:

- MSS development problems, such as poor analysis or poor specification or poor design of the system
- MSS implementation problems, such as the introduction of a software bug or inadequate training
- sub-standard manufacture of the MSS hardware, such as the installation of a faulty chip

- MSS operational problems, such as mistyping or poor maintenance or virus infection
- MSS use problems, such as human error by the manager making use of the system output.

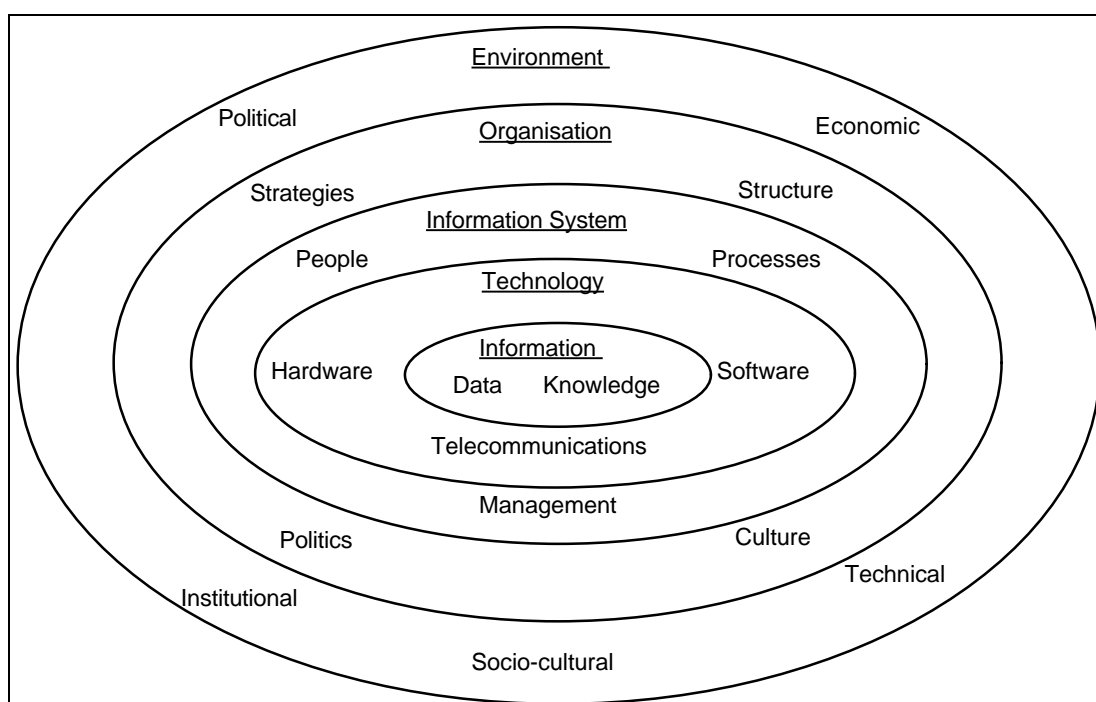
Each source in itself can be many-layered. For example, if the software system has a bug that leads to damaging decisions, who is to be held accountable: the programmer who put in the bug; the system tester who failed to spot it; the system designer who chose that particular programming language and complex software design; the project manager overseeing the whole process; the PSO manager who commissioned the system; etc.?

The use of *computerised* information systems in decision making can therefore cloud more than clarify accountability.

4. FACTORS DETERMINING ACCOUNTABILITY OUTCOMES

Information systems can support or alter or undermine accountability. How can we explain this variety of different impacts? The first step is to understand both information technology and information systems as part of a broader context. Drawing from innumerable other works on information systems (e.g. Kling 1987, Walsham 1993, Bell & Wood-Harper 1998), a summary framework of IT and IS context is presented in figure 3.

Figure 3: Information Systems as Social Systems



Each one of this diagram's factors, alone or in combination, can be seen to have an effect on accountability outcomes. Here, the factors will be discussed under four headings.

4a. Information Technology

Information technology generally provides a reporting of information that transmits information from the source decision maker to the recipient. At best, it can provide an openness that compares this information to pre-set norms and alerts recipients when there is some deviation. It cannot create complete accountability because it has no innate accountability property. Thus, IT is not always essential in accountability

information systems. Indeed, as described above, IT seems to skew or undermine accountability more easily than increasing it.

4b. Wider Systems Design

If information technology alone cannot create accountability, then simultaneously-introduced, wider systems components are required if accountability is to be achieved. These components - people, management and processes - are part of the overall information system, but they are also related to wider organisational systems components such as strategies and structures. They must exist around both the accountability source and the recipient:

Source factors

- *People.* Over and above most other factors, there must be a motivation of public servants to act accountably. This, in turn, depends on many other factors such as current rewards within the job for performing well; the likelihood of detection and punishment for wrong-doing; and the organisational culture's viewpoint on accountability.
- *Management.* Within public sector organisations, there must be a system of managerial responsibility that informs decision makers of their responsibilities and identifies those who are responsible. One common fudge in accountability information systems is the identification of a shortcoming but a failure to identify who specifically is responsible for that shortcoming. This is corporate accountability without individual accountability.

If the accountability information system is to move beyond just reporting, some type of performance standard must be set. Reported information can then be compared against this standard to determine what is and is not satisfactory. Both source and recipient should be aware of these measures.

- *Processes.* The processes must exist to gather accountability information and deliver it to relevant recipients.

Recipient factors

- *People.* Those wishing to hold public servants accountable must have the skills to access information systems and interpret results. They must also be motivated to hold public servants accountable. This last point cannot always be assumed: some public information systems in the West are marked less by the enthusiasm of a minority of citizens than by the apathy and disinterest of the majority.
- *Management.* Those wishing to hold public servants accountable must have the authority to demand explanations from public servants, and to affect those public servants with their subsequent actions. Appropriate structures must therefore be in place to permit this. Taking a UK example, one of the aims of the Citizen's Charter - besides publicising information about performance - has been to create an easy-to-use complaints and feedback system.
- *Processes.* Comparison and control processes must exist that allow recipients to interpret accountability information in the light of performance standards; to communicate with public servants in order to supplement the formal accountability information with informal contextual information; and then to decide upon and implement appropriate control actions.

Returning to an earlier example, the rural poor in the state of Rajasthan in India undertook an accountability action (Roy 1996). Here, the people components were definitely in place as regards the recipients, who had a deep desire to hold public servants accountable for money that was being corruptly diverted from development projects. However, the management authority, structures and processes to then call the public servants to account and affect them with actions were not present. This is therefore a case of openness without accountability: new information flows made citizens aware of wrong-doing by public servants, but they had little ability to interact with the public servants and little power to correct those wrong-doings.

4c. The Process of Information System Design

The method of design strongly shapes the design and operation of the information system it produces (Bhatnagar 1986, Braa 1996). The designers of an accountability information systems must therefore themselves be accountable to the intended recipients of accountability information.

In some cases, this is so. Where central government or donor organisations introduce an accountability information system, for example, they often fund it and 'call the shots' as far as system design is concerned.

The same is less likely to be true of managerial or public accountability systems. Here, the systems designers may have little meaningful interaction with the intended recipients. Instead, they design the information system to the requirements they believe the recipients have, or to the requirements of the source decision makers. In either case, the resulting information system may not support accountability.

4d. Organisational and Environmental Factors

Given the flexibility of information technology and information systems, accountability impacts are strongly determined by the management decisions of those creating the accountability information systems. In turn, these decisions will themselves be affected by a range of wider factors.

Taking the Indian case (Roy 1996) once again, accountability information systems were largely shaped by an organisational politics of self-interest and a culture of corruption prior to the actions of a non-government organisation (the MKSS: Mazdoor Kisan Shakti Sangathan) in pressurising government for more access to information. In theory, before the MKSS' actions, there were accountability systems passing information up to higher levels within the public sector organisations involved and to external, central government institutions. In practice, the politics and culture ensured there was no accountability because the information transmitted was largely false and because higher levels were not motivated to try to hold development staff accountable.

The actions of institutions in this case - the MKSS on behalf of the rural poor of Rajasthan and, probably much more importantly, the mass media that picked up the story and publicised it - changed the external environment, and led to changes at the level of the state government. However, this did little to effect the ongoing politics and culture. Overall, then, negligible progress was actually made in holding public servants accountable.

5. CONCLUSIONS

5a. IT, IS and Accountability

Clearly computerisation is no panacea for achieving accountability. Information technology has no innate impact on accountability and, whilst it may support some accountability information systems, it is not typically essential. Where present, computers may skew or undermine accountability as much as support it.

Information technology may not be essential to accountability, but the same is not true of information and information systems. Information flows (hence, information systems) enable accountability and are essential to it. Nevertheless, like IT, information systems are flexible and have no pre-determined impact on accountability.

In some cases, new information systems have been associated with positive accountability outcomes for certain stakeholders. In other cases, though, even when a working information system is produced, there may be components of IS failure, such as:

- *goals unattained for particular stakeholders*: this will occur, for example, if the new IS only assists reporting rather than accountability, or if the new IS undermines accountability by giving credibility to inaccurate data
- *undesirable outcomes for particular stakeholders*: this will occur, for example, if the introduction of a donor-oriented IS leads to a reduction in accountability to the public.

In all, we may conclude that information systems, particularly their technology component, have had only a limited positive impact on accountability initiatives in the public sector.

Information systems *per se* do not cause or even significantly drive accountability. Instead, the key to accountability outcomes lies within the shell of surrounding factors illustrated in figure 3. Within this shell, it is management decisions about the information systems and their design processes that are fundamental. These decisions, in turn, are affected by factors such as organisational politics and culture, and the external environment.

Thus, not surprisingly, accountability outcomes associated with IT are not equal across all types of accountability but have tended to follow existing distributions of

power. As a generalisation, computerised accountability IS initiatives in the public sector appear to have supported:

- financial accountability to some extent
- managerial accountability to a limited extent
- political accountability to a very limited extent, and
- public accountability hardly at all.

This hierarchy typically reflects the hierarchy of political will and power identified in section 1.

5b. Achieving Accountability

For any type of accountability to be achieved, there must a fit between all the factors identified in section 4, including:

- the process of information systems design
- the technology; the skills and processes of the information system
- personal motivations of the stakeholders
- management strategies and values
- organisational structures, politics and culture.

In certain public sector situations - currently characterised by limited accountability and even corruption - this fit will be hard to achieve because it requires such a combination of changes. This includes changes not just in the information systems architecture but also, quite probably, in the way that information systems are designed and implemented. In addition, there will be the wider linked changes that are required in organisational political and bureaucratic structures, strategies, culture and so on.

Within each of these changes, there will be inertia at work that will tend to reinforce the status quo, such as:

- a *technological inertia* because of the high financial and skills costs of introducing IT or of changing the current computing architecture
- a *management inertia* because managers are used to making work decisions, including those on information systems, in a particular way
- a *political inertia* because those involved will not wish to give up their information and power by becoming more accountable.

It is possible to overcome such inertia, but only where change is driven from an environmental and organisational level. In other words, referring back to figure 3,

change will be driven from the outer shells inward far more easily than it can be driven from the inner shells outward.

In practice, this means that successful accountability initiatives will require consensus amongst the key stakeholders about the desirability of accountability. Such consensus may derive from factors within the organisation (such as self-interest, and reward and punishment systems) or from outside the organisation (such as pressure from politicians, international organisations, or the public via the mass media). Where such consensus is absent, the risk of failure is high for any accountability IS project.

5c. Implications for Information Systems Design

The role of the IS design method in determining accountability outcomes has been described above. In this final section, though, the focus will be on stakeholder perceptions of likely accountability outcomes, and the impact of those perceptions on IS design.

Although the impact may be limited in practice, public servants often perceive that new information systems - especially computerised information systems - *are* going to have a significant effect of increasing accountability (and, hence, reducing corruption). These perceptions will feed into the process of planning any new information system. The effect of these perceptions is likely to be particularly marked where a new computer system is being introduced in the presence of practices that are currently unaccountable.

For instance, in one Asian government's pensions office, studied by the author, computerisation was roundly resisted. Many factors were at first seen to underlie the resistance including:

- fears of loss of jobs
- fears that staff would not have the necessary skills
- health and safety concerns.

What emerged during investigation, however, was that the main fear lay around the issue of corrupt incomes. Pensions staff had the power to deny claimants access to pension payments or to provide claimants with access to certain types of higher-income pension. The staff were using this power to extract bribes from pensionable claimants. They feared that computerisation would create accountability in the

pension payment process and would therefore remove this power. Hence, their true reason for resistance.

Where resistance and lack of accountability are linked, there are three possible reactions:

- if the new information system will not have an effect, make this (subtly) clear
- if the new information system will increase accountability and the stakeholders are not that powerful, then 'tough it out', i.e. push on in the likelihood that resistance can be overcome
- if the new information system will increase accountability and the stakeholders are powerful, change the IS design plans so that the key unaccountable processes are not computerised or are not exposed to monitoring by the computerised information system.

'Toughing it out' can also be tried in the last case, and this would seem to be the morally-correct route to take. However, it will greatly increase resistance to the new information system and the risks of IS failure.

Whatever the reaction, it is clear that the link between new information systems and accountability will have to be recognised in the planning of some information systems. This link must also be teased out as a component of resistance to computerisation.

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