3 Understanding success and failure in information age reform

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Abstract: In this chapter, a model is developed of information systems within information age reform, based on case examples of reform success and failure. It is argued that failure is far more prevalent than success, and that the root causes of both must be investigated. From analysis of both theoretical and real-world examples, these root causes are seen to lie in ‘conception-reality gaps’: gaps that exist between the way in which reform is conceived and the public sector realities into which it is introduced. These ideas are simplified into the ITPOSIMO model that focuses on seven key dimensions of conception-reality gap. Three archetypal situations are identified and discussed in which conception-reality gaps arise, each of which can form the basis for information age reform failure. The archetypes relate to reforms conceived around models based on organisational rationality, private sector functioning and different country contexts. They point to some general conclusions about better information age reform.

DEVELOPING A MODEL OF INFORMATION SYSTEMS AND REFORM

Whether recognised by stakeholders or not, it is information systems that are central to the process of information age reform. In Chapter 1, we provided a definition of information systems. We now need to develop a more comprehensive model of information systems within the reform process and will do so from cases of success and failure in information age reform.

These cases highlight critical success or critical failure factors (CSFs and CFFs) which can be categorised under a number of headings.
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- CFF: California Environmental Protection Agency staff were not properly trained to use a new database that was meant to improve tracking of hazardous waste shipments. They therefore:

  accidentally inserted hundreds of thousands of duplicate identification numbers ... The resulting output was so unreliable that it became difficult, if not impossible, to find out when toxic waste was being transported and dumped, or to prosecute the perpetrators of hazardous-waste violations.

  (James 1997: 7)

Management factors

- CSF: decentralisation was enabled in the Irish Department of Social Welfare through the introduction of new computerised information systems. The development of these systems was successfully managed in a 'core-periphery' manner: retaining sufficient drive from the centre to overcome pre-existing obstacles, but according sufficient weight to users' views and devolving sufficient resources to the local level to ensure that new obstacles rarely arose (Cooney and O'Flaherty 1996).

- CFF:

  Management ignorance was rampant in Texas recently, when state agencies rushed to upgrade their computers systems without understanding the risks involved. The state has ended up paying $1 billion a year, without its managers knowing whether the money was being spent wisely or well. One system - a statewide computer for tracking deadbeat parents - is more than four years late and is costing three times more than the originally budgeted $25 million. The situation became so bad that a Senate committee voted last April to move responsibility for child-support payments to a completely different government agency.

  (James 1997: 4)

Process factors

- CSF: in Nicaragua, reform of the national public health system was planned. This included a new information system that would feed health information collected at community level up via the regions to national level. Additional processes were included which fed back health information to the communities from which it was gathered. Communities therefore used this information to discuss their health needs, and so saw the value of information. This, in turn, significantly increased data quality and coverage, ensuring that the new system had a viable base of health data (Horejs 1996).

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- CFF: the UK's Bristol Royal Infirmary, a public hospital, was part of a reform process that included the benchmarking of performance. As a result, information came to light in the 1980s that death rates in its paediatric cardiac surgery unit were well above national averages. Yet remedial measures were not taken for nearly ten years because there was no set of effective processes in place to feed that information into public decision making and action (O'Higgins 1998).

Cultural factors

- CSF: Thailand's Ministry of the Interior has been involved in a series of population registration projects since the early 1980s. These use computerised information systems to issue a personal identification number to all citizens and retain details on a 'central population database'. The system was introduced in a top-down manner, and operates according to centralised and bureaucratic principles that provide the government with considerable powers of 'bureaucratic surveillance' over Thai citizens. The system is rated a 'tremendous success' by users and won a Smithsonian Computerworld Award. Its success is due particularly to a supportive organisational culture that runs throughout the Ministry. The culture is one of centralisation, bureaucratic role fulfilment and a lack of concern for the privacy rights of individual citizens (Ramasoota 1998).

- CFF: as part of its transition to a market economy, Mongolia instituted a series of wide-ranging reforms in its public sector. These included the introduction of decentralisation - supported by a plan for a decentralised information system - in its public health sector. The new computerised system that emerged is not particularly decentralised, and usage of the system remains very limited at local levels. To a large extent, this is because the organisational culture of public health in Mongolia is still strongly rooted in the top-down, centralised Soviet model that sees no place for local initiative (Braa 1996).

Structural factors

- CSF: Kent County Council, a local government unit in the UK, wanted to devolve management responsibilities as part of its desire to improve service delivery. New information systems were an essential part of this reform. At first, reforms were stymied by the traditional, centralised IT structures within the organisation. However, the IT function was then restructured, broadening its remit to cover information systems and devolving many responsibilities and staff to individual departments. As a result, the reform programme was able to proceed (Moreton and Chester 1997).

- CFF: the Finance Division of Kenya's Ministry of Agriculture was supported by a technical assistance project that introduced microcomputers
in an effort to improve the management of financial resources. There was little improvement in the monitoring of expenditure because of a three-way structural division between central finance officers who held the monitoring information but had no powers of enforcement, senior finance officials who had the power to enforce expenditure warnings but had no information or incentive to do so, and district officers who actually spent the money (Brodman 1987).

**Strategic factors**

- **CSF:** Portugal’s Infocid project has been able to provide a very wide range of government information to citizens as an integrated package via electronic channels. It covers health, education, military service, elections, employment and training, social security, tax, legal matters, housing, economic activity, consumer protection, environmental issues, culture and tourism. It has been able to do this by adopting a strategic approach that cuts across traditional intra-governmental divisions and which used outsourcing to overcome resource constraints (Vidigal 1997).
- **CFF:** in the 1980s Sacramento, a city in Northern California, took a top-level decision to devolve computing decisions to individual departments. The result after a few years was a patchwork of incompatible applications, no city-wide information or computing infrastructure, and wide inequalities in the extent of computerisation. All this presented serious barriers to further progress of information age reform (King and Kraemer 1991). (The authors contrast the situation in Charlotte, Virginia, where a strategic decision had been made to retain central, city-wide control over information systems.)

**Political factors**

- **CSF:** Indianapolis/Marion County in the US has been a leader in providing local government information and services via the Web, with a goal of becoming one of the first truly electronic city halls. In large part, this process has been driven by the political support and championing of reinvention via IT from the Indianapolis Mayor, Stephen Goldsmith (Poulos 1998).
- **CFF:** India’s Income Tax Department decided to computerise part of the tax system in order to produce better statistical information on the country’s revenue base, thus permitting improved management of revenue. However, the project ran into difficulties due to political antagonisms between various groups, notably between regional tax commissioners and the central tax board and between management and unions (Singh 1990).

**Environmental factors**

- **CSF:** social security reform in Sweden has been supported by changing environmental factors. In the 1960s and early 1970s, reform aimed to centralise and control the social security system. This was supported by the dominant host–terminal computing architecture of the time, by a national ideology of ‘big government’ and by social distrust of local politics amongst the Swedish people. In the late 1970s and 1980s, reform reversed and aimed to decentralise social security. In the changing environment, this was supported by emergent microcomputing technology, by a new ideology of ‘small government’ and by a new desire among citizens for more active local government (Ingelstam and Palmlund 1991).
- **CFF:** a generic example is the millennium bug. Here an environmental factor – the date – threatens to be the cause of a number of public sector information system failures.

On the basis of these factors and their structural relations, we can draw up an ‘onion ring’ model of information systems within the reform process, as shown in Figure 3.1. From this model, we see that information age reform is a comprehensive process that can involve change in a wide variety of factors. The relationship between the extent of change and reform success is discussed in more detail below.

Figure 3.1 can also be seen to summarise some of the problems of the isolate and idolise approaches described in Chapter 2:
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- they fail to place information and information systems at the heart of change, but instead marginalise them, replacing them with technology alone in the idolise case;
- they fail to recognise the contextual factors that form an important and integral part of information age reform.

Indeed, the integrated approach to reform approximates to driving reform from the outer rings of the model inwards, whereas the idolise approach approximates more to trying to drive reform from the inside of the model (or at least from its second ring) outwards.

In addition, we can draw a few conclusions about information systems (IS) that expand upon points noted earlier in Box 1.1:

- Information systems are social systems; that is to say, information systems are rooted in a context of people and of social structures and are themselves made up partly of people and social structures.
- Information lies at the heart of all information systems.
- All information systems operate within a reform context that has two main components. The first is the organisation within which the IS is located. This has an organisational culture, a political dimension, a set of overt or covert management strategies relating to reform, and both formal and informal organisational structures. The second is a wider environment outside the organisation. Within this wider environment there are other institutions; there are new technologies being developed; there is the state of the economy and markets; there are political pressures which are likely to be particularly significant in reform; and there are a variety of cultures and other social systems. All of these factors have a bearing on the information system as well as on the broader process of reform. Sometimes the influence is too weak to detect, but in other cases the influence may be strong, as in the integrated approach.
- Information system means information technology plus information plus people plus processes plus management. For an IS to be successful in supporting reform, it must succeed in all these areas. Some systems succeed technically but fail in other ways: not providing the right information; not being usable by the people involved; not involving work processes that produce the right organisational outputs; etc. Reform initiatives where the technology works but other IS components do not are reminiscent of the old medical joke: 'The surgical operation was a success, but unfortunately the patient died.' This summarises the outcome of many idolising reform initiatives like those described in Chapter 2. Indeed, it is sadly appropriate, given the deaths that occurred during the failed implementation of the London Ambulance Service information system, as emergency victims awaited the much-delayed arrival of paramedics.

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UNDERSTANDING SUCCESS AND FAILURE: CONCEPTION–REALITY GAPS

Chapters 1 and 2 presented examples of both successful and unsuccessful information age reform. We have likewise seen just above that reform may end in failure as well as success. Even the integrated approach, though it may promise greater reform benefits, also seems to have its failures. In general, failure of information age reform seems more common than success.

What is failure?

The last statement must be qualified by explaining that failures can be divided into two camps:

- total failures: in which proposed reform is never implemented or in which reform is implemented but soon abandoned. In 1994, for example, California’s Department of Motor Vehicles abandoned a seven-year, US$44 million reform project to improve efficiency and effectiveness by replacing its 1965-vintage mainframe systems. No workable system was ever produced from this project and no reform objectives were achieved (King 1994);
- partial failures: in which reform is implemented but has something wrong with it. In the Indian Income Tax Department case mentioned above, for example, only parts of the information system and only a sub-set of intended process reforms became operational and even these were resisted by staff. There was therefore only limited achievement of reform objectives (Singh 1990).

We can be more specific on the point of "something wrong with it", and can categorise two aspects of failure:

- goals unattained: expected outcomes that someone wanted to happen but which did not happen. In cases of total failure, no reform objectives are attained. In cases of partial failure, objectives relating to the unimplemented or non-operational components of reform are not attained;
- undesirable outcomes: unexpected outcomes that someone did not want to happen but which did happen. In the Californian case, there was the undesirable outcome that money, time and reputation were all lost. In the Indian case, there was unexpected and fierce staff resistance.

In explaining both of these aspects, the word 'someone' was used. This alerts us to the fact that failure can be a subjective phenomenon. For example, we can ask questions such as 'Whose goals were not attained?' or 'For whom were the outcomes undesirable?'. It is quite likely in cases of information age...
reform failure to find different groups experiencing failure in different ways. We may also find some groups who see a reform initiative as a failure alongside other groups who see it as a success.

The extent of failure

Having defined failure, we can look for some sense of its prevalence. This is not readily found because failures tend to be swept under the carpet, whilst successes (real or imagined) tend to be shouted from the rooftops. The same handful of rose-tinted 'good news' reform stories do the rounds continuously. There is surely global legislation that all books on IT and the public sector (this one included) must mention Singapore, where everything the government touches turns to silicon. Yet most published cases on Singapore come across like a government-sponsored press release. Critical appraisals of information age reform – in Singapore or anywhere else – are few and far between.

We are also faced with the problem that few, if any, comprehensive reviews of information age reform exist, least of all those which understand that failure has subjective components. We are therefore left to rely on the independent assessments of public sector information systems that are occasionally undertaken. These suggest that failure is widespread:

- Research on information systems in the UK public sector estimates that 20 per cent of all IT expenditure is wasted, while a further 30–40 per cent leads to no net benefits accruing (Willcocks 1994).
- A survey of all African public sector IT projects funded by the World Bank concluded: ‘in the majority of cases, several factors have constrained organisations from effectively using the technology and the information it provides, or have proved to be constraints on the sustainability of IT’ (Moussa and Schware 1992: 1750).
- Even the biggest spender of all, the US government, has problems: ‘Despite spending more than $200 billion on information management and systems in the last 12 years, the government has too little evidence of meaningful returns’ (General Accounting Office 1994).

A number of the cases presented in this book, particularly in Parts 2 and 3, would also be classified as total or, more typically, partial failures of information age reform. To these we can add a few more, on a rising scale:

- the Canadian government’s attempt to reform its payroll system, as reported in Chapter 2. This was abandoned at a cost of c.US$30 million (MclLellan 1996);
- California’s Department of Social Services, which began reform of its child support payments system in 1992 through an automation project. The project – ‘the largest and most expensive state-run, single-unit

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information system in our nation’s history’ – was terminated late in 1997 with 1,400 outstanding problems (Newcombe 1998: 1). Expenditure had reached US$100 million at that point and final costs could be up to US$345 million. (America-wide, reform of child support systems through automation has cost around US$2.7 billion and produced the following dismal equations: pre-automation case collection rate in 1990 = 20 per cent; post-automation case collection rate in 1998 = 20 per cent);

- the UK public health service’s Resource Management Initiative, which attempted to improve the monitoring and control of hospital resources: ‘information technology and systems were introduced in virtually every hospital in Britain but it appears few of them were successful by any criteria’. The total cost was ‘Hundreds of millions of pounds’ (Westrup 1998: 9);

- the US Internal Revenue Service, which takes the current prize, albeit mainly defined in terms of revenue forgone: ‘Despite an annual computing budget of $8 billion, the IRS has managed a string of project failures that have cost taxpayers $50 billion a year – roughly as much as the yearly net profit of the entire computer industry’ (James 1997: 1).

Of course, failure is not a problem restricted to the public sector. Surveys in the US private sector, for example, indicate that ‘the success rate for software projects is only 27%’ (James 1997: 1) while others estimate failure rates of ‘at least 80 per cent and often higher’ (Korac-Boisvert and Kouzman 1995: 134).

It’s just that the private sector has been better than government at keeping these failures quiet thanks to:

- fear of shareholders, who take a dimmer and more vociferous view of wasted expenditure than citizens;
- better-paid public relations staff;
- a habit of keeping noisy academics, eager for case studies, at arm’s length;
- no public audit and oversight agencies breathing down their necks, stuffed with politicians and staff eager to score points by highlighting the shortcomings of others.

Why do success and failure happen?

There is a yawning gap between the positive potential of information age reform and the largely negative reality. Huge sums of money are being invested but a large proportion of this is going to waste on unimplemented or ineffective reform.

Clearly, something needs to be done about this but, before moving to that in Chapter 4, we must first understand why these failures occur and why, less frequently, there are successes. There are almost as many explanations as there are reform initiatives. What follows must therefore be seen as just one
approach, albeit one that runs throughout all the cases presented in this book. It is based on the work of Heeks (1998a).

Conception–reality gaps

We know that the assumptions made by those involved in information systems-related change contribute significantly to success or failure (Bostrom and Heinen 1977; Hirschheim and Klein 1989). More specifically, we can say that the conceptual models held by key stakeholders or implicit within reengineered information systems are important. They are important because the gap that exists between these conceptions and public sector realities will determine success or failure. A couple of generic examples will illustrate.

First, imagine a reform initiative focused around the introduction of a decision support system (DSS). Such DSS-based initiatives are typically conceived according to a model of organisational rationality. This model assumes:

- that decisions are made in order to produce outcomes that best meet formally stated organisational objectives;
- that outcomes are produced on the basis of what is the optimal solution according to logical criteria.

This DSS-based reform therefore incorporates rational assumptions:

- about the objectivity of information that is present in the system;
- about the formality of processes and management involved;
- about the skills and role of people;
- about the presence of organisational strategies;
- about the rationality of organisational culture;
- about the absence of organisational politics, etc.

Where such assumptions match the reality of the public sector organisation, the DSS-based reform is likely to be introduced successfully. However, where the assumptions do not hold – in other words, when there is a gap between the initiative’s conception and organisational reality – the reform is not likely to be introduced successfully. The smaller the gap, the greater the chance of success. Conversely, the larger the gap, the greater the risk of failure.

Second, imagine a reform based on the introduction of word processing. This makes a few assumptions about skills, about technical infrastructure and about cultural values related to technology and to documentation. However, these assumptions are far fewer than for the DSS-based reform. The chances that there will be a gap between these assumptions and organisational reality are therefore smaller. As we find in practice, word processing-based reform therefore succeeds in far more situations than initiatives requiring the introduction of decision support systems.

Two further points emerge from this analysis:

- **No gap means no change** The logical extension of the arguments above is that an initiative involving no gap between conception and reality will be 100 per cent successful. But no gap means that nothing changes in the organisation. If they are to create any change, all information age reform initiatives must therefore involve some kind of conception–reality gap. They all therefore run some risk of failure, that risk being proportionate to the size of the gap.

- **Gaps, risks and benefits** Larger conception–reality gaps may bring greater risks of failure, but they may also bring greater organisational benefits. As discussed further in Chapter 15, major reengineering that introduces new information systems, work processes and structures can be perilous for a public sector organisation. However, if successful, it can dramatically improve organisational efficiency and effectiveness. Public officials may therefore find themselves in a dilemma, torn between one reform project that is revolutionary, high benefit and high risk and another that is incremental, limited benefit and low risk. Given that the former is likely to be more ‘high profile’, officials – especially politicians – will often be tempted by it, regardless of the risks.

The dimensions of the conception–reality gap

The DSS and word processing examples provide general illustration, not specific evidence, so let us now move on to real examples of information age reform. Matches and mismatches between conception and reality were implicit within many of the success and failure cases cited at the start of the chapter. These matches and mismatches are made explicit for each of the international cases analysed in Parts 2 to 5. Two of those cases will be summarised here.

Chapter 7 describes the introduction of an information system to support decentralisation of public health management in Ecuador. This reform initiative was a failure because a significant gap existed between the conception of the information system and the realities of the context into which it was introduced. Gap dimensions included:

- **a structural dimension**: the information system design assumed a centralised management structure. There was a major gap between this conception and the decentralised realities of Ecuador’s district health centres;
- **a process dimension**: the IS design assumed a rational and objective approach to implementation processes. There was a major gap between this conception and the reality of a very politicised implementation process.
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By contrast, Chapter 9 describes a successful intranet-based system introduced by Johannesburg Metropolitan Council in South Africa. This reform initiative succeeded because it was conceived in a way that matched Council realities. Matched dimensions included:

- **an information dimension**: the new system provided just the kind of information that Council users wanted, creating little gap between conceived and actual information needs;
- **a technology dimension**: the system relied mainly on existing technology within the Council, creating little gap between conceived and actual technology;
- **a people dimension**: consisting of two parts. First, system developers had the necessary skills to produce the system. Second, developers had the necessary motivation to produce the system. Overall, there was therefore little gap between conceived and actual ‘people factors’;
- **a resource dimension**: the system was set up cheaply and incrementally, without particular time pressures, creating little gap between conceived and actual resource requirements.

These ideas can equally be applied to the strategies and techniques of information age reform. Chapter 16, for example, describes the use of a framework for analysing performance information needs: the Results and Determinants Framework. The framework is flexible and imposes few preconceptions. Relatively few conception–reality gaps can therefore exist, and the framework can be successfully applied in a wide variety of organisational contexts.

Having presented the general idea of conception–reality gaps, we can be more specific about them. These gaps could be assessed on each and every one of the elements listed in Figure 3.1, from information out to environmental factors. In practice, analysis of cases like those just described suggests that we can whittle this down to focus on gaps in:

- Information;
- Technology;
- Processes;
- People: Objectives, values and motivations;
- People: Staffing and skills;
- Management and structures.

Most of the other factors listed in Figure 3.1 are incorporated within those listed here. Strategies are derived from the objectives of organisational members. Politics and culture can also be understood through the people factors and through an understanding of informal processes and structures. Environmental factors are either constants that do not change significantly during the reform process or they are the driver from which other gaps are manifest.

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We do need to add two other resources, essential to organisational change and obvious from the cases, but not made explicit within the diagram. These will be included as:

- Other resources: money and time.

In all, then, seven dimensions of conception–reality gap are presented here, summarised by the ITPOSMO acronym.

**CONCEPTION–REALITY GAP ARCHETYPES**

Conception–reality gaps can arise in any situation, but we shall highlight three archetypes that make information age reform failure more likely.

**Rationality–reality gaps**

The ideas behind rational models of organisations arise from a particular social and historical context which, among other things, believes that:

- science has an underpinning of logic and objectivity which gives it great validity;
- such ‘scientific values’ can be applied outside pure science to human systems, such as management and organisations;
- some desirable outcomes result from applying these values.

As already described in the DSS example, rational models assume that logic and objectivity underlie the workings of organisations.

Alternative behavioural and political models of organisations have subsequently been developed. They assume that factors such as self-interest, personal objectives and subjectivity underlie the workings of organisations, with processes of conflict, bargaining and compromise. These models are also more comfortable with the idea of informal information flows (see Box 3.1).

Despite the development of these behavioural and political models, many reform initiatives are still based on models of organisational rationality. This seems to be particularly true of information age initiatives, including a number of those described in this book. In part this may occur because of the continuing emphasis on IT within information age reform; an emphasis that is particularly apparent in the idolise approach. Technology is conceived by the average public sector stakeholder as an objective and rational entity, not as something that incorporates particular cultural and political values. Reform initiatives associated with that technology are therefore themselves likely to be conceived according to an objective and rational model.

Where an organisation conforms to the rational model, initiatives based on
Box 3.1 Formal and informal information flows

One consequence of the dominance of rationality in information age reform is that formal information is seen as much more important than informal information. In reality, however, this is not so.

Detailed studies show again and again that the real decision making processes of organisations – both formal and informal – rely extensively on informal information (Daft and Lengel 1986; Hastings 1996; Heckscher 1994). Research in UK public service organisations by Davies (1997), for example, demonstrates the importance of personal contacts, ‘invisible colleges’ and face-to-face meetings both in the normal operation of these organisations and during processes of reform.

Informal information is valued because, compared with formal information, it often:
- provides more background and explanatory detail;
- enables a fuller evaluation of the consequences of decision alternatives;
- is more timely;
- is easier to interrogate for further details;
- better serves personal objectives and interests.

Hence government’s fascination with lobbying, backroom meetings, and focus groups, all of which produce informal information that feeds into decision making.

A gap thus often exists between the formal information conceptions of reform initiatives and the informal information realities of the public sector. This may serve to undermine either the reform initiatives or the vital role of informal information.

As knowledge management rises to the top of the management fad agenda, an equivalent gap is likely to emerge between the explicit knowledge-based conceptions of some reform initiatives and the tacit knowledge-based realities of much public sector activity (see, for example, Government Computing 1998b).

that model are likely to succeed. The problem is that such rationality is more often an ideal that does not exist in reality. In reality, many organisations seem to adhere more closely to behavioural and political models.

This gap – between the rational conceptions of reform initiatives and the behavioural/political realities of organisations – is likely to be greater in the public sector than in the private sector.

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For example, in the private sector, there tends to be greater insecurity about jobs, units and even whole organisations. One element of self-interest – of preserving one’s own job – therefore tends to be a more overt part of decision making, and this generally overlaps with the interests of organisational efficiency and effectiveness. Similarly, there tends to be a single, clear organisational objective (profit or market share or survival) guiding behaviour. Related to this, a focus on personal performance and a personal sense of the need to create added value within the organisation are often strong.

In the public sector, on the other hand:

- formal organisational objectives often relate to the objectives of a group (the public) which is not directly represented within the organisation, and these objectives are often less than clear. In such cases, it is less likely that personal objectives can be aligned with formal organisational objectives;
- loyalties may be greater to one’s professional peer group than to one’s organisation;
- there are a greater number of internal and external stakeholders, creating greater conflicts of interest;
- political conflict and compromise over resource allocation have come to be seen as activities inherent to the public sector and its power culture;
- job insecurities may be fewer;
- personal performance measurement and a sense of value added are often poorly developed.

Therefore, in the public sector, a strongly emphasised fait of organisational rationality often covers a seething mass of very different political realities.

The sum result is frequent and significant gaps between rational conceptions and political realities in information age reforms. The outcome – as observed – is frequent failure of such reforms. The US agency example described in Chapter 5 is a case in point. In this case a rationally conceived reform came unstuck because it mismatched reality on a number of the ITPOSMO dimensions. For instance, the presence and usage of formal information was less than anticipated; and staff motivations were driven as much by self-interest and ‘internal politics’ as by conceived models of formal organisational objectives.

Traditional strategic information systems planning is also flawed as an information age reform technique, as described in Chapter 14. It relies on a rational conception of organisational business objectives that are known, unitary and unproblematic. This is hardly ever the case in real public sector organisations. As a result, this technique fails far more often than it succeeds.
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Computer applications themselves differ in the extent to which they derive from approaches of organisational rationality or organisational reality. A continuum of application types can therefore be drawn up, as shown in Figure 3.2.

**Figure 3.2 Continuum of computer applications**

*Rationality-imposing applications* are developed from an organisationally rational perspective. They are information systems that incorporate a significant set of rational structures, processes and even culture and strategies for their operation. These rationalities could cover most of the rings in Figure 3.1. Figure 3.3 provides an example of what might be required, although not all rationality-imposing applications will be the same. The shaded areas represent the rationality requirements of the decision support system described earlier. They must either be present in the organisation as a precondition for successful implementation of this application, or they must be imposed. Successful introduction of rationality-imposing applications may strongly support the reform process. The DSS, for instance, might well support more organisationally effective decision making. In many situations, though, the introduction will not succeed because of the large gap between the application’s required rationalities and current organisational realities.

*Reality-supporting applications* are not developed from a strongly organisationally rational perspective. They are often information technologies more than information systems. In other words, they incorporate few ‘hard’ rationalities, covering only one or two rings in Figure 3.1 at most. Figure 3.4 provides an example drawn from the earlier example of word processing.

**Figure 3.3 The rationalities required by a typical rationality-imposing application**

By comparison with rationality-imposing applications, reality-supporting applications require fewer rationalities to be met as pre-conditions or to be imposed. They can therefore work successfully in a wider variety of organisational environments. Reality-supporting applications like word processing may lead to relatively limited reform benefits, but will succeed in far more situations than the introduction of rationality-imposing applications.

**Figure 3.4 The rationalities required by a typical reality-supporting application**

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**Private–public gaps**

A central theme of reform – particularly as inspired by the New Right – is that government could improve if only it would knuckle down and start behaving more like the private sector. Such ideas may be based on flawed understanding of the private sector:

Those arguing for the introduction into the public sector of better – private sector – management practice often fail to address the mixed
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record of private sector organizations on both IT and non-IT issues, and often fail to point to the considerable long-standing debate on how far private sector management practice needs to be improved.

(Willcocks 1994: 16)

The ideas may also be based on flawed understanding of the public sector: ‘Government is not a business. Forcing government managers into private sector thinking usually causes more problems than it solves’ (Goddard and Riback 1998; see also Osborne and Gaebler 1992: 20–22).

We have already alluded to certain differences that exist between the public and private sectors: the greater prevalence and possibly even greater legitimacy of ‘politicising’ in the public sector, and a greater dissonance between personal and organisational objectives. We can specifically relate this and other factors to information-related differences between the sectors (adapted and expanded from Pollitt and Harrison 1992; see also Bretscheider 1990).

Different objectives

Public sector objectives are typically broader than those of the private sector, encompassing social and political and economic factors rather than having a more narrow financial focus. As a result, the public sector works with a broader range of information than the private sector. Policy making, for example, is a thoroughly political process and requires qualitative, often informal, information about the political strengths and opinions of various individuals and groups. Public sector organisations (PSOs) therefore have to work with a broader range of institutions than private sector organisations.

Different accountability

Private sector organisations are accountable to their shareholders and, perhaps, to their customers and employees. Public sector organisations have a broader set of political and legal accountabilities. This means that information will flow between the PSO and other institutions such as the legislature, the public, the judiciary and other government ministries. There is an obligation to keep records of information for legal and other reporting purposes. Consequently, ‘legal norms and political requirements make themselves felt during the building processes of IT systems and influence the systems from the outset.’ (Willcocks 1994: 18). The environment of accountabilities is also unstable. Working within the framework of constant changes in legislation, policy initiatives, political parties and questions from politicians can create one-off and/or short-term information needs to which considerable resources have to be devoted.

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Lack of competition

Public sector organisations rarely find themselves in direct competition with other organisations. They therefore have less need and desire for ‘strategic information’ than the private sector. This includes both short- and long-term information about competitors, customers and prices. Where PSOs do compete, it is with other PSOs for resources. This competition tends to take place in the political arena where qualitative, informal information is used. The lack of competition also creates a tolerance for two things which, though present, tend to be suppressed more in the private sector. First, as noted above, the promotion of personal rather than organisational objectives. This (yet again) requires information that is qualitative and informal. Second, an aversion to risk and to innovation. This aversion requires information on past practice, particularly on past decisions, from which public actors tend not to diverge.

Lack of production and sales

The majority of public sector organisations are service sector organisations and produce little, if anything, that is sold. As such, they have no use for information that forms the bedrock of much private sector functioning, such as information on sales, marketing, production, accounts receivable and so forth. It is also more difficult for PSOs to identify clear organisational outputs, let alone outcomes. Information on outputs provides clear performance signals for the private sector and helps to guide many of the decisions and activities of private firms. Such guidance information is harder to produce in a PSO.

A view of the ‘whole person’

Private sector organisations tend to understand their customers merely in terms of what those customers buy. By contrast, the public sector as a whole holds and uses information on virtually every aspect of people’s lives: their location, health, education, finances, criminal record, children, business activities, etc.

Other

Public sector IS projects are often larger and more complex on average than those in the private sector. See Box 4.2 in the next chapter for further details.

Given all these differences, information systems or techniques developed for private sector use can easily be based on conceptions that do not match public sector realities. Information age reforms that rely on these systems or techniques will be more prone to failure. Examples appear later in the book:
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- Chapter 14 notes the private sector roots of strategic information systems planning (SISP). SISP is based on conceptions of unitary organisational objectives, apolitical decision making and the presence of skilled support for implementation that do not apply in many public sector organisations. This conception–reality mismatch makes SISP risky and/or impractical in the public sector.
- Chapter 15 notes the private sector roots of business process reengineering (BPR) and its rational basis. It then analyses the problems created in trying to transfer BPR to a public sector where many organisations have a reality of informal groupings, power games and self-interested behaviours.
- Chapter 16 argues for the transferability of particular performance measurement techniques from private to public sector, on the grounds of their flexibility and few preconceptions. Even here, though, a number of limitations are noted in the applicability in one sector of techniques developed in the other.

Such problems — and the attendant likelihood of failure — are likely to increase if/as the private-sector oriented reform agenda of the New Right takes hold.

Country context gaps

Information systems or techniques developed in the context of a particular country will incorporate common assumptions of that context. This can cause problems in the transfer of information age reforms between industrialised countries. For example, a patient information system was developed in the US to support improved health resource management. When similar reforms based around this IS were introduced in the UK, they ran into difficulties. British nurses found it hard to use the new information system because of the US-inspired assumptions it made about the planning and costing of patient care (Westrup 1998).

Even greater can be the problems of transfer from an industrialised to a developing country (DC). Such countries stereotypically differ in many ways, including those identified in the ITPOSIMO model (adapted from Bhatnagar 1990):

- **Information**: formal, quantitative information stored outside the human mind is valued less in developing countries. Thus, for example, industrialised country assumptions about the perceived value of a computerised information system may not match DC realities.
- **Technology**: the technological infrastructure (telecommunications, networks, electricity, etc.) is more limited and/or older in DCs, as illustrated in Chapter 2. Thus, for example, industrialised country assumptions about availability of Internet connections to support inter-agency information flows may not match DC realities.
- **Processes**: public sector work processes are more contingent in developing countries because of the more politicised and inconstant environment. Thus, for example, industrialised country assumptions about the viability of automating an overt, stable set of processes may not match DC realities.
- **Objectives and values**: developing countries are reportedly more likely to have cultures that value kin loyalty, authority, holism, secrecy and risk aversion (Haque 1996; Ojo 1992; van Rynckheghem 1996). Thus, for example, industrialised country assumptions about the value of a leading-edge IS that will help public managers share information may not match DC realities.
- **Staffing and skills**: developing countries have a more limited local skills base in a wide range of skills. This includes IS/IT skills of systems analysis and design, implementation skills and operation-related skills including computer literacy and familiarity with the Western languages that dominate computing. It also includes a set of broader reform skills covering the planning, implementation and management of reform initiatives. Thus, for example, industrialised country assumptions about the presence of skills necessary to assess the feasibility of kiosk-based service delivery may not match DC realities.
- **Management and structures**: developing country organisations are more hierarchical and more centralised. Thus, for example, industrialised country assumptions about the acceptability of reforms that disperse information and power may not match DC realities.
- **Other resources**: developing countries have less money. In addition, the cost of IT is higher than in industrialised countries whereas the cost of labour is less. Thus, for example, industrialised country assumptions about the financial benefits of efficiency reforms which replace clerical staff with an automated system may not match DC realities.

Of course, these are stereotypes, and many cases can be found in which they are reversed. Nor is the Third World some computer-free wasteland. Countries like Iran, India and Morocco introduced computers into public service in the mid-1950s and have expanded their use of IT continuously ever since. Developing countries are producers as well as users of IT, exporting some US$3 billion-worth of software in 1998, from locations as diverse as Chile, Barbados, Egypt, South Africa, India and China (Heeks 1998b). Vast gulfs also exist within industrialised countries: compare Beverly Hills with South Central in Los Angeles for instance.

None the less, there is a major problem with the ‘If it works for us, it’ll work for you’ mentality being peddled round the Third World by IT multinationals, international consultants and aid donor agencies. Transferring ideas from one context to another can save waste by stopping the recipient from ‘reinventing the wheel’. But — to continue the analogy — this approach
failing when the recipient needs a motorcycle wheel and is instead offered one from an American train.

Chapter 12 provides the salient example of an IT strategy prepared for Barbados by British consultants. The strategy was of questionable worth because it incorporated Western conceptions of electronic government, cultural values and the business environment that did not match Barbadian realities. The IS difficulties reported in Chapter 6 are also, to some degree, the result of trying to impose Western-conceived systems in an African environment.

SUMMARY AND CONCLUSIONS

Information age reform succeeds or fails – it is argued here – dependent on the degree of mismatch between the conceptions of that reform and the realities into which it is introduced. We can assess that mismatch along seven main dimensions, described above in the ITPOSIM model. Given that failure is naturally of more concern than success, and given that information age reform fails more often than it succeeds, three archetypal conception-reality failures were presented which may occur:

- when reforms, systems and techniques derived from rational models of organisation meet a political reality;
- when reforms, systems and techniques derived from the private sector are transferred to the public sector;
- when reforms, systems and techniques derived from one country are transferred to another country.

Having provided an explanation for failure within information age reform, the obvious question is: ‘OK, so what do we do about it?’ A few general points will be made here.

With reference to the first archetype, information age reform based on the realities of public sector organisations, rather than on some theoretical model of rationality, seem more likely to bring success. Public managers would do better to open their eyes and ears to their immediate surroundings rather than burying their noses in MBA textbooks in seeking guidance on reform. Similarly, reforms based around reality-supporting applications will succeed more often than those based around rationality-imposing applications.

With reference to the other archetypes, the public sector has been criticised in the past for the costly, often unsuccessful, development of unique IT applications. It has been advised to make greater use of off-the-shelf packaged solutions. Yet this pendulum swing clearly must not go too far. One general message from the archetypes is that whole governments, public sector organisations and even individual public servants must learn to recognise, express and have satisfied their unique requirements. ‘Customised’ must therefore take precedence over ‘ready made’. Adaptive and participatory approaches must therefore take precedence over mechanistic and control-oriented approaches. In many cases, this will require both national and public sector-specific IS development capacities to be strengthened.

Overall, the role – even the nomenclature – of public sector IT professionals must also be scrutinised. The analysis of Chapter 2 suggested that, instead of IT professionals, there was a greater need for staff who are IS professionals, or even hybrids who combine IS and IT skills with an understanding of public sector management. From this chapter, too, we see that a focus on technology is too narrow and that information age reform must be seen as a multidimensional process of change.

Professionals must therefore see themselves more as change agents (Markus and Benjamin 1996). They may become facilitators by increasing the capacity of others to change, or they may become advocates who take responsibility for implementing change along the identified dimensions. In either case, their technology skills will be complemented by those of change management and of communication, negotiation and advocacy. To support this, there must be a change of organisational structures and management processes away from the old ‘central IT unit’ model.

These responses to the question posed above are fairly general. However, the question can also be answered in much more detailed and specific ways. This forms the focus of Chapter 4.

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