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Analysing e-Government Project Failure: *Comparing Factoral, Systems and Interpretive Approaches*

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2010

Abstract

It is a well-known secret in the computer industry that information systems projects are more likely to fail than not. Academic studies by e-government researchers provide the analytical findings that confirm this practitioner insight. Failure and success are subjective assessments that vary over time and with the standpoint of those making the judgement. Evaluation results are often contested, with the dispute based on political, legal or contractual matters – and even differing academic points of view.

This short paper reviews the three main categories of diagnostic approach being used in the study of failed e-government projects – factoral analyses, systems approaches and interpretive studies. It shows that each category derives from a separate academic discipline, is based on differing theoretical constructs and entails a particular epistemological stance and research methodology. The story is told of the author's own experience in deciding on an appropriate research strategy for the study of a failed e-government project in Sri Lanka. Practical conclusions and recommendations are drawn to guide future research.

A. Introduction

An estimated US$3 trillion was spent during the first decade of the 21st century on government information systems (Gubbins, 2004). Yet recent studies suggest between 60 to 80% of e-government projects fail in some way leading to "a massive wastage of financial, human and political resources, and an inability to deliver the potential benefits of e-government to its beneficiaries" (Heeks, 2006, p. 3).

E-government investments are not alone, however, in being viewed as problematic and hard to judge in terms of benefits realisation. There is an on-going fascination with the apparent failure of systems in both the media and in academic discourse. Financial market failures, accidents, natural disasters and planning failures, as well as information system breakdowns, are common subjects. Bignall and Fortune (1984) term all these classes of failure as 'systems failures'. Systems failures are recognised as occurring from a complex interaction of technical and human factors set in a social situation rather than as the result of the failure of one particular component (human or technical).

Smithson and Hirschheim (1998) provide a comprehensive overview of the many available evaluation models for information systems projects. They identify an ongoing academic debate between the rational positivists, concerned with the objective application of method, and the contextual interpretivists, concerned with wider issues such as history, politics and culture. Berghout and Remenyi (2005) have since contended that there is "no single, superior, theoretical underpinning" for such research with the wide variety of models indicating that there are numerous issues and concepts and "too many different ways" of thinking about these.

Thus the academic field of information systems evaluation does not readily assist researchers in defining the precise nature of e-government project failure. Many have consequently chosen to avoid addressing the issue of failure directly and have couched their discussion in terms of what is needed to achieve success. But important processes are hidden in this way and researchers need to identify and study project failure directly for these to be revealed (Mitev, 2005). To learn lessons from failure requires an understanding of both the process of project evaluation and the theoretical viewpoints of those making the judgement.

After this short introduction, we will review the relevant literature on e-government project failure in relation to the categories of diagnostic approach adopted during the evaluation process (Section B). Then a conceptual taxonomy of the theoretical constructs on which each of these frameworks is based will be proposed (Section C) and subsequently applied to the design of a research exercise on a particular e-government project (Section D). The paper concludes (Section E) with recommendations to guide the understanding of both researchers designing and practitioners reviewing studies of e-government projects that have been evaluated as failures.

B. Overview of Diagnostic Approaches

> "The system achieved what was intended of it; it was operational at the time and cost that were planned; the project team and the users are pleased with the result and they continue to be satisfied afterwards." (Fortune and Peters, 2005)

If we take the view that an e-government project has failed if it misses any of the criteria that are implicit in such a common-sense definition of success, then it is hardly surprising that most projects are categorised as failures. But to understand failure, we need to examine the basis on which academic writers, who generally adopt an informative stance to evaluation, decide to provide descriptive and diagnostic information on the projects being considered. These diagnostic approaches fall into three main categories – factoral analyses, systems approaches and interpretive studies – and an overview of the three analytical groups, together with their identified strengths and weaknesses, will now be undertaken.

Factoral analyses as applied to the understanding of failure have been progressively developed in the project management literature and are focussed on the recognition of certain critical failure factors. The essence of the approach is that failure of a project to meet its targeted performance is caused by a combination of these identified critical factors – but one of the practical difficulties in its application is judging what constitutes the optimal or non-failure state for each factor on any particular project.

Information systems surveys using a factor-based approach can be characterised by that of Flowers (1996), who uses a series of seven UK-based case studies (four e-government applications, including the London Ambulance Service computerised despatch system, and three private sector information systems) to identify his set of factors. He chose to focus on identifying "the crucial elements of a project that, when they are in a less than optimal state, will increase the chance that an information system project will either fail or, at worst, become a disaster" (p. 157). His critical failure factors for the information systems projects studied are listed in Table 1.

Organisational Context Hostile culture Poor reporting structures Project Management Over-commitment Political pressures	Conduct of Project Initiation Stage Technology focused Lure of leading edge Analysis and Design Phase Poor consultation Design by committee Technical 'fix' for management problem Development Phase Staff turnover Competency Communication Implementation Stage Receding deadlines Inadequate setting Inadequate user training

Table 1: Critical Failure Factors (Flowers, 1996)

Heeks (2002) applied a factor-based approach to an analysis of the significant number of failures in e-government projects. A survey of relevant case studies in the literature led him to the identification of seven dimensions necessary and sufficient to measure the gap that exists between 'current reality' and the 'design concept' of the intended application. He contends that the wider the gap that exists on each of these dimensions, the higher the risk of failure for the project.

The seven dimensions of potential design-reality gaps to be explored on an e-government project are summarised by the ITPOSMO acronym and are outlined as:

- "**I**nformation: the formal information held by the digital system and the informal information used by the people involved with the system.
- **T**echnology: mainly focuses on the digital IT but can also cover other information-handling technologies such as paper or analogue telephones.
- **P**rocesses: the activities undertaken by the relevant stakeholders for whom the e-government system operates, both information-related processes and broader business processes.
- **O**bjectives and values: often the most important dimension since the *objectives* component covers issues of self-interest and organizational politics, and can even be seen to incorporate formal organizational strategies; the *values* component covers culture: what stakeholders feel are the right and wrong ways to do things.
- **S**taffing and skills: covers the number of staff involved with the e-government system, and the competencies of those staff and other users.
- **M**anagement systems and structures: the overall management systems required to organize operation and use of the e-government system, plus the way in which stakeholder agencies/groups are structured, both formally and informally.
- **O**ther resources: the time and money required to implement and operate the e-government system." (Heeks, 2006, p. 5-6)

The ITPOSMO factor model has led Heeks (2003) to identify three 'archetypes of failure': situations in e-government projects where design-reality gaps are common. These are identified as:

Hard-Soft Gaps:	the difference between the (hard) technology-oriented design and the (soft) socio-political reality of the context in which it will operate;
Private-Public Gaps:	the difference between a system designed for use in the private sector and the realities of its use in the public sector;
Country Context Gaps:	the difference between a system designed for use in one country and the realities of its use in a different country.

Factor-based studies are the most widely-used diagnostic approach to the evaluation of information systems projects and researchers have created models that are being constantly refined with better and more consistent metrics. But Belassi and Tukel (1996) point out a generic criticism of the factor-based approach that even the most recent models, such as DeLone and McLean's 2003 update of their original model (1992), are unable to adequately address. They conclude that the inter-relationship between the factors and the various analytical groups are just as important as the individual factors themselves and the critical factor approach does not provide an adequate mechanism for taking account of the complexity of these inter-relationships. Larsen and Myers (1999, p. 398) draw attention to further generic criticisms of the approach which "tends to view implementation as a static process instead of a dynamic phenomenon, and ignores the potential for a factor to have varying levels of importance at different stages of the implementation process".

Systems approaches to understanding failure have their origins in the study of catastrophes. Various studies of these catastrophic types of systems failure (Peters and Turner, 1976; Bignall, Peters and Pym, 1977; Perrow, 1984) have identified themes that are of direct relevance to e-government project failure.

The main relevant finding is that failure in these complex systems is multi-causal. Minor failures in large, complex systems are endemic and these will occasionally concatenate in unforeseen and unpredictable ways to generate a crisis. In his Normal Accidents Theory, Perrow (1984) argues that technological systems that are tightly coupled and characterised by interactive complexity (defined as parallel rather than linear interactions) will never be completely safe – accidents are normal. This is because we will never have complete knowledge about how the systems will operate in all circumstances and so we cannot ensure they will be free of errors or unpredictable behaviours. Risks are inherent to their existence.

An interaction approach to the understanding of information systems failures was proposed in the recognition that "the impacts of systems are not caused by system technology or by the people and organisations that use them but by the interaction between specific system design features and the related features of the system's organisational setting" (Markus, 1984, p. ix). Information system implementation problems, particularly where there is resistance expressed within an organisation to a system that is being introduced, can be explained through a lack of organisational validity. This concept is "a property neither of systems nor of organisations but of the match of fit between them. … [it is] a descriptive and relative concept rather than a normative and absolute one, with no simple connection between it and effective system use" (Markus and Robey, 1983, p. 205).

Organisational validity is assessed by Markus and Robey (1983) as being the fit between the system design attributes and organisational realities on four levels:

User-System Level: between the users' psychological characteristics and the system design in terms of the users' cognitive styles;

Structure-System Level: between the structural characteristics of the organisation and the system design in terms of organised tasks;

Power-System Level: between the distribution of power in the organisation and the system design in terms of any potential power re-distribution;

Environment-System Level: between the environment of the organisation and that assumed in the system design.

The authors caution against the normative use of the concept of organisational validity. Organisationally invalid systems might be more difficult to implement than valid ones but it is by no means certain that validity will lead to effective use or invalidity to ineffective use. It is clear that Heeks' design-reality gap model – when understood as a means to assess fit between system design and various contextual realities, rather than just as the ITPOSMO checklist – can be directly related to Markus and Robey's concept of organisational validity. This has led Fortune and Peters (2005) to suggest that Heeks is adopting "a composite approach" to the analysis of e-government project failure involving both the factoral and systems approaches.

A Systems Failure Approach has been progressively devised by a core group of academics interested in information systems project failure, among them Bignell, Peters and Fortune. This draws on the work of Checkland (1981) and the Soft Systems Methodology and uses a model uniting a number of system concepts, known as the Formal Systems Model. Fortune and Peters (2005) analysed a number of UK e-government projects that have failed or partially failed to meet set objectives using the Systems Failure Approach. Their analysis draws heavily on soft systems methods to construct a systems model that is compared with the analysed case study situation.

Although these later systems approaches to e-government project evaluation are more complex and insightful, there is continuing support for the early contention by Sauer (1993) that the systems failure literature yields only "useful, general insights" and that information systems failure is a special case that warrants detailed separate study and extensive interpretation.

Interpretive studies of project failure are derived from the social sciences. They are based on the belief that 'the system' is the construct of an individual, often established with the aim of interpreting it or understanding it more fully. The decision as to which aspects of any particular scenario can be regarded as constituting 'the system' will depend on the interest and background of the researcher (her own worldview) as well as the purpose of the study.

An interpretive research orientation searches for an underlying meaning behind surface manifestations in texts, interviews or observed behaviours. According to Denzin and Lincoln (2000), such qualitative research involves "an interpretive, naturalistic approach to the world" and interprets phenomena in terms of the meanings people bring to them. One of the main devices used for gaining understanding of information systems failure in research studies based on the interpretive approach has been the hermeneutical circle. Information is gathered about a project and the analyst looks for apparent absurdities or discontinuities. She seeks further information to provide an answer to each disconnect, then looks again at the situation and develops a new understanding of it.

Davis et al (1992) used a case study of a personnel database project in a US university to develop a two-dimensional matrix for diagnosing information system failure. Based on the premise that failure cannot be explained in terms of either the technology or the social dimension alone, their matrix displays four areas of "potentially useful data for a failure diagnosis" on each dimension, as shown in Table 2.

Dimension	***Social System***				
		Reactions to technical system	Performance indicators	Development processes	Designers' theories-in-use
Technical System	Technology	X	X	X	X
	User interfaces	X	X	X	X
	Information requirements	X	X	X	X
	Organisational fit	X	X	X	X

Table 2: Socio-Technical Framework for Data Analysis (Davis et al, 1992)

The case study data is classified using the sixteen cells of the framework, with any apparent anomalies being noted by the analyst for further investigation as she continuously moves around the exploratory loop until the meaning of the situation has been extracted. The four areas of the social dimension used in Davis et al's analysis were considered too narrow by later critics. For example, Mitev (1996), in her study of the French Railways computerised reservation system, insists that macro-social and historical factors must also be investigated.

In a similar case study, Myers (1994) expressly takes into account historical factors in his analysis of a failed attempt by the New Zealand Education Department to implement a centralised payroll system. He links his work to the critical hermeneutics of the philosophers Gadamer and Ricoeur but chooses not to codify his qualitative data prior to interpretation thereby inhibiting others from easily replicating the approach used. This is perhaps not surprising as interpretive approaches are deliberately subjective and relativist.

Sauer (1993) examines the history of a project intended to automate the personnel and establishments record processing for the Australian public service, a development that was initiated in 1970 and abandoned in 1981. His approach is based on the Triangle of Dependence model where the information system is fashioned through its project organisation's innovation activities, the project organisation requires support and resources, and the supporters need some [future] payback from the information system. These relationships are graphically illustrated in Figure 1.

Each relationship represented by a side of the triangle is subject to a variety of influences which make certain aspects of the process uncontrollable. Problems with any one of these relationships will be the source of consequential difficulties for the other two. It is a central tenet of Sauer's argument that flaws in the innovation process

are normal and they must be repaired through the application of appropriate problem-solving techniques within the project.

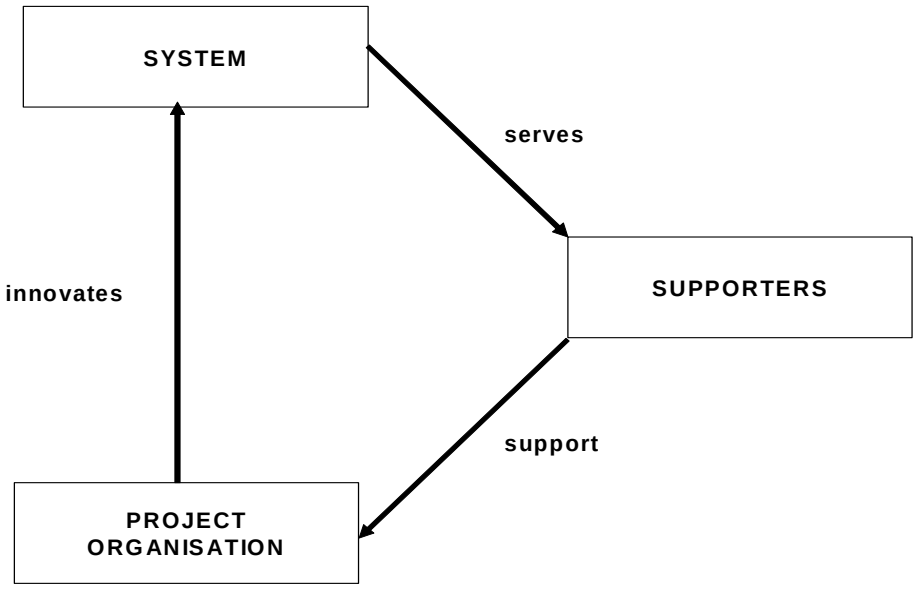

Figure 1: Triangle of Dependence (Sauer, 1993)

Repairs require resources, however, which may or may not be available to the project, and the non-repair of flaws risks the continued provision of support to the project. A project organisation has to influence and manage its supporters to ensure that the level of flaws is acceptable and that the support continues. Organisational politics is therefore an integral part of successful information systems project management. Project supporters are divided into three categories: the funders who provide the resources, the political fixers who "manage strategic contingencies and control important decisions" and the power-brokers who wield influence over those who control funds and contingencies. The potential influence of the project organisation on the continuation of support is through the mechanism of evaluation: namely, purposefully managing a favourable outcome to the interim evaluation exercises and then ensuring that these results are correctly targeted at each group of supporters.

The emphasis in Sauer's interpretive case study is on the project organisation and the staged innovation process it undertakes to develop the information system. The available data about the project is drawn together before being classified into life cycle stages. Each stage is investigated in turn, looking first at the effects of context on the flaws emerging at that stage and then at the effect on the decision-making process of the results of the interim evaluations. Based on these two analyses of each life cycle stage, anomalies are noted with further understanding and meaning being sought through exploring the alternative options available to the project organisation and what the possible outcomes might have been.

Sauer describes his approach as "an eclectic theory whose predictions are contingent on contextual factors" (1993, p. 36) when contrasting it with earlier interpretive

frameworks. The Triangle of Dependence model does, however, have a number of the defining features of a web model of information systems (Kling and Scacchi, 1982; Kling, 1987). Web models make it apparent that simple linear explanations are misconceived because the relationships surrounding information system processes and the dependences on which they are based are highly inter-connected. Web explanations are unavoidably complex and, if they are to be enlightening and useful, it is necessary to understand the e-government project processes and their context in considerable detail. An interpretive approach that conforms to Kling's definition of a full web model can be found in the work of those researchers adopting a social constructivism perspective, such as Wilson and Howcroft (2005) and Mahering et al (2004), which is a later approach to the study of e-government project failure that has been gaining some recognition.

C. Proposed Conceptual Taxonomy

We will now attempt to conceptualise the differences between the three categories of diagnostic approach. The intellectual strategy of closed-boxing will be applied: this refers to the degree of explicit description and explanation of change that each analytical framework admits. The chosen abstraction principles of each approach lead to a closing or hiding of – by conceptually excluding – pertinent features of the change from the inquiry (Lyytinen and Newman, 2008). A specific conceptual taxonomy can thus be developed for the study of e-government project failure.

A majority of the evaluation studies of information systems treat the process of undertaking the project as a simple, linear progression where a new system is planned, designed, adopted, and modified in step-wise manner (Lyytinen et al., 1998) so that performance targets are met (or not, as the case may be). In their simplest form, factoral explanations of success and failure use variance theories, which correlate static vector measures about the information system and its environment before and after the introduction of the system. These explanations close-box the change process and mask its dynamics and generative mechanisms.

When richer socio-technical frameworks like social constructivism are adopted, these accounts rarely view the change in non-linear terms but, being "grand theories of social change" (Lyytinen and Newman, 2008), they are not meant to provide explicit process explanations. Mid-range frameworks, such as the systems approaches, are designed to overcome the limitations of too general or too accurate accounts by building generalisable yet localised socio-technical explanations. Figure 2 locates the factor-based models, the systems approaches and the interpretive descriptions reviewed in this paper on two scales: from totally-closed to totally-open and from simple to complex explanations of e-government project failure.

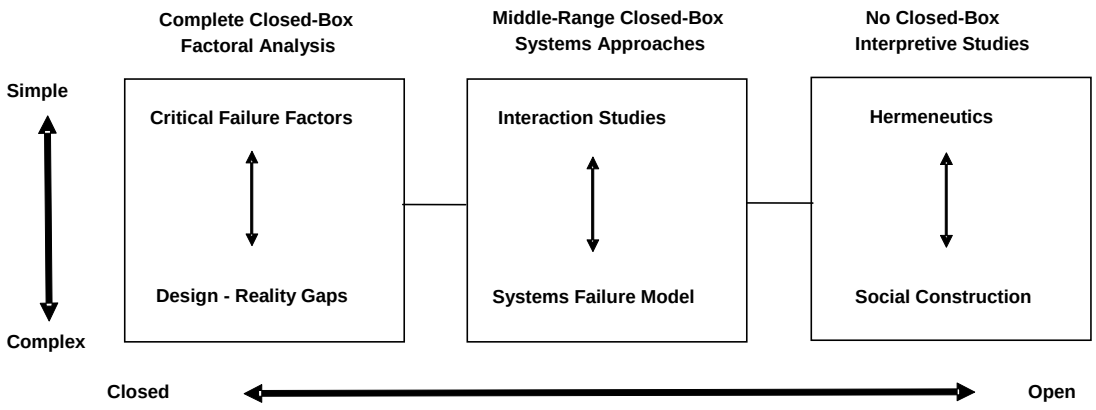

Figure 2: Closed-Box Taxonomy of Diagnostic Approaches (adapted from Lyytinen and Newman, 2008)

At one extreme – with complete closed-boxing – the explanation admits only snapshots of failure factors, while remaining silent about actual processes. Factor-based models use surveys of information systems projects and represent them as sets of vector states to suggest a causal depiction of failure. Their epistemological foundations are in the positivist view of science. The models and the variables of interest are primarily derived from past literature and are fixed over time. These accounts assume a common context, a lack of history and are devoid of a sense of process. Heeks' design-reality gap model is judged to be the most complex of this group of diagnostic approaches as it does not assume a common context: it is contingent and thus context-sensitive.

At the other extreme, with interpretive studies, there is very little closed-boxing. Ethnographic or action researchers pursue extensive raw data gathering in a single organisation and there is little theorising *a priori*. Such approaches use thick, rich descriptions and the researcher is immersed in experiencing the project. All data is considered for possible collection, including contextual, historical and process data. A local and unique narrative based on the principles of ethnomethodology is sought, with the researcher making a choice on how far to move from raw data, analysed through devices such as the hermeneutical circle, to more complex models with abstract vocabularies, such as those of social constructivism.

The systems approaches fall somewhere mid-way on the closed-box scale. The models have an affinity to many of the features of ethnographic research: they rely on small samples with the researcher situated within the organisation(s) in the data collection phase, and explicit recognition of context, history and process. However, in contrast to the interpretive descriptions, the systems approaches offer as skeletons explicit *a priori* models and theoretical categories for data collection and analysis. A research trade-off is made between the level of accuracy and completeness in recording the complexity of the change processes leading to the project history or histories, as illustrated by the Systems Failure Model, and the generalisability of the approach, as with interaction studies including Heeks' design-reality gap model as seen from a systems perspective.

The differences in the theoretical constructs underlying the three groups of diagnostic approach are summarised in Table 3, which has been adapted from Lyytinen and Newman's (2008) review of the analytical frameworks utilised in their study of information systems change. We will now move onto examining how the author was able to practically utilise this particular conceptual taxonomy when designing one of her own research projects.

	Closed-Box **Factoral Analyses**	***Mid-Range Closed-Box*** **Systems Approaches**	***No Closed-Box*** **Interpretive Studies**
Epistemology	Positivist	Positivist / interpretive	Interpretive
Sampling	Multiple projects	One or few projects	Usually single project
Context; History; Process	No	Yes	Yes
Data collection	Surveys	Interviews / documentary analysis	Action research / participant observation
Researcher	Separate	Situated	Situated

Table 3: Theoretical Concepts Underlying the Diagnostic Approaches (adapted from Lyytinen and Newman, 2008)

D. Practical Application

The author is a reflective practitioner who had the opportunity to study a government-wide, integrated financial management information system (IFMIS) project funded by an international financing institution and implemented by the Sri Lankan Ministry of Finance. The project was initiated in 2000 but the design proved to be too ambitious, the information systems strategy based on a 'best practice' integrated solution was rejected by the Ministry and the project was deemed a failure after the first year. This was, on the face of it, surprising in a country with an active and sophisticated ICT industry. However, after a radical re-design, the project was eventually implemented with various contingent improvisation measures, driven by a local political consensus, leading to the project being evaluated as a partial success by the sponsors in 2004. The Ministry considered the project to have delivered relevant and useful outputs and the IFMIS became an integral part of the Government's medium-term fiscal reform programme.

The research questions being addressed in the investigation were:

- what were the processes leading to the apparent failure – and later success – of the e-government project; and
- what might be done to strengthen the networks formed to design and implement e-government projects in developing countries that are assisted by international financing institutions?

The initial diagnostic approach adopted was based on Heeks' design-reality gap framework. His observations on expected gaps in the seven critical areas (the

ITPOSMO factors) when researching e-government in developing countries are acknowledged as "stereotypical" (Heeks, 2002) but they did provide the author with initial possible explanatory factors as to why the 'best practice' integrated IFMIS did not readily transfer to the Sri Lankan government context:

> - "***I****nformation*: formal, quantitative information stored outside the human mind is valued less in developing countries.
> - ***T****echnology*: the technological infrastructure (telecommunications, networks, electricity) is more limited and / or older in the developing countries.
> - ***P****rocesses*: work processes are more contingent in developing countries because of the more politicised and inconstant environment.
> - ***O****bjectives, values and motivations*: developing countries are reportedly more likely to have cultures that value kin loyalty, authority, holism, secrecy and risk aversion.
> - ***S****taffing and skills*: developing countries have a more limited local skills base in a wide range of skills. This includes technical skills of systems analysis and design, implementation skills and operation-related skills including computer literacy and familiarity with the Western languages that dominate computing.
> - ***M****anagement and structures*: developing country government organisations are more hierarchical and more centralised.
> - ***O****ther resources*: developing countries have less money. In addition, the cost of technology is higher than in industrialised countries whereas the cost of labour is less." (Heeks, 2002, p. 8)

These seven critical factors guided a mapping of the gaps between the intended design of the IFMIS and the organisational realities within the Ministry of Finance during the pilot phase of the case study research. However, the author then realised that the design-reality gap framework was not designed to support the work she now found to be necessary to trace the history of the project (a ten-year longitudinal research exercise from 1996 through to 2005 was eventually undertaken) and did not accommodate the gradual build-up of a reflexive understanding of the many levels of complexity that had already been identified in the study.

In order to trace the processes leading to the varying and evolving evaluations of the project (the first of the two research questions), it was deemed necessary to adopt a more open-boxed approach as an explicit description was required. The author reviewed the open-box categories to decide whether the systems or the interpretive approach to project evaluation would be the most appropriate and whether a simple or complex explanation of e-government project failure would be attempted.

An exploration of the multi-disciplinary Science and Technology Studies literature, a relatively new body of knowledge where writers have explored the question of integrating technology into social theory, was carried out. This indicated that an interpretive approach to the research exercise would enable the author to avoid the tendencies towards technological determinism and *a priori* theorising to be found in the systems approaches. She chose to undertake an interpretive case study of the Sri Lankan e-government project and to employ the rich socio-technical analytical frameworks informed by social constructivism; thus adopting an open and complex

approach according to Figure 2's taxonomy. Constructivist research is judged to be liberal in nature and aiming at emancipation – and such a philosophical stance was aligned to the author's own worldview.

An actor-network perspective was adopted and she became fully conversant and at ease with the appropriate analytical frameworks. These enabled the research:

- to accommodate the longitudinal research strategy so that the time dependency of the success/failure evaluation could be recognised;
- to handle the multiple stakeholders and interpretive strategies in play due to the subjectivity of success/failure;
- to enable consideration of the organisational politics and power in the public administration reform environment in Sri Lanka; and
- to handle the complexity of the interplay between the international and national organisations involved in this e-government application.

In order to address the second research question, relating to the strengthening of the networks formed to design and implement e-government projects in developing countries, the author drew extensively on her interpretation of the research findings from the application of three actor-network analytical frameworks – local/global networks, moments of translation, and boundary objects – that had not previously been combined in the study of e-government projects (see, for example, Heeks and Stanforth, 2007). But she also incorporated into the research strategy important lessons from the systems approaches: namely, the recognition that systems failure is multi-causal and accidents are normal in a complex system, such as an IFMIS.

These insights guided an examination of certain of the unintended consequences of the project arising from the crisis that occurred when the project was initially deemed a failure. Interpretation of the hidden meanings of these improvisations was facilitated by recognition of the multiple causes of the crisis. Three final deliverables from the project were analysed in the light of "the important bridging role" they had played, according to the Ministry of Finance. These deliverables were unreferenced in the official *ex-post* project evaluation, carried out by the international financing institution, as they had not been included in the formal project design. However, the Ministry was clear that these unplanned deliverables contributed significantly to their attempts to achieve the project's overall goal of improved governance and the author's recommendation was that flexibility in implementation needs to be built into the design of future IFMIS projects.

The study concluded that there is a growing interest in the value of such e-government evaluation studies that draw on qualitative research data. This mirrors the realisation that matters of political economy and other wider issues influence the pace and direction of reform programmes in the public sector. Using such an approach, evaluation cannot provide objectively 'correct' answers but instead can act as a facilitating mechanism to produce a consensus and build a shared view of a project's effectiveness, its overall value and the 'lessons learned' among the various groups of actors involved.

E. Conclusion and Recommendations

The three categories of diagnostic approach to evaluation reviewed in this short paper are judged by the author to differ considerably in the views, values and goals that their use implies in any research undertaken on e-government project failure. In terms of analytical focus, epistemological assumptions and the purpose of generated knowledge, they point to different ways of understanding. Mahring et al (2004, p. 234) summarise this well: the type of diagnostic approach to evaluation being employed is "not merely a choice of tool, but also a choice of philosophy, of perspective on greater things than a specific IT project".

The author's own experience in deciding upon her epistemological stance and the research strategy to be adopted is not an unusual one. The proposed conceptual taxonomy should enable informed consideration of the available alternatives by new researchers designing studies of e-government projects that have been evaluated as failures. It should also provide useful guidance to practitioners when reviewing and comparing the theoretical underpinning of published studies.

An alternative to the three categories of diagnostic approach to e-government project evaluation reviewed here is one based on critical realism, the third philosophical paradigm alongside positivism and interpretivism. A number of academic writers influenced by the concepts of institutional theory (e.g. Carlsson, 2003; Mutch, 2002) argue that the social world is fundamentally a process of negotiation and so are information systems projects. Hence evaluation research is a process of negotiation and evaluators are the 'orchestrators' of the negotiation process. To develop an evaluation theory of why an information systems project fails, for whom and in what circumstances requires a researcher to generate some means of making independent judgements about the institutional structure and the power relations present in the initiative, which is 'not possible' in positivist or interpretive evaluation research. Such a diagnostic approach has not yet been applied in a comprehensive way to the study of e-government project failure and must be the focus of future research.

Why is it so important to continue to develop the theoretical basis to the analysis of e-government project failure? The answer lies in the urgent need to encourage organisational learning from project failure in order to realise the benefits of e-government. Ewusi-Mensah and Przasnyski (1995) conducted a survey of abandoned information systems projects. Their findings suggest that "most organisations do not keep records of their failed projects and do not make any formal efforts to understand what went wrong or attempt to learn from their failed projects" (p. 3). Academic studies of e-government project failure can assist practitioners in this respect – but only when the theoretical constructs on which the evaluation is based are clearly laid out.

According to Smithson and Hirschheim (1998), there is a considerable gap between information systems evaluation theory and practice. There is an increasing focus on developing participative approaches to evaluation, as in the author's own Sri Lankan case study, but judgements about the worth of the system are still generally viewed as 'reflexive moments' that are separate from on-going organisational activity. If and when evaluation becomes "an ongoing conversation which is itself part of the larger conversation that *is* the organisation" (Introna and Whittaker, 2002, p. 167) then

practitioners will need to recognise that organisational politics is an important and integral part of e-government project management – with the need to be continuously aware of the constraints and opportunities for action that the process of evaluation engenders.

It is with this participative, on-going form of evaluation in mind that the reader is asked to examine this final definition of e-government success proposed by Sauer.

> "Systems can be delivered late, at inflated cost, with inadequate functionality, and may be largely unused, all without necessarily being failures. So long as the project can command the resources and power to sustain its system, it will not be counted as a failure because it is serving some organisational purposes." (Sauer, 1993)

The author concludes that if, like herself, the reader holds a similar view to Sauer's, then the case for continued investment in e-government projects might be better made if success was routinely measured in terms of the organisational and societal purposes being served by the system rather than by the targeted technical outputs.

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