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Paper No. 22

Steering e-Government Projects from Failure to Success: *Using Design-Reality Gap Analysis as a Mid-Implementation Assessment Tool*

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2012

ISBN: 978-1-905469-30-7

Published by: ***Centre for Development Informatics***
Institute for Development Policy and Management, SED
University of Manchester, Arthur Lewis Building, Manchester, M13 9PL, UK
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View/Download from:
http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/index.htm

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Steering e-Government Projects from Failure to Success: *Using Design-Reality Gap Analysis as a Mid-Implementation Assessment Tool*

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2012

Abstract

There are many e-government failures in developing countries. Most studies look at these after the event (*post hoc*) but we wanted to take an original approach to look mid-implementation (*durante hoc*) in order to provide recommendations for improvement. We chose a partial failure / partial success land management information system being implemented in one Ethiopian city. The project has made retrieval of land information quicker and simpler but is only partly implemented, and is still – on occasion – circumvented by public servants for personal gain.

To understand why the project had partly failed in some ways, we used the design-reality gap framework, which analysed the shortfall between design expectations and implementation realities. Drawing data from four stakeholder groups, our analysis showed more-serious gaps around management systems and structures, staffing, and stakeholder objectives and values; and less-serious gaps around some of the e-government system components.

We used the design-reality gap analysis to propose an action plan that would help institutionalise the system, steering it from partial failure to success. We therefore demonstrate the value of the design-reality gap framework as a tool for mid-implementation analysis of e-government projects. It provides a clear understanding of past progress – both success and failure factors – and clear guidance for future action. We therefore recommend its usage on other ongoing e-government projects in developing countries.

A. Introduction

e-Government has received interest all over the world because it can help make governments more efficient and more effective, hence transforming relations with citizens, businesses, and other arms of government (Walsham and Sahay, 2005). But studies indicate that most e-government initiatives in developing countries fail in some way (Ndou, 2004; Dada, 2006). According to a study carried out by Heeks (2008), 35% of e-government implementations in developing/transitional countries can be classified as total failures (project never started or started but immediately abandoned) and 50% are partial failures (major goals are not attained and/or there are undesirable outcomes). Heeks and Stanforth (2007) estimate expenditure of US$3 trillion on information technology (IT) projects by governments during the ten years between 2000 and 2010; with an overall failure rate around 60%, thus wasting huge amounts of money.

Various explanations for this failure have been offered. Some identify the cause as a specific issue, such as lack of commitment on the part of political leadership and public managers (Bhatnagar, 2000). Others identify slightly broader causes, such as poor management of long-term sustainability risks (Aichholzer, 2004). Others still try to provide a comprehensive and contingent model, such as the "design-reality gap" framework (Heeks, 2002; Heeks, 2006).

These causal explanations have been applied to cases of e-government in developing countries (e.g., for the design-reality gap framework – Dada, 2006; Ramaswamy, 2009; Syamsuddin, 2011). However, almost all of this analysis has been *post hoc*; i.e. it has been undertaken after the project has been completed (sometimes after it has ended in some kind of failure, or has been superseded), and it has often been an academic exercise that does not particularly seek to interact with the project, merely extract data from it. Lessons may be learned but there is little value for the specific project studied.

We wanted to take a different – hence original – approach, looking at an e-government project in mid-implementation (*durante hoc*), with the specific aim of providing some future guidance for improvements to managers of that project. This approach will be relevant for any e-government project that falls into the partial success / partial failure categorisation. Total failures and complete successes can still be analysed but are by definition not really amenable to improvement.

We therefore selected a partial success / partial failure project – as described next, a land management information system in Ethiopia – and applied the design-reality gap framework to analyse the reasons for its particular success / failure status. From that analysis, we were able to identify both factors underlying what had already been achieved, but also underlying continuing problems. The latter – indicated by large gaps between design and reality – were then converted into specific recommendations for project improvement.

Alongside our specific contribution of action priorities for this particular project, more generally our contribution is to identify a methodology by which e-government project managers can turn their projects from failure to success. We also highlight reasons for failure and reasons for success that may have a more general applicability to other e-government projects in developing countries.

The paper is organised as follows. First a brief description of the case under consideration is offered, explaining its success / failure categorisation. This is followed by a presentation of the research methods. Then, design-reality gap measurement is undertaken on seven "ITPOSMO" dimensions. These findings are discussed and conclusions from the overall analysis are drawn.

B. e-Government Case Study

The system selected to act as a case study to test the mid-implementation use of design-reality gap analysis was a land management information system (LMIS) launched in early 2009 by the city administration of Bahir Dar. Bahir Dar is located in the north-western part of Ethiopia and is the capital of Amhara region.

The LMIS was built around the voluntary efforts of a single individual – Alazar Tilahun – who was an experienced IT professional. He developed the system for the city administration as a memorial tribute to his late father who served as city mentor during the 1960s. Two other IT professionals (originally from the United Nations Development Programme and serving as advisors to the city) also participated in system development. In all, the system took about six months to develop and become initially operational, and its main aim was to improve the management of land holdings within the city. Key stakeholders can be identified as the managers, administrative personnel and IT staff of the city administration; the Capacity Building Bureau and ICT Section of the Amhara regional government; the residents of Bahir Dar; and the volunteer who initiated the project.

The system was designed to integrate two land management-related services by creating a land information system (LIS) and a file information system (FIS). The LIS was intended to manage information related to land(s) owned within the city while the FIS would manage information about people, i.e. the land owner(s). The LMIS was described as a success by both staff at the Ethiopian Information and Communication Technology Development Agency (the national body responsible for promoting integration and use of ICT in Ethiopia), and within the Amhara regional government. However, closer analysis painted a slightly different picture. There had been progress made via the LIS in simplifying and speeding up the procedures for accessing land information, and there had been a rationalisation of that information into a single database. However, not all the LIS features had been fully implemented, the FIS had not been implemented at all, and this e-government system overall had not been fully integrated into the procedures of the city administration.

It was therefore appropriate to classify this e-government project as a partial success / partial failure: it had met some but by no means all of its original objectives (not all

of which had been made explicit). The system was not regarded as finalised at the time of analysis, and it could thus be described as "mid-implementation", with an imperative to understand how and why it had reached its current state, and what might be done to improve it and help bring it closer to realising the governance benefits that it could potentially achieve. The next section describes how we went about addressing that imperative.

C. Method

To understand better why the LMIS was an e-government project partial failure, we used the design-reality gap framework (Heeks, 2003). This can be used in various different modes (Heeks, 2006). For example, it can be used *pre hoc*; that is, before an e-government project, in order to predict the likelihood of that project succeeding or failing, and to identify key sources of project risk. It can also be used *post hoc*, that is, after an e-government project has been completed, in order to analyse the reasons why the project succeeded or failed. Here, though, we wanted to use it *durante hoc*; that is, in mid-project and combining both the backward-looking *post hoc* component that would understand what had happened on the project so far, but also with a forward-looking *pre hoc* component that would identify future courses of action for the e-government project managers.

As its name suggests, the essence of the framework is to understand the various gaps between the design of the e-government project (which can be thought of as "where the e-government project wants to get us": the conceptions, assumptions, expectations of a new future that are built into the project design) and the current realities of the implementation context (which can be thought of simply as "where we are now"). The design-reality gap is thus the gap between where we are now and where the design wants to get us: the larger that gap the more it is associated with project failure; the smaller that gap the more it is associated with project success.

Heeks (2003) indicates that seven dimensions – summarised by the ITPOSMO acronym (Figure 1) – are necessary and sufficient to provide an understanding of design-reality gaps to analyse IT-related projects. For an e-government project specifically:

- *Information* – indicates the information used in the e-government application (comparing the information requirements contained within the design of the e-government application vs. the information currently really being used in the organisation).
- *Technology* – indicates the technology required by the application (comparing the requirements contained within the design of the e-government application vs. the real situation now).
- *Process* – indicates the work processes undertaken in the agency (comparing the processes needed for successful implementation of the e-government application vs. the real situation now).

- *Objectives and values* – indicates the objectives and values that key stakeholders need for successful implementation of the e-government application vs. their current real objectives and values.
- *Staffing and skills* – indicates the staffing numbers and skill levels/types required in/by the agency (comparing the requirements for successful implementation of the e-government application vs. the real situation now).
- *Management system and structure* – indicates the management systems and structures required in the agency (comparing the requirements for successful implementation of the e-government application vs. the real situation now).
- *Other resources* – indicates such issues as the time and money required to successfully implement and operate the new application compared with the time and money really available now.

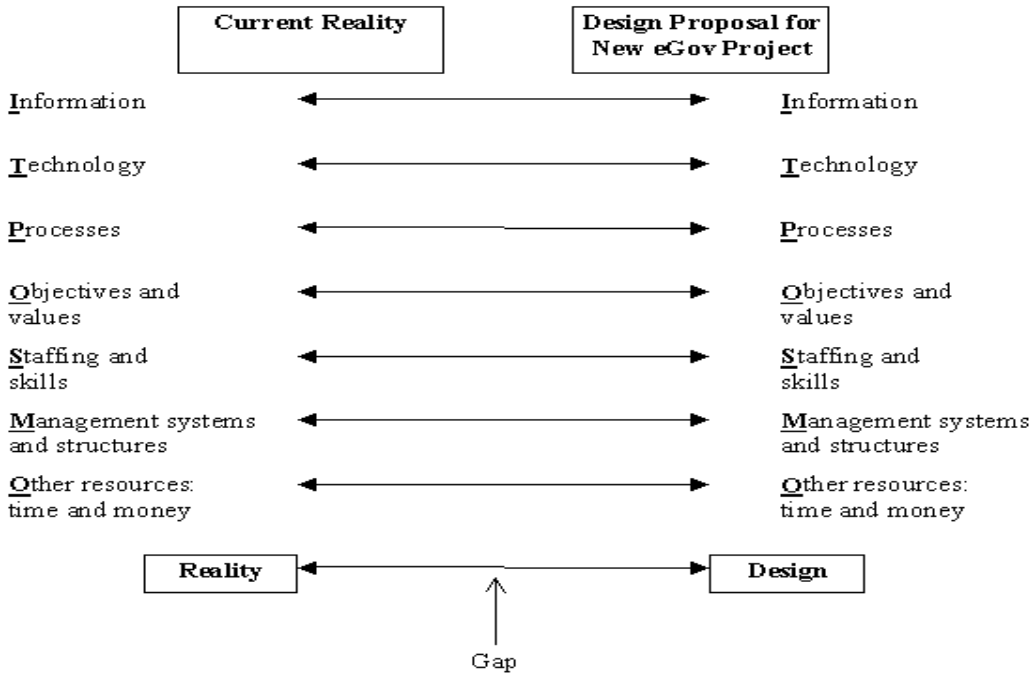

Figure 1: The ITPOSMO Dimensions of e-Government Project Design-Reality Gaps

C1. Collection of data

All the primary data were collected from the supply-side system stakeholders as citizens have no direct interaction with the system as yet. Thus, four different groups involved in the project were contacted and interviews were held with: the Deputy Director from the Ethiopian ICT Development Agency; heads of the Capacity Building and ICT Section Bureaux of the regional government; six top-level managers in the city administration whose duties related to land management, and the system administrator of the new LMIS. In addition, a group discussion was organised with the four IT staff (data encoders) in the city administration.

The questions for the structured interviews were prepared based on the constructs of the design-reality gap model and the ITPOSMO checklist, and a copy of the

interview questions was given to each study subject at least two days in advance. Both the interviews and group discussion were held during July-August 2010; i.e. just over one year after development first began on the LMIS. Follow-up clarifications were obtained through telephone conversations with two of the top-level management interviewees in the city administration, particularly focused on the numerical ratings for each of the ITPOSMO dimensions in the design-reality gap model.

C2. Presentation and analysis of data

Thematic analysis (Orodho and Kombo, 2002) of the organisational reality and the requirements within the design of the e-government application was made based on the qualitative data collected from the field as per the seven ITPOSMO dimensions. Next, the rating of each dimension as well as the sum of the numerical values of the dimensions was interpreted according to guidelines provided by Heeks (2008a). The rating of each dimension was made via consensus among the three researchers based on the data at hand and recommendations made by respondents during the interviews, discussion and follow-ups.

Specifically, each dimension was numerically rated on a scale from zero to ten where – for example – zero is to mean no change between the design and current reality; ten means complete change between the design and current reality; and five would indicate some degree of change. Finally, all the rating numbers for each dimension were added up and interpreted as depicted in Table 1 (*ibid.*). The original table was intended for use with predictive – i.e. *pre hoc* – design-reality gap analysis undertaken prior to e-government project implementation. As this system had already been implemented, we were interested in doing a mid-implementation assessment in order to see what had been achieved so far, and where the project might go in future. Items in the table have been reworded accordingly.

Total Gap Score	***Interpretation***
0-14	The e-government project has largely been successful, and is likely to continue to be so.
15-28	The e-government project is likely only a partial success, and might continue to be so unless actions are taken to close remaining design-reality gaps.
29-42	The e-government project is likely a partial failure, and will likely continue to be so unless gap-closure actions are taken.
43-56	The e-government project is a failure of some kind, and this will continue unless gap-closure actions are taken.
57-70	The e-government project is and will remain close to a total failure without significant action to close design-reality gaps.

Table 1: Interpretation of Total Mid-Implementation Design-Reality Gap Score

D. Design-Reality Gap Analysis

As the project is classified as a partial failure / partial success we may anticipate sizeable gaps between design and reality on some of the ITPOSMO dimensions. The analysis of these gaps, and identification of which dimensions were the focus for concern, is presented next.

Information

As noted in Section B, the land management information system was designed to include two modules: land information (LIS) and owner profile (FIS). The LIS was designed to hold all land-related information including location, size (area in sq. metres), purpose/zoning (such as commercial, residential, school, church, etc), land identification number, and other legal information including scanned copies of all supporting and related documentation concerned with the history of the particular plot of land. The FIS was designed to manage information about people such as land owner address and household number, personal details (e.g. family information – spouse, children), and links to scans of all documents relevant to the land owner.

As also noted above, in reality, only part of this information was available. The core land information was available via the system. However, the scanned documents were not available – so items like tax receipts, court decisions, signed ownership papers were not incorporated but were left in their original hard-copy condition. This was something of a problem, though digitised documents were only required in around 10% of cases. In addition, the owner profile information was not available for use.

Gap = 4.5; core design expectations were met in reality, but others were not.

Technology

The design called for technologies including six scanners, a server computer and local area network, and a set of Internet-connected personal computers. Scanners were needed to digitise the current paper-based documents. The server computer and network were needed for storing and processing information in a centralised location for access by decision makers including engineers, finance officers, land administrators, and city managers. Internet connectivity was needed for off-site access mostly by field personnel. About fifteen personal computers with Pentium IV processors and at least 40GB hard disk space were needed for decision makers and data entry personnel.

The implemented reality was that all technology requirements were met at least in part, but only two scanners were present rather than six, and the processing as well as storage capacity of the personal computers was below the design requirement.

Gap = 3; core technology requirements were met in reality; but lack of scanners and PC capacity was something of a problem.

Processes

A business process re-design project had preceded implementation of the land management information system, so gaps between design and reality had already been closed during the operation of the manual system. The intended top-level processes involving the system were as follows:

- Land information registration sub-process – aimed at registering and documenting all required information regarding land management.
- Land ownership licensing sub-process – aimed at providing and approving ownership licenses to owners of plots of land for a given purpose (business, residence, public service, etc).
- Information provision service – aimed at providing any information regarding a plot occupied for an owner or any other concerned body within and outside the city administration such as the court and others.

For most of the mid- and lower-level decision processes, the reality was as per this design, and the majority of processes were met by the LIS implementation. However, the lack of owner profile information due to absence of the FIS did create a gap between the design (which assumed processes using the owner profile information) and the reality that those processes could not take place.

Gap = 3.5; given prior process re-design, most intended processes were present in reality save those involving owner profile information, and also scanned documents.

Objectives and Values

Two primary objectives inherent to the e-government project design were an efficient and transparent land management system. In relation to efficiency, the manual system took 3-4 months to process land administration enquiries, and reducing this long processing time was one of the main design goals. Regarding transparency the manual system involved many loopholes that opened spaces for corruption; hence the design called for a transparent system. The design in terms of transparency assumed that this objective was also shared by all the public sector stakeholders.

In relation to efficiency, the current reality showed a significant improvement in land administration processing in terms of time, effort, and resource consumption. The new system took less than a day to complete land administration queries, a very substantial reduction from the earlier delays, with around 90% of all queries using this system and only about 10% requiring reversion to the manual system.

The intended transparency was somewhat compromised because some lower-level officials still found loopholes to revert to the manual system. The design required buy-in to the goals of efficiency and transparency. This buy-in was present among senior managers and the volunteer but was absent among some (corrupt) staff in the middle/lower levels of the decision-making ladder. Hence, a few of the latter tried to obtain corrupt payments from citizens who required land-related services. This happened in situations where the resident's documents were physically received by the public servant rather than being scanned and present in digitised versions on the

LMIS. The commitment of top managers to the design objectives and values was demonstrable since one lower-level manager had been punished for such actions.

Gap = 5.5; there was a commitment to the objectives and values of the system among some stakeholders but not among several others; the adverse behaviour of the latter was constrained by the new system but not completely eliminated and the underlying drivers to such behaviour remained.

Staffing and Skills

The design called for personnel including one system administrator, one network administrator, one database administrator, four data encoders, and two computer maintenance crew. The design called for all personnel to have experience and the administrators to have at least a Bachelor's degree. In reality only five people were hired (the system administrator and the four data encoders); none had experience, and they were all fresh graduates from just an ICT diploma programme. They were building up their skills and expertise over time on the job, but this could not yet reach the design expectations.

Gap = 6; only five of the nine staffing positions were filled, and competency levels fell short of the design.

Management Systems and Structures

The design called for a new structure with an ICT department that would manage the land management information system. The design also called for a significant revision to human resource management systems with a new salary structure and clearly defined promotion levels for IT staff. In reality the intended department was not created and the reporting structure fell under the existing Land Administration department. No permanent employees were hired – all ICT hires had temporary status – and the HR reforms had not been undertaken. Some of the broader management systems assumed implicitly within the design did exist in reality e.g. those relating to land administration.

Gap = 7; due to failure to create the intended department and management structure.

Other Resources

In other resources we looked at cost and time overrun; an overrun being the manifestation of a gap between design and reality. The design was loosely defined to take six months. No explicit budget was allocated for the project. The project was operational within the projected six-month time frame. The technology used was that already present and development costs were incurred but absorbed by the individual that initiated the project; hence no overt financial contribution was made by the city administration. The city administration also absorbed other costs – e.g. those of staff – within its general ICT expansion plans.

Gap = 1.5; project time was as expected, and funding was mainly absorbed within existing expenditures.

E. Discussion and Recommendations

A summary of the design-reality gaps for the LMIS just over a year after it was first begun is shown in Table 2, arranged in descending order of size.

Dimension	Gap
Management systems and structures	7
Staffing and skills	6
Objectives and values	5.5
Information	4.5
Processes	3.5
Technology	3
Other resources	1.5
Total	***31***

Table 2: Summary of Design-Reality Gaps

A cross-check of the validity of the design-reality gap model comes via interpretation of the total design-reality gap – 31. Reading from Table 1, this equates to "The e-government project is likely a partial failure, and will likely continue to be so unless gap-closure actions are taken". As seen, the LMIS is indeed a partial failure (and simultaneously a partial success), and the analysis of individual dimensions shows more about the nature of this partial failure and that it is likely to continue.

Looking at the individual dimensions, we can perform an – admittedly somewhat subjective – categorisation into three types: more serious, semi-serious, and less important. The *more serious gaps* are around the top three items in Table 2: management systems and structures; staffing and skills, and objectives and values. Looking for core explanations, one can see these in part relating to the way the project is seen through a rather "narrow lens": top managers have supported the project but not the wider changes that are needed to embed the system into the city administration, and outside the small group of project supporters, there is limited enthusiasm for what the LMIS seeks to achieve.

All these point to a lack of "institutionalisation" of this e-government project. It is working to some degree (albeit not totally as intended) but there is a fragility about it. The IT professionals on whom the project completely relies are not recognised within the current organisational structure, and have only a temporary status rather than any permanency let alone career path within government. Given the supply-demand gaps in the Ethiopian IT labour market, there is a serious likelihood of the IT staff leaving once they have built up sufficient expertise on their CVs. They will leave not so much for higher salaries but for the lack of recognition and lack of stability. The city administration needs to address this; showing that it is investing in its IT staff (e.g. by offering them education and training opportunities) and making them

feel part of the organisation both structurally and in terms of processes (e.g. by involving them in decision-making about the LMIS).

A design-reality mismatch of attitudes and values among some lower-level public servants is reflected in the occasional circumventing of the LMIS for personal gain. At present, these values are being contained through the actions of the new system, and through punishment for offenders, but these are treating symptoms rather than the core "disease". That will require a much broader and longer-term culture change. Institutionalisation of the LMIS will be part of this – if successful, in five or ten years it will likely be a shared expectation that land administration is conducted in a transparent, digitised and rational manner. But in the meantime, the benefits of the system – not just the benefits to citizens and to the image of the city administration, but to the nature of internal work – could be sold more to the lower-level public servants, and they could be brought more into the decision-making process so they feel some ownership of the LMIS rather than seeing it as a top-down imposition.

The core of any information system is the combination of information, processes and technologies, which can all be rated as having *semi-serious gaps* between design and reality (4.5, 3.5 and 3 respectively). These largely boil down to the lack of scanning of key documents, and the non-implementation of the FIS module of the system. With the LMIS now working, it would be an appropriate time to address these gaps, and to get to work on scanning – helping remove the exploitable loopholes – and on the second system module. But these cannot just be mandated on their own: the systemic, competency, and motivational issues identified above as being behind the more serious gaps need to be addressed before these more functional actions are taken. As ever with e-government projects, if the human aspects of the project are got right, then the more technical aspects will fall into place. If the human aspects are not right, the technology alone will never deliver.

Finally, the "other resources" dimension can be rated as *less important*. As yet, at least, time and money have not been constraints on this project, in part because of the commitment of the volunteer and the support of top managers.

In sum, the design-reality gap analysis has helped to identify core causes of the partial failure of the system to date. Moving from project failure to project success requires closure of the larger gaps. This can be done in two ways. Managers could alter the design of the e-government project to better match reality (for example, scaling back its ambition by removing the intention to scan or the presence of the FIS module from the design). Here, though, our recommendations have been to alter reality to bring it closer to the design, in relation to what we have termed both the "more serious" and the "semi-serious" gaps.

We shared these findings in our discussions with city administration managers, and they have come to recognise this issue of gaps between design and reality. Thus, for example, they have enacted plans to create a new ICT department, hire additional IT staff to bring staffing realities closer to design requirements, and set up permanent

positions with clearly defined salary scales and promotional criteria. This will lay the foundation for implementation of many of the required "semi-serious" gap recommendations. This will not completely close the gaps between design and reality – given the continuous flux of all e-government systems, that rarely happens at any point in a system's life – but it will be a significant step towards institutionalisation of this e-government initiative.

F. Conclusions

Our focus in this paper has been to explain and test a methodology to help turn e-government projects from failure to success when they are still mid-implementation. In doing that, we necessarily focused on the problems of the project and how to address those via improvements: i.e. on the large design-reality gaps and how to close them.

However, we can also draw out from the design-reality gap analysis some of the small gaps, which represent critical success factors for this e-government project (and potentially for other e-government projects). These include:

- **Committed project champions**: other factors listed here are enablers, but a successful e-government project also needs drivers: forces impelling the project, and helping it to overcome the inevitable obstacles. Top management support was clearly a help in this case, but it really all happened due to the single-minded commitment of one person: Alazar Tilahun. (Although not analysed above, of course, this does create a vulnerability – unless there can be the type of gap-closing institutionalisation measures described above, the project remains vulnerable to the future absence of the main impetus from this one individual.)
- **Prior process re-design**: it is sometimes said (Heeks, 2006) that trying to change processes and technology at the same time is like trying to lift both legs off the floor at once – the inevitable result is that you will fall flat on your face. This project learned that lesson: processes were re-designed first (creating and then closing one set of design-reality gaps), and only then was new technology introduced. As a result, the gap between design and reality never became an unbridgeable chasm.
- **Automating existing information**: in a similar vein, this project did not try to significantly change the type of information being held about land and land ownership in the city; it thus kept the gap between design and reality quite small, and reduced project risks.
- **Keep it simple, stupid**: the project did not try to rely on cutting-edge, unfamiliar technology; it kept the technological requirements relatively simple (save the issue of the scanners), ensuring the design did not greatly differ from the technological reality.

Of course, the project was not perfect – it could have done more to involve a wider range of project stakeholders, and it could have considered what contribution other volunteers, academia, NGOs, etc could make in bringing a broader scope of skills and

ideas to bear on the project. Likewise, the evaluation reported here was externally driven, and it would have better arisen from within the project itself.

However, it is perceived that this analytical exercise has been beneficial. It has been appreciated by the e-government project stakeholders, such as the city administration managers, and it has helped to set an improvement path that will push the project further along the continuum from failure to success. More generally, it has demonstrated the triple value of the design-reality gap framework as a mid-implementation tool for e-government projects:

- It has provided the basis for a "state of play" check to understand how far a project has progressed in achieving its objectives.
- It has helped analyse both the critical success factors that have supported the project, but also the critical failure factors that are currently holding it back.
- It has developed a clear set of prioritised management actions that are necessary in order to make this e-government project more successful and more institutionalised.

Overall, the design-reality gap framework is not a deep sociological theory, it is a straightforward tool that helps to focus management attention on key e-government project issues; it digs beyond just technical issues to address underlying human and organisational factors; and it offers a systematic and credible basis for project reporting and analysis. Our paper has shown it can be used not just prior to and following an e-government project, but also during the process of implementation for both a status check and future action guide. We therefore recommend its usage on other ongoing e-government projects in developing countries.

Acknowledgements

Our thanks to the management of the Ethiopian Information and Communication Technology Development Agency for partially sponsoring the study. We are also grateful to Professor Richard Heeks, the University of Manchester, for providing valuable comments on earlier drafts.

References

Aichholzer, G. (2004) Scenarios of e-government in 2010 and implications for strategy design, *Electronic Journal of eGovernment*, 2(1), 1–10

Bhatnagar, S. (2000) Social implications of information and communication technology in developing countries, *The Electronic Journal of Information Systems in Developing Countries*, 1(4), 1–9

Dada, D. (2006) The failure of e-government in developing countries: a literature review, *The Electronic Journal of Information Systems in Developing Countries*, 26(7), 1-10

Heeks, R. (2002.) Information systems and developing countries: failure, success, and local improvisations, *The Information Society*, 18(2), 101–112

Heeks, R. (2003) *Most eGovernment-for-Development Projects Fail: How can Risks be Reduced?*, iGovernment Working Paper no. 14, Centre for Development Informatics, University of Manchester, UK http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/igov_wp14.htm

Heeks, R. (2006) *Implementing and Managing eGovernment*, Sage Publications, London

Heeks, R. (2008) *Success and Failure Rates of eGovernment in Developing/Transitional Countries*, eGovernment for Development portal http://www.egov4dev.org/success/sfrates.shtml

Heeks, R. (2008a) *eGov Risk Assessment: Design-Reality Gaps*, eGovernment for Development portal http://www.egov4dev.org/success/techniques/risk_drg.shtml

Heeks, R. and Stanforth, C. (2007) Understanding e-government project trajectories from an actor-network perspective, *European Journal of Information Systems*, 6(2), 165-177

Ndou, V. (2004) e-Government for developing countries: opportunities and challenges, *The Electronic Journal of Information Systems in Developing Countries*, 18(1), 1-24

Orodho, A.J. and Kombo, D.K. (2002) *Research Methods*, Institute of Open Learning, Kenyatta University, Nairobi, Kenya

Ramaswamy, M. (2009) e-Government implementation in transition countries, in: *Handbook of Research on ICT-Enabled Transformational Government*, V. Weerakkody, M. Janssen & Y.K. Dwivedi (eds), IGI Global, Hershey, PA, 441-451

Syamsuddin, I. (2011) Evaluation of e-government initiatives in developing countries: an ITPOSMO approach, *International Research Journal of Applied and Basic Sciences*, 2(12), 439-446

Walsham, G. and Sahay, S. (2005) Research on information systems in developing countries, *Information Technology for Development*, 12(1), 7-24