e-Government: Institutional and environmental challenges

The design, development and implementation of e-Government applications are affected by several factors, which include institutional and environmental challenges within the organisation. To understand these institutional and environmental challenges, 36 South African senior civil servants from the national government were interviewed. The interview data were analysed using principles of content and interpretive analysis. A key institutional and environmental challenge is related to the problems that affect senior managers. Senior managers are frustrated, disenfranchised or expunged of managerial authority, which in turn has an effect on the design, development and implementation of e-Government applications. The practical implications of this research are that in the government the management structure within the state has to show a greater level of agility, and the government should proactively engage with key stakeholders within the state to develop a common shared vision for the use of e-Government applications.

Introduction

e-Government application design and development is at the heart of any e-Government initiative because during the design process what is offered to the citizens and how it will be of value to them are decided. The designing of e-Government applications is a challenging issue because the applications are frequently large and complex and require large sums of money, the system’s objective can be difficult to define, senior government officials who do not have adequate information and communications technology (ICT) expertise sometime interfere and they have a fairly wide range of stakeholders who need to feel that the e-Government application is providing some form of benefit to them. According to Abrahams (2009), South African e-Government applications face challenges because of the fragmented nature of the government’s administration and its communications processes. Furthermore, unlike many other ICT applications, e-Government applications are often conducted under public scrutiny. When mistakes are made in e-Government applications, they tend to be expensive, impact large numbers of citizens and are embarrassing to civil servants and politicians (Singh & Averweg 2015). e-Government applications require adequate online services, infrastructure and human capital, but with all these in place, the issue of making individual systems work still remains, which depends on how the government’s designers design, develop and implement the systems, which is the focus of this research.

Background

The design and development of e-Government applications is not an extensively researched area for either the developed or the developing world; the current e-Government research appears to be policy-focused (Hernández, Bolívar & Muñoz 2012). Grönlund and Horan (2004) pointed out that the literature on ICT in the government can be traced back to the early days of data processing in the 1970s, which were long before the Internet and the Web were developed. In more recent years, the governments became aware of the advantages of employing Internet technologies to facilitate service delivery as a result of becoming aware of its success in the e-business sector (Bannister 2012; Becker, Algermissen & Niehaves 2006; Worrall 2011). The US National Performance Review (Heeks & Bailur 2007) first used the term e-Government in 1993 (Annttiroiko 2008). The Government Direct Green Paper, one of the first government publications on e-Government in the UK, was published in November 1996 and outlined the way in which the government was going to use ICT (ePractice.eu 2007) to deliver services. In 1997, the National Performance Review in the USA recommended the use of ICT to deliver services to citizens (Relyea & Hogue 2004). The first academic paper to use the term electronic
government was published in 1996 by Milward and Snyder, who defined electronic government as the ‘use of technology to link citizen to government services’ (Milward & Snyder 1996:262). Almost two decades of experience, with numerous types of e-Government systems being developed, e-Government systems still experience crippling challenges (Abu-Shanab & Khawasneh 2014; Dombrowski et al. 2014; Gauld & Goldfinch 2006). In this context, poor investment decisions have not only been made in situations where there has been an inadequate return on investment, but also include incidents where ICT applications failed to work or caused considerable disruption to the organisations attempting to apply the technology (Belardo, Ballou & Pazer 2004; Gauld & Goldfinch 2006; Heeks 2002a, 2002b, 2002c; Mitev 1996). Estimates of the extent of e-Government failures range considerably. The New Zealand Government lost a modest $17 million on ICT for health care, when it purchased an American-developed ICT system which was designed to manage health information and then abandoned the system within two years (Gauld & Goldfinch 2006). The Irish Government spent an estimated €156 million on a Health Services Administration system called PPARS and obtained no return on the investment (Comptroller and Auditor General 2005). But in the UK, where government services are much larger, the National Health Service wasted an estimated $24.5 billion on an ICT health care system which they were not able to successfully implement (Heeks 2007).

**Purpose of the study**

The purpose of this research was to identify and explore issues related to the institutional and environmental challenges that affect the development of e-Government applications in South Africa. Furthermore, the study proposes a theoretical conjecture on how senior managers deal with issues related to institutional and environmental challenges. In the South African context, adequate attention has not been paid to how institutional and environmental challenges affect the development of e-Government applications because of the challenges researchers experience in getting access to senior government managers. The research question for this study is: What are the issues that affect senior managers within the government?

**Methodology**

The research strategy that was used in this research was qualitative in nature. A qualitative approach is important because the evidence that was required to develop a better understanding of issues related to institutional and environmental challenges could not be collected using an experimental design. The evidence required had to be collected from knowledgeable informants, in the form of interviews, who have been involved with or interacted with e-Government applications. In addition to the interviews, the evidence also comprises reports, government website examinations, project documents and media reports. The data required to answer the research question were primarily acquired through a face-to-face basis, and the discussions with them were recorded. Transcripts were prepared and used in conjunction with other documentary evidence for data analysis. Data analysis was performed by using principles of content analysis and interpretive analysis. The unit of analysis for this research is the decision-making process which is employed across a number of different government entities.

**Selection of informants**

The following heuristic was used in the selection of informants. Informants had to have worked for the government. Informants could be employed by the national government, the provincial government, the local government or a government agency. Practical and logistical concerns that influence the selection of informants are:

- government officials are geographically dispersed, both the prospective informant and researcher have time constraints, the researcher has limited funding, the ethics protocol is a guide for the researcher not to wander outside the boundaries of the accepted interview questions, and the researcher is unknown to the prospective informants.

A further selection of criteria is applied: ‘prospective informants must be involved with, or be affected by, government ICT and prospective informants must be at a senior or upper management level in the public sector’.

If informants met the criteria, they were interviewed. All informants who were interviewed were senior managers. They were not contractors and therefore are considered civil servants as they are permanently employed by the state.
The informants are categorised into four groups: national government, provincial government, local government and government agencies. There were:

- 16 informants from 9 different departments that represented national government;
- 4 informants from 4 different departments that represented provincial government;
- 3 informants from 3 different departments that represented local government; and
- 13 informants from 7 different government agencies.

Research consent forms and information leaflets were provided before the interview to the informants and on the day of the interview. Only after the informants had signed the Informed Consent Documents, did the data collection process start.

**Data collection**

The method of data collection for this study was semi-structured interviews (Leedy & Ormrod 2010; Saunders, Lewis & Thornhill 2009). Semi-structured interviews were appropriate because they give the researcher some structure, whilst allowing the researcher the opportunity to explore in depth important issues as they arose. The questions that were posed to informants were derived from the extant literature and a three-round Delphi study (Singh 2013) that was used to acquire a deeper understanding of the issues that affect e-Government. Informants were asked the following question:

> ‘Can you please describe the management approach that is used in the design and development of e-Government systems?’

  a. Please describe the management approach.
  b. If there is no management approach, who would take charge and ownership? ‘How does this happen?’

**Data analysis**

The two principal approaches to analysing qualitative data are content analysis and interpretive analysis. Content analysis requires counting the concepts discussed with the informants to develop and understand the situation. Interpretive analysis looks beyond counts of concepts to a direct understanding of the meaning of the data obtained. Atlas.ti facilitated the coding of the transcripts and allowed the researcher to group codes, concepts and constructs. Figure 1 shows the coding cycles. The transcripts were uploaded to Atlas.it, and codes were developed. In the first cycle of the coding, the text was read, reflected upon and then key issues in the text were identified and coded. The 913 quotations represented the key issues in the text. Further reflection on the quotations resulted in the quotations being reduced to 280 codes. During this phase, the quotations that presented the same type of issue were grouped together. In the second cycle of coding, after reflecting on the codes, the codes that presented similar issues were grouped together to develop 42 concepts. Then in the third cycle of the coding, after reflecting on the 42 concepts, these concepts were reduced to 8 themes. One of these themes related to institutional and environmental challenges, which is the focus of this paper.

**Findings**

**Institutional and environmental challenges to e-Government applications**

Institutional and environmental challenges refer to the organisational setting within which e-Government applications are designed and developed. Different organisational settings have a direct impact on how ICT opportunities are perceived, how systems are designed and how the organisation’s implements them in order to take advantage of their potential benefits (Bannister 2012). The development of e-Government applications happens in an environment that is traditionally inflexible and not conducive to creative ICT development and structural change as a result of ICT initiatives. The implications are that the government may not realise the benefits of the proposed e-Government application. From the analysis, the elements within this theme are: problems affecting senior managers; problems regarding the appropriate use of ICT; problems regarding organisational process; problems regarding policy; and problems regarding clarity of ICT strategy. These themes are discussed in the following section.

**Problems affecting senior managers**

Informal communication affects senior managers’ (and users’) perceptions of e-Government applications. Informal communication is a casual exchange of information and
some informants referred to this type of communication as the grapevine. This is demonstrated by the following comments from informants:

‘Most people [managers and users] would be vaguely aware through the grapevine that there is something happening’.

‘I [senior manager] tend to keep my ear to the ground whenever something [new ICT projects] is coming down the line’.

‘I think that was quite helpful because those are very influential people. If they [senior managers] say they are not happy regardless of whether there was a mistake in, you know, small thing as a semicolon, if he’s not happy and he broadcast that then everybody is not going to be happy’.

Further, senior managers who are not ICT savvy assess the merits of e-Government initiatives. Senior managers who are not ICT savvy do not understand how ICT is used in the organisation or are under-prepared to understand ICT. These senior managers struggle to make decisions, as demonstrated by the following comments from informants:

‘So it’s a crisis management [in relation to ICT projects]. It’s not a management by objective’.

‘They [senior managers] can’t see that [in relation to the ICT project], if they do this like this [make a particular decision], the consequences a year, two years, three years, probably get down the line, is going to be that…’

However, if an ICT person is able to package the problem and solution in an elegant, trustworthy and understandable manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal. Packaging the problem refers to the manner, then the senior management will be inclined to accept the proposal.

‘If I went to my leadership [director] with a problem and I said, look, we have to spend 5 million rand, doing a particular thing and that particular thing would enable the project to go live more smoothly, you know, the questions would be around budget availability and all that and does the cost justify it. But once they are satisfied with the fundamental information, they would then support me’.

In addition, senior managers in government are being reassigned or are being moved horizontally within the government to other posts in different departments. These types of movement have an unsettling effect on the organisation or are under-prepared to understand ICT. These gaps in understanding create challenges that subordinate members of staff recognise, but in most cases they are unable to do anything about these challenges. Senior managers’ lack of understanding of how ICT is applied in government leads to the problems regarding the appropriate use of ICT. The narrative excerpts from the informants illustrate that there are gaps in understanding (Singh 2013) by senior managers on how to effectively use ICT. These gaps in understanding create challenges that subordinate members of staff recognise, but in most cases they are unable to do anything about these challenges.

Problems regarding the appropriate use of ICT

The problem regarding the appropriate use of ICT in government is a phenomenon that is characterised by a low level of understanding of how e-Government applications are developed and designed. This is demonstrated by the following comments from informants:

‘I think a lot of them [senior managers] don’t understand information technology, they don’t understand what information technology can do and sometimes when a project has possibly been not successful or it’s been floored they may have a negative view about information systems what they can do’.

‘the application of ICT in particular areas of government is seen as a ‘foreign concept’, for example the application of voice recognition applications’.

Also within the government there is strong scepticism amongst civil servants as to the creditability of the information produced by e-Government applications, as demonstrated by the following comments from informants:

‘I think that is in their minds [managers and directors], I think in a way they are still sceptical about whether the system has really managed to get them the information that they are looking for’.

‘You see, even if you [managers and directors] are afraid to take that step you will also not trust those systems that keep that data, yeah’.
Next, senior managers are in ivory towers or are disconnected from the realistic application of ICT. Senior managers who are in ivory towers do not understand how or when to use ICT appropriately, as demonstrated by the following comments from informants:

’a senior manager team would make a decision to implement something and even a guy that is at a level below me ask him a question that should have been asked by one of his peers in the meeting where they made a decision and you know, they don’t respond’.

‘...it is very painful or sad because you sit in a meeting with senior management, executive management of the organization and you would see your CIO giving information that does not make sense there, but you can’t say it to them and even when you come back and say you know what you have committed to this thing, and that’s not the way you are doing, you are going to have problems here and here and here and being the way they are they will never go back and say you know what I made a mistake maybe you know for what reasons but I believe that if you go back and say you know what I think this might not work and come up with an alternative before you can spend the money they might respect you and trust you’.

‘But the senior managers [directors] they don’t see that problem because it’s just too distant from where they are sitting. It sounds like a very logical business requirement because everybody is using like this’.

A further reason why there are problems regarding the appropriate use of ICT in government is because some senior managers do not lead by example and use the technology at their disposal, as demonstrated by the following comments from informants:

‘Some of the very senior people won’t even use a PC, some of them won’t even type a word, some of them don’t even know how to type in Word. So it’s a huge challenge. It’s a difficult thing, but the organization works around it’.

‘...secretaries answer all their bosses’ email’.

Because senior managers are not using the technology and have downward delegated the management of their communications, a level of bureaucracy in the organisational process is created.

The narrative from informants illuminates that there is a lack of appropriate ICT knowledge (Pihir, Tomicic-Pupek & Androcec 2013) amongst senior managers. This leads to a situation where it is a challenge to introduce, design and develop e-Government systems. A further consequence is that the entire process of delivering an e-Government system becomes slow.

Problems regarding organisational process

There are several types of organisational process problems (bureaucracy) that exist in government. These problems are agreed to bureaucracy, prolonged bureaucracy and difficult bureaucracy. Agreed to bureaucracy is a bureaucracy that all key stakeholders have negotiated and agree to, as demonstrated by the following comments from informants:

‘...we decided to go through a committee structure in order to make sure that the decision making is appropriate’.

’It is a bureaucratic approach but it’s an agreed process on both sides, that is, the change request procedure that you would follow’.

‘Any project or any initiative that needs to be approved goes through the IT steering committee, and essentially after that goes to the head of department for approval. So nothing happens in the IT space without approval from the head of department’.

Prolonged bureaucracy is a bureaucracy that is characterised by prolonged delays in time before any action can be taken, as demonstrated by the following comments from informants:

‘And that put the whole thing [ICT initiative] in another year, took another year to get everything signed. And struggled to trace where the documentation was and what was holding it up’.

‘...it [approval] can take long, very long, what I mean by long is it’s not a measure of few days or just a week, it can take very long because people have to sit and because ICT is a bit specialized, there aren’t many people who are able...’

‘After 16 months of trying [seeking approval], there’s a lot of, the internal processes are very sluggish, very, very sluggish’.

Then there is difficult bureaucracy. Difficult bureaucracy is characterised by ambiguities within the organisational process, as demonstrated by the following comments from informants:

‘We have many levels of management. In fact to be precise I think we have 22 levels of management’.

‘...but most of the time it’s budgets are the problem. In order to get something done now, in the next financial year in March, you should have motivated for it long, long time ago, early last year already so that it’s on the radar’.

‘I do not know how to make contact with another department, can I phone them, must I ask the DG [Director General] to phone them, and it’s bad’.

The bureaucracy of the government is associated with policies within the government.

This series of narratives from the informants illustrates an issue of poorly managed public expenditure that do not produce efficient public services because of waste, delays, mismanagement or poor organisational and management skills (Heeks 2000a).

Problems regarding policy

ICT policies regarding policy development within the government is a top-down approach. This is demonstrated by the following comment from an informant:

‘in every policy process, you have to go to -- you know once it’s been to top management [director general] and to the minister and then it has to go to the cluster’.

However, there are those managers who ignore the restrictive policies, as demonstrated by the following comment from an informant:

‘...they [directors] just say don’t worry about the policy but you know, you can be held liable for it’.

http://www.icbmd.org
doi:10.4102/jbmd.v5i1.4
Policies are only effective if there are well-coordinated strategies that support the policy.

Currently, within the South African Government there is no ICT policy or policy regarding e-Government applications. This creates a challenge as each department has different expectations and there are no policies to guide the department.

**Problems regarding clarity of ICT strategy**

In the case of the South African Government there is no ICT strategy. Although there is an ICT policy, the following comment from an informant demonstrated this point: ‘There is not an ICT strategy for government, okay’.

Informants did not want to openly discuss the government’s ICT strategy claiming that the ICT strategy has to come from senior government officials. This lack of a clear ICT strategy has an effect on the modernisation of the government.

In the absence of an ICT policy, there will be no ICT strategy. Each department has to develop their own strategy. It is difficult to develop a strategy when departments have competing mandates, limited resources and a poor understanding of ICT.

In summary, these institutional and environmental challenges have a negative effect on the introduction, design, development and implementation of e-Government applications.

**Limitations**

The primary limitation of this study was that only senior managers from the national government were interviewed. This is the first study that interviewed senior managers in the government and there are no previous studies to compare the findings with.

**The theoretical conjecture**

The reported finding has been consolidated and refined to produce the following theoretical conjecture:

‘Driven by a poor ICT strategy and a top down management approach, senior managers in government experience challenges in understanding the design, development, implementation and the appropriate use of ICT. To bridge this understanding gap the following approaches has been adopted: if an ICT person can demonstrate the value of the project the senior manager is more inclined to support the proposed ICT project. The second approach is the use of ICT committees. These committees are plagued with crippling bureaucracy, which encourages informal communication channels. This leads to scepticism amongst civil servants. A further challenge is that senior managers in government are being reassigned with government’.

Figure 2 shows a graphical representation of the theoretical conjecture. Senior managers are affected by several challenges, and in an effort to manage these situations they develop coping strategies that have less than optimal outcomes.

**Practical implications**

This study has several implications for both the government and the state. It is incumbent on the present government, elected for a defined period of time usually 5 years, to ensure that the government officials that they deploy to head up different arms of the state are appropriately qualified to do so. The consequences of not doing so lead to a situation of conflict between the government employee and the state employee. This conflict situation has an adverse effect on state departments. The state employees, who are generally full tenure civil servants, become frustrated or disenfranchised or the managerial authority is decommissioned. This then leads to a situation where the vision of the government employee is difficult to achieve. For the successful design, development and implementations of any e-Government application, all key stakeholders, government and state need to share the same common vision and mutual respect for each other. Further, there is a power relationship between government employees and civil servants. Civil servants influenced...
by their ministers may attempt to be agents of change in technology. It has been known that ministers issue directives to their departments to implement particular systems within a pre-defined time period often attached to their term of office (Mooij 2007; Sudan 2002). The ICT personnel, who do not wish to disappoint the minister, hastily try to develop solutions and in their endeavours may compromise the development process. To minimise these types of power relationships, it is important to have clear management structures that are flexible and adapt to change. There are also managerial implications from this research. There appears to be a problem with managerial systems and structures that are designed to remove managers’ authority and replace it with difficult bureaucratic processes which leads to a situation where the technology is advancing at a much greater speed and the governments developing legacy applications. The management structure has to show a greater level of agility.

Thus, government should proactively engage with key stakeholders from the state to develop a common shared vision. E-Government applications have less to do with technology and more to do with the people who are the champions of these systems.

**Conclusion**

In the context of this study, the likelihood of e-Government applications being successful would increase if there is a shared and accepted vision between the government and civil servants. A certain level of harmony must exist between the two and civil servants must neither fear nor feel threatened by government representatives. e-Government applications are only a tool by which the government executes the mandate of their constituents, but the success is dependent on the people entrusted with the execution of the application.

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