

Information Systems Innovation in Public Organisations: An Institutional Perspective

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Purpose

The paper takes an institutional approach to the analysis of organisational-level challenges of IS innovation in public organisations. It seeks to answer the question: how can the challenges of IS innovation in public organisations, presented by the interactions between IT and public bureaucracy, be explained and addressed?

Design/methodology/approach

Empirical study approached with an interpretive philosophy that influenced the gathering of qualitative evidence.

Findings

The analysis reveals the institutional tensions between the low-entrepreneurial ethos of public organisations and the efficiency principle of information technology (IT).

Practical implications (if applicable)

Public bureaucracy should be adjusted by de-institutionalising its variable characteristics such as standardised and centralised employee roles and information. Information technology should be adjusted by restraining commitments to and expectations in public organisations.

Originality/value

The paper argues that the primary principle of IS innovation should be institutional adjustments of public bureaucracy and information technology. It informs e-government policy makers to think primarily about the institutional relations between IT and public bureaucracy.

Keywords: Information systems innovation, public organisations, public bureaucracy, information management, e-government.

1 Introduction

Advances in information technology (IT) development have engendered pressing demands for public organisations to adopt them to consummate information systems (IS) innovation. IS innovation is defined as an organisation's application of IT to make its processes more efficient and effective (Swanson 1994, p.1072). However, IS innovation in public organisations are confronted by challenges of IT integration (Chisholm 1988), as witnessed in the high failure rate of government IT projects worldwide (Fountain 2001). These challenges have recently engaged the attention of information systems (IS) and e-government researchers. They have attempted to explain and address these challenges, but their models are limited for the following reasons.

Firstly, some researchers mainly focus on the relationship between the public organisation and the public, without much attention to the internal organisational processes (e.g. Dunleavy et al. 2005, Cordella 2007, Heeks 2001, Chadwick and May 2003). For this reason, information management as an important antecedent of the organisation's interface with the

public is left unanalysed. Secondly, even if internal organisational processes are focused upon, researchers adopt overly situated perspectives that result in organisational- or micro-level analysis at the expense of institutional- or macro-level analysis (e.g. Irani et al. 2007, O'Donnell et al. 2003, Bellamy and Taylor 1998). A few exceptions are Cordella (2007), Henriksen and Damsgaard (2007), and Fountain (2003). In so doing, the role of historical institutional antecedents are excluded in explanations of IT integration in public organisations. Thirdly, many approach IT integration with overly high degrees of IT optimism and determinism (e.g. Heeks 2001, Fountain 2001, Osborne and Gaebler 1992, Kim et al. 2009). IT is so highly privileged that only organisational issues such as people, information, systems and change are problematised. Thus, apart from a few exceptions (e.g. Kraemer and King 2006), explanations of IT-related organisational change virtually leave the IT as a constant attribute. As a result of all these limitations, extant models preclude explanations of how the *institutional* relationship between IT and public bureaucracy shape information systems (IS) innovation in public organisations.

This paper, therefore, seeks to address these limitations by answering the question: *how can the challenges of IS innovation in public organisations, presented by the interactions between IT and public bureaucracy, be explained and addressed?* It takes an institutional approach to the analysis of organisational-level challenges of IS innovation. One aspect of this perspective is the consideration of IT as an institution in its own right (Avgerou 2000). Considering IT as an institution allows for explanations of how it exerts an independent causal influence. To this end, the paper avoids the taken-for-granted idea that IT deployment in public organisations depends on rational analysis of its value. Thus, while the paper takes an institutional perspective, it, at the same time, focuses on organisational processes. This focus is important because “only with an effective internal processing of information can the citizen and business be better serviced” (Henriksen and Damsgaard 2007, p.14, see also Andersen 2004). Through the analysis of the information management challenges faced by a British local government authority, it argues that the primary principle of IS innovation should be institutional adjustments of public bureaucracy and IT.

2 Information Systems Innovation and Institutions

Innovation in an organisation refers to “the adoption of an idea or behaviour that is new to the organisation adopting it” (Daft 1978, p.197). The novelty of the idea usually leads the organisation to better address its internal and external environmental opportunities and challenges. To this end, organisations operating in the current environment of rapid IT innovation and resource scarcity are coerced to innovate to become more efficient, more effective, or even to survive.

Swanson (1994, p.1072) defines IS innovation as an organisation’s application of IT to make its processes more efficient and effective. But this definition suffers from the problem of IT determinism and optimism because it privileges IT as the unquestioned agent of IS innovation. Avgerou’s (2002) definition avoids this problem and presents a desirable framework for the analysis in this paper. She defines IS innovation as “IT innovation and organisational change, whereby both the IT items and the individual organisational actors involved are part of institutionalised entities, that are historically formed durable, but dynamic, heterogeneous networks” (p.64). She explains IS innovation by emphasising the interactions between the network of heterogeneous actors involved in the innovation. The

heterogeneity in the network is represented by actors such as hardware, software, data, IT developers, vendors, users and consultants (cf. Lanzara 2009).

The mutual interrelations between this range of heterogeneous actors remove any presuppositions or accepted assumptions about the determining capacity of technology or society. Neither the social nor technical determines the other, signifying that socio-technical relationships can be understood in terms of the outer socio-technical context of the network, including its institutional history. Therefore, “IS innovation should not be limited to revealing the mechanisms of the interrelations of humans and technology under power relations which just happened to be so, that is, without considering the history of social conditions that have shaped them” (Avgerou 2002, p.66). The outer socio-technical context refers predominantly to the institutional fields of both IT and the bureaucracy, and also to politics.

The important role of the institutional context as a factor that bears on organisational interactions is a popular argument in institutional and organisational theory (e.g. Meyer and Rowan 1977, DiMaggio and Powell 1983, Oliver 1991). An institutional structure is an order which is imbued with time-honoured values. These usually induce specific attitudes (e.g. low-entrepreneurial ethos) among employees in organisations. Furthermore, institutions are “social patterns that, when chronically reproduced, owe their survival to relatively self-activating social processes” (Jepperson 1991, p.145). Institutional structures bear on the details of what happens in organisational interactions – in the operational details which innovation is an instance.

Therefore, understanding the role of the institutional field of IT is important because IT is an institution in its own right (Avgerou 2000, Avgerou 2002). The institutional essence of IT is summarily explained by Avgerou (2000) in terms of the established value of technology for post-industrial society; an established array of professional experts devoted to innovating IT the established regulations for IT development and use; and powerful professional associations who promulgate standards of technology development and practice.

In terms of use, IT is now mainstream because of its ubiquity as witnessed in the global internet, in organisational local area networks, in various models of computers spanning from desktop to handheld, and in the increasing application of software to human problems and activities. In terms of epistemology, IT is also mainstream because it is a central issue in discussions of international development (Heeks 2010), of post-modernism (Blackler 1994), of organizational change (Drucker 1988), of control (Beniger 1986), of the information and post-industrial society (Webster 2006, Castells 2003), and of globalisation (Bensal 2001). Apart from these terms of its mainstreaming, IT is understood as an institution because the momentum of its diffusion defies even negative analysis of its value. Because of this, IT is ubiquitous in almost all fields of endeavour where it is deemed to be enhancing productivity.

Just like IT, the institution of bureaucracy has acquired its own momentum and has its own norms of good practice in modern organisation. Thus, although post-modern thinkers of organisational governance tout bureaucracy as an institution that degrades human dignity and they celebrate its supposed demise, it remains the best alternative to the market. Both IT and bureaucracy are distinct institutions with their own orders. The foundations of the bureaucratic order are different from the foundations of the technological order. The two orders interrelate in IS innovation, and this may involve other actors in a heterogeneous network engendered by the IT-bureaucracy relationship. To this end, “[n]etworks involving institutional actors do not grow at random, but result from alliances and tensions of forces at the junction of the institutional fields in which an information systems innovation takes place (Avgerou 2002, p.67).”

The upshot of this brief review is that the social and technical challenges that accompany IS innovation cannot be understood sufficiently without relating situated events to their institutional, historical and professional contexts. When organisations adopt products of IT innovation to explore new management opportunities and exploit existing ones, explaining the accompanying change becomes a matter of critical necessity for the theorisation of IS innovation. Yet, “while business innovation now depends increasingly on IS innovation, the nature and significance of the latter remains underexplored” (Swanson 1994, p.1070). This problem is even more pronounced in the context of public organisations because people, information, public bureaucracy and IT have received little attention in IS research.

3 Research Methodology

The empirical study was approached with interpretive epistemology (Walsham 2006) and critical realist ontology (Bhaskar 1978, Mingers 2004). Interpretivism influenced the gathering of qualitative evidence while critical realism informed the perception of IT as material, and hence, real and objective. An interpretive epistemology was adopted because employees of public organisations, being human, have varying belief systems and interpretations. The aim to understand the way the local government authority’s staff construed, conceptualised and understood their activities in terms of their approaches to information management made the examination of social reality and interpretive meanings held by subjects important (Bredo and Freinberg 1982a). The immersion of the problem in the local government context and subjective understanding of the reality in the context required would undoubtedly produce qualitative evidence. The focus on a local council and on its information management processes in terms of institutional influences makes the concept of contextualism (Pettigrew 1985b, Pettigrew 1987) very useful. Contextualism recognises the importance of multi-level contexts, taking into account not only the internal organisational context, but also institutional contexts. In contextualism, the main idea is to trace the dynamic interlinking among aspects or components within a given scope over time.

3.1 Research Approach

A case study approach (Cresswell 2007, Yin 2003) was used to understand the issue of IS innovation challenges presented by the public organisation context. This issue was conceptualised through an exploration of its manifestation in 2002 at London’s Lambeth Borough Council (LBC). To this end, particular attention was paid to the Council’s information management processes in the face of IT and public bureaucracy. In consequence, the illustration highlights the dynamic behaviours of the main elements of information management – people and information – in response to the institutions of IT and public bureaucracy. The case strategy does not limit altogether the generality of the proposed perspective because “generality is a property of the necessary relations in real structures” (Tsoukas 1989, p.551) exemplified by IT.

In operationalising this approach, purposive sampling (Cresswell 2007) was used to select particular staff of the Council from whom data were collected. Purposive sampling was used because some of the staff had more relevant and adequate information about the issue than others. Some of these staff could only be identified as key informants through earlier responses from others. Thus, the appropriate sample of informants was chosen subjectively

according to their relevance to the issue of IS challenges in public organisations. However, the case study approach and the critical realist ontology together provide sufficient grounds for the transferability of aspects of the paper's contributions.

3.2 Data Collection Methods

Data were collected from meetings, interviews, documents, the Internet, and the Council's intranet in accordance with Yin's (2003) recommendation. These multiple sources were useful for ensuring the veracity and dependability of the data, as well as the credibility of the interpretive epistemology adopted.

Meetings: The study began with two meetings held with a senior director and a member of the IT Strategy and e-government team. The information obtained from these two meetings (held a week apart) shaped the research problem and was used to prepare interview guides. These meetings were convened by the senior director and yet served as an important source of information about other key informants in the Council. No other meetings with the Council's staff were held for the purpose of data collection because the data obtained from the other sources were sufficient for analysis.

Interviews: Open-ended interviewing was adopted in which senior managers were asked questions leading to discussions of the value and degree of appreciation of information management. The open-ended approach was considered important because "when interviewees elaborate, their language reveals attitudes, morals, beliefs, opinions and feelings" (Kendall and Kendall 1993, p.169). The aim was to gain an insight into the contextual and inter-subjective perceptions about past information-related decisions and the value placed on information handling. The following procedure was followed in the investigation of information communication and use. First, an elected Councillor - representing the executive board and also as a customer who uses the council's information - was interviewed. Second, based on some responses in the first interview, a senior Director and a member of the council's Strategic Management Board (SMB) were interviewed. These interviews sought their views on current information related problems, senior management views on IT and current e-government practice. Third, two members of the IT department were interviewed one after the other, with the aim of obtaining IT-based information particularly those concerning electronic presentation of information to the public. Then a comprehensive and detailed questionnaire was e-mailed to the head of IT of the council. The e-mail questionnaire aimed to obtain information on IT architecture and processes. Each interview lasted for about forty minutes and was tape-recorded. The transcript of each of them was returned to the respective respondent for comments and adjustments. These were used to build a validated case description and assessment (Smits et al. 1997) of information management for e-government from different perspectives.

Documents: Existing documented materials such as the council's ongoing Business Improvement Strategy (from 2001 to 2004), the micro-plans drawn by the councils various functional departments, and other reports published on the Internet by the UK e-Envoy were undertaken. These sources served as benchmarks, guides and comparables with regard to the information obtained from the interviews. They also acted as the structures into which an e-local government information management strategy will fit.

Internet and Intranet Analysis: The council's internet and intranet sites were also studied. This study examined documents search and the security measures applied to ensure

difference between internet and intranet information. The aim was to gain a personal insight into the seriousness of the search problem reported by interviewees.

3.3 Data Analysis

Data analysis was approached with deductive reasoning (Van de Ven 2007). By deduction, the theoretical premise, 'IT as an institution,' was used to analyse LBC's information management, which was a specific aspect of the case embedded in it. Deduction was adopted to explain why the social and technical challenges of IS innovation cannot be understood sufficiently without relating situated events to the institutional contexts. The key themes of information management (information, people) were identified in the case and used to categorise the Council's existing information management experiences into two corresponding groups.

The institutions of public bureaucracy and IT were also used as themes to relate to the themes of information and people. This was important for gaining a systematic processing of the data into concepts. The relationships produced a two-by-two framework – two groups of existing experiences that pertain to public bureaucracy without IT, and two groups of expected experiences that pertain to the introduction of IT. In this analysis of themes (Cresswell 2007) the actual human and information attributes drawn from the institution of public bureaucracy were compared with the expected attributes drawn from the institution of IT. The comparison of the attributes clarified the conceptual tensions between the two institutions, and enabled a systematic understanding of the real tensions that were identified in the case.

4 Environment of Information Management at LBC

The empirical component of this research, conducted in 2002, focused on LBC as the empirical case. LBC is the local government authority for London Borough of Lambeth (LBL). LBL is one of thirteen Boroughs of the Greater London area and occupies almost a central position in it. LBC's central aim of public services delivery presented immense challenges. It was in competition with other local councils in terms of Best Value Performance (BVP). BVP indicators had been formulated by the central government to provide a nationally consistent framework for measuring progress in public services delivery. The emergence of the Internet and World Wide Web imposed even greater challenges for BVP. Yet, at the time of this study, the council had not prepared a formal information and knowledge management strategy to guide its information-related decisions and operations. The state of information in the council corroborated a history of *ad hoc* information related decision-making in the council.

LBC was making efforts to accelerate the steps towards meeting these e-government BVP targets, but only as far as *providing information* and *consultation* which were online, with the rest at the rudimentary stages of planning. Even with information provision, interviews indicated that searching for council documents online was frustrating.

With over 10,000 documents scattered on its website, the council seemed to lack the appropriate search software to make online document search easy for its customers. Besides, metadata tagging of the documents was poor. The ability of the Council's website to support smooth documents search by the public was important with regard to accountability,

information retrieval and retrieval times, and empowering the citizen with the information resource. Citizens' rights to access documents on the council's website had been given legal backing in the Freedom of Information (FoI) Act 2000. Thus, the council had a significant problem to tackle.

Organisational Processes

LBC's processes reflected personal and political power relations. The political processes thrived in unison and in various degrees of domination within the information handling processes. According to a member of the SMB,

"[There are] a mix of all of them! Actually, there needs to be another [process] – random – because a lot of the time, decision-making processes have reflected crisis management and expedient solutions. But I would say that the political type is a generally true feature that permeates everything."

'Random' processes reflected in senior managers' attitude to IT. Although IT was embraced by them as a useful tool in the Council's operations especially e-governance, it was evident that IT had been isolated instead of being fully integrated into service delivery operations. As a result, a lot of middle managers were either circumspect or, at worst, doubtful about the prospects of IT.

"[Senior managers] see IT as an overhead. They have a long way to go to recognise the value and power of what is available on the desks of their staff. There are very few areas where process management and automation has been used to improve service delivery and/or cost." – Head of IT.

"We don't have good processes that we could easily automate. We still have lots of paper-based systems. The bulk of work is to make the processes work properly today before we can then automate." – a Councillor.

The council had planned to integrate information systems strategy with business strategy. There was sufficient evidence from the numerous BV Review reports and the council's objectives that pointed to attempts at alignment. Besides, its information systems were disintegrated and impliedly did not support collaboration of efforts from various divisions of the council.

"[There is] too much duplication, too little cohesiveness between departments" – Head of IT.

"We had a history of managers spending their money as they wanted and they often did their own thing without thinking about what the person sitting next to them would be doing, and what the department next to them would be doing" – a Councillor.

Information management and culture

There did not seem to be any formalised mechanisms instituted to facilitate organisational learning at LBC.

"On organisational learning, my observation is very poor on things like learning from past strategic experience through controlled experiments and executive seminars. We are not really a data-driven organisation." – Director of Culture change.

Organisational learning in the council was in this poor state because of its organisational culture. For instance, it was loosely assumed that every section of the council would play some minimum role towards effective and efficient use of information albeit unsystematic and disintegrated. The e-government and BV wind was blowing across the council, apparently because it was being enforced by the central government. But commitment levels were low among some managers and lower level employees, and the roles of various

participants seemed disjointed. This was an immense challenge in terms of culture change. It was clear that the new ideology that was required to catalyze the change process within the council was not available, even at the management level.

“I think there is a real historical legacy here. Managers have had to make decisions without having [the required] information. Because there haven’t been any information systems in place, they have usually made decisions based on inspiration, talking to few people, and often being quite successful in doing that.” – Director of Culture Change.

Besides, fear of redundancy among lower-level staff was a significant factor that impacted negatively on commitment levels to changes in information handling within the council.

There was also a general lack of true understanding of what is achievable through the use of IT in the council. Even though many of the employees had a sense that computers and IT can do a lot of things, there were still many who were just not aware of how they could be used to enhance their activities. As a result, there was low use of IT in the council. It was observed that almost all desks had workstations.

“In terms of internal processes, I think as an organisation, we are not all good at using and sharing information. The fact that e-mail exists helps a lot but that mean that every manager is very heavily dependent on e-mail. We don’t have shared drives, and we don’t have bulletin board areas or anything like that.” – member of SMB.

IT operations were intended to support business objectives. According to the Head of IT, although his department had specific objectives, there were no clearly defined strategies to ensure efficient and effective alignment of IT and business innovation.

5 Public Organisations and Challenges of IS innovation

LBC’s efforts to integrate IT is an interesting example of the challenges of IS innovation in public organisations. The case suggests that attempts at technology integration both for information and knowledge management are fraught with serious tensions between IT and public bureaucracy. This means that a mere focus on information management in the organisation without understanding the institutional constraints will not yield holistic explanations. The following analysis hinges on the integral components of information management – information and people. Each of these components is further analysed in terms of the institutions of IT and public bureaucracy to show the challenges facing IS innovation and how they can be addressed (see Fig. 1).

5.1 Relationship Between Public Bureaucracy and People

Public bureaucracy as an institution had considerable effects on the employees of the Council and their activities. Public bureaucracies are characterised essentially by a low-entrepreneurial ethos. They operate with a basic principle of equality and impartiality in their provision of services to citizens, thereby enforcing democratic values. They are perceived as “instrument[s] through which democratic states enact their political choices” (Cordella 2007, p.270). Grounded in this ethos, local councils operate as low-entrepreneurial bureaucracies (Özcan and Reichstein 2009, Moe 1990). This ethos is a context that affected the employees of the Council.

For instance, their exhibition of random or ad hoc processes constituted enactments of political organisation that is very typical of public bureaucracy. The employees’ political

decision-making processes that reflected crisis management and expedient solutions are reactive (rather than proactive). According to Moe (1990, p.127-127), the necessity for compromise in politics calls for expediency and effectiveness rather than efficiency in the design of public organisations. These processes exhibited by the employees of the Council also reflected their limited knowledge. Limited knowledge is usually caused by information barriers that prohibit information sharing and awareness creation between employees. Thus, there was too much duplication of information and too little cohesiveness between the Council's departments. The paper-based information moves slowly, is difficult to access, and contributes to the creation of barriers to information. Political processes thrive in environments saturated with information barriers, but they leave employees destitute of shared knowledge.

The employees' exhibition of low commitment to the Best Value wind that was blowing through the Council can be explained by the non-inclusive terms by which they were involved in the organisation. The social foundations of the bureaucratic order are the non-inclusive involvement of employees in organisations (Kallinikos 2004). Only the individual's role (not the full person) is involved in formal organising. The effects of non-inclusivity are over-specialisation, limited discretion and low inclination to initiative-taking. The rules of public bureaucracy do not leave room for employees to exercise discretion and take initiatives. Özcan and Reichstein (2009, p.606) even argue that a chief concern among public employees is their "diminished sense of impact." Commitment to BV would entail the Council's employees' initiatives and contingent behaviours, especially on their use of digital information and collaborative information systems to make decisions based on information rather than inspiration. However, bureaucratic rules are purported to exclude these behaviours. It would also entail employees' efforts to be recognised and rewarded, but their sense of inability to make any changes holds them back.

Another effect of the non-entrepreneurial ethos of public organisations was witnessed in managers' decision-making by intuition and inadequate information. Efficiency demands the use of rational processes to make decisions. However, in the public organisational context where expediency is the normally accepted principle, people are allowed to compromise on efficiency and act intuitively (Moe 1990). Besides, when managers encounter inadequate or hard-to-find information because of paper-based information systems, they are likely to make decisions by intuition. By intuition, decisions become unaccountable because they cannot be measured to any significant degree of accuracy. This can easily lead them to act without any transparency, and without fear of being sanctioned.

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5.2 Relationship between information technology and people

Information technology as an institution was envisioned to address all the problems that employees of public organisations face due to the effects of bureaucracy. IT integration in public organisations aims at their root – the low-entrepreneurial ethos – to induce high degrees of entrepreneurship among employees. This form of market-like entrepreneurship in public organisations has been the predominant philosophy of the new public management (NPM) reform agenda (Gruening 2001, Osborne and Gaebler 1992). The NPM agenda

proposes a radical change in the underlying logic of public organisations, and in the parameters of assessing actions therein. Its fundamental assumption is that public bureaucratic organisations that aim for *effectiveness* must be reformed to aim for *efficiency*. Pollit and Bouchaert (2004), for example, explain the agenda in terms of adopting a more customer-oriented attitude that is very typical of market organisations to enhance efficiency and productivity. At the time of this research, this agenda had highly informed the BVP ideal that was being propagated by the central government. But, interestingly, the efficiency or market orientation of the Council's employees through IT did not materialise. This is because those efficiency ideals of IT were challenged considerably by low-entrepreneurial attitudes and expedient actions of the employees.

Thus, employees had poor understanding of the value of IT that caused management to perceive IT as overhead. The true value of IT can elude even private profit-oriented organisations as witnessed in the "productivity paradox" (Brynjolfsson 1993). But the problem is worse in public organisations because of how actions, including IT-related ones, are less transparent and measurable. The envisioned value of IT, informed by NPM-based Best Value Practices, was to make actions more transparent, measurable and efficient. The institution of IT is imbued with an efficiency order borne of the entrepreneurship in its production and consumption. IT production is now a predominant aspect of the global economy (Avgerou 2000), as witnessed in the emergence of giant internet and software businesses and their high-valued technology stocks in the international exchange markets. IT consumption is also commonplace in organisations' innovation initiatives aimed at gaining competitive advantage. In both production and consumption, metrics are used to approximate the value of IT as means of judging efficiency. However, public organisations are not even judged by efficiency (Cordella 2007, Moe 1990, Williamson 1999) but by effectiveness in delivery of services equitably and impartially. Employees' poor understanding of the value of IT, thus, lied in their judgment that it was largely impotent for effectiveness in the public organisational context.

Another challenge was witnessed in senior managers' perception of IT as overhead. An overhead is a property to be maintained. It is an expense of organisational operations, but generally understood to be an asset that does not contribute directly to profits or benefits. This perception resulted from the managers' random or ad hoc decision making processes which are enactments of political organisation typical of public bureaucracies. Political organisation reflects effectiveness in delivery of public services, especially when the democratic principles of equity and impartiality must be satisfied. When these principles are in mind, as it was in the Council, its Best Value Performance would only render IT as a mere help to the traditional public bureaucratic procedures. The increased number of citizens and public organisations; and rising demands, production, and exchange of information between citizens and public organisations have increased the complexity of administrative processes (Cordella 2007). What was required to deal with this complexity is effectiveness through ad hoc decision making, and not efficiency. It is conceivable that IT was not perceived by senior managers of the Council as strategic to the cause of effective public services delivery, but just helpful.

5.3 Relationship between public bureaucracy and information

The low-entrepreneurial ethos of public bureaucracy reflects the nature, media, processing, and systems of information in it. Thus, the poor information sharing between employees of

the Council can be explained in terms of these descriptions of information. The paper-based media that bear information in public organisations inherently inhibit information sharing. This is because reproduction and dissemination of information with these media are relatively expensive, and therefore prohibitive. Movement of information with these media is slow and cumbersome, inducing the generation of information silos and barriers.

Beside the media, the information culture of employees can explain the poor information sharing. Alavi and colleagues (2005), for example, argue that employees will share information if their organisation operates a group reward scheme; and they will not share if the organisation operates an individual reward scheme. Individual reward schemes are prevalent in public organisations because of the high degrees of specialisation associated with employees. Skills specialisation coupled with on-the-job training increase the transaction and opportunity costs of leaving public organisations (Özcan and Reichstein 2009). Employees are, therefore, induced to protect their roles by keeping information tacit instead of sharing to make them explicit. This results in the “stickiness” of knowledge (Brown and Duguid 1998) in particular specialisations at the expense of others.

Another factor contributing to poor information sharing is the less efficient information processing systems in the form of paper folders and cabinets that were ubiquitous in the Council’s offices. The processing of information with these traditional technologies is very customary and routine because these technologies have a high propensity to form a labyrinth of information (Ciborra 2002). Such labyrinths encumber and decelerate the flow of information between units in an organisation. Paper-based media, sticky knowledge, and inefficient systems together explain why managers in the council were making decisions without adequate knowledge.

5.4 Relationship between information technology and information

IT as an institution is believed to engender efficiency in information capturing, processing, storage, and dissemination. This belief rests on the digital nature of computer-based information which makes it very amenable for easy sharing, for informing citizens through its website, and for enhancing citizens’ search for information on the website. Easy information sharing through IT would have resulted in the “leakiness” of knowledge (Brown and Duguid 1998) across specialisations in the Council. But the reality was “sticky” knowledge.

The poor design of the Council’s website and the poor search reflected poor use of internet technology to inform citizens about the various services being offered. Information provision through the website signifies ‘pushing’ by the Council, but information search signifies ‘pulling’ by citizens. The poor use of the technology is attributable to the poor understanding of the actual value of IT by employees. It is also attributable to mismatch between the demands of using internet technologies to inform citizens and the responses by employees to them. Managing information on a website demanded constant updating of the pieces of information and tagging them with the relevant metadata according to established standards of Best Value Practices. These would depend on both responsiveness and initiatives of the employees. However, the dependence on employees’ initiatives for providing timely and accurate information to citizens through a website seems to be a monumental challenge. This is because, rewards and promotions are not necessarily tied to employees’ contributions in public organisations (Özcan and Reichstein 2009). Therefore, it is difficult to suddenly turn to depend on employee initiatives for information sharing, and knowledge creation and

synthesis. It is likely they will not be motivated to match the demands of IT with their responses.

6 Discussion

The institutional approach to the analysis informs us of the tension between information technology and public organisations. This approach has unearthed the remote institutional orders underlying public bureaucracy and information technology. It informs us of the gulf between expectations from IT and the reality of operations in public organisations.

Based on these, the paper argues that socio-technical relations of IS innovation should be understood, first, at the institutional level before the organisational level. At the organisational level, the mutual shaping between IT and operations as well as their effects is sought with a practice perspective (Schultze and Orlikowski 2004, Orlikowski 2000). Based on this level of analysis, public organisations are perceived as the objects of transformation in IS innovation with promises such as improved transparency, accountability, efficiency and marketability (Kim et al. 2009, Heeks 2001). At the micro-level, the functional order of IT is usually taken for granted while public organisations are scrutinised meticulously to understand the challenges of IS innovation. The problem with this level of analysis is that it induces overly high degrees of optimism about IS innovation as it overlooks the momentums driving the institutions of IT and public bureaucracy.

However, if the challenges of IS innovation are analysed from the macro-level or institutional perspective, as in this paper, greater circumspection will be exercised when addressing the challenges. The institutional analysis proffered by this paper leads to the argument that the primary step of IS innovation is to understand the unquestionable forces behind the orders of IT and public bureaucracy as well as their implications for information management. It seems that this institutional perspective was lost on the authorities of the Council. They were depending on the organisational perspective which advertently or inadvertently made them optimistic that IT could be used to rationalise some of their operations. However, the primary step of IS innovation is not to think of rationalising bureaucratic or low-entrepreneurial processes of public organisations with IT, or vice versa. Rather, it is to think of confronting each of the institutions with the aim of adjusting each of them to make it fit for alignment with the other.

Institutional adjustment reflects the old maxim of IS that says ‘if you do not sort out your mess before computerizing, you computerize the mess, and end up being worse off.’ But this maxim is losing its appeal because of increasing claims in the IS literature that computerization can be used to sort out the mess in high-entrepreneurial organisations (e.g. Gurbaxani and Whang 1991). But be that as it may, it has to be remembered that IT and high-entrepreneurial organisations share the same efficiency principle, making it easier to substitute non-computerised organisational processes with computerised versions. Therefore, the claims can be true in that context, but the Council’s experiences demonstrate that substitution may not be true in the context of public organisations. This is because, being a typical public organization, its principle of practice was effectiveness in equitable distribution of services to citizens, making IT substitution an imprudent and almost impracticable prospect. By this reasoning, IS innovation should be approached from the philosophy of relating IT and public organisations according to their institutional realities, not according to their organisational realities which engender high expectations from substitution, transformation, structuration and reform.

This paper's argument resonates with the works of Cordella (2007) and Dunleavy and colleagues (2005) who reject the efficiency goals of the NPM agenda. Cordella calls for e-government projects to apply IT to public bureaucracy with the aim of achieving the e-bureaucratic form. The e-bureaucratic form appreciates the enduring role of public bureaucracy in delivering public services effectively, as this paper argues. His discussion of this form, however, is limited because it takes IT for granted by refusing to problematise it. The Council's authorities also did not problematise it as they sought to use IT to substitute bureaucratic operations which were rather problematised. Indeed, the case indicates how any public organisation will most likely be inclined to take IT for granted without taking an institutional perspective. This paper, however, problematises both IT and public bureaucracy and provides a more holistic discussion of the relationship between them.

Dunleavy and colleagues' pronouncement of the death of NPM is supported by a critique of its many limitations, leading to their proposal of a digital-era governance model (Dunleavy et al. 2005, Dunleavy et al. 2006). Their critique is in harmony with that of this paper. But their proposal focuses on reintegration of various government organisations that were separated or privatised under NPM; on interactions between public organisations and clients in terms of the latter's needs; and on using digitisation as transformative rather than supplementary to organisational processes. Thus, digital-era governance privileges technological determinism and optimism in its tenets while this paper does not do so. The difference between the philosophies underlying the digital-era governance model and this paper's IS innovation argument is that the latter takes the institutional perspective while the former does not. Because of this, IT is perceived as an instrument for governance transformation in the digital-era governance model.

Fountain (2001, 2007), however, approaches IT integration in public organisations from an institutional perspective. In harmony with this paper's argument, she concludes that e-government efforts will not live up to their expectations if organizational and social institutions remain the same. Indeed, she argues, just as this paper, against substitution of social or organisational processes with technology (2001, p.80), claiming that e-government is not about technological capability but about overcoming entrenched organisational, social and political institutions. However, her approach does not consider technology as an institution, but as an instrument, leaving her institutional change arguments limited to public bureaucracy. With an instrumental, rather than institutional, view of technology, her analysis of it is confined to interpretive flexibility at the organisational level. Moreover, her institutional approach fails to show how institutional obstacles can be overcome to result in change. But this paper, taking an institutional view of technology, explains it primarily in terms of institutional change, and considers organisational analysis of technology as secondary. It also details, in the following sub-sections, how institutional changes in the spheres of public bureaucracy and technology can be achieved.

6.1 Suggestions for adjusting public bureaucracy

To approach IS innovation from the institutional reality of public bureaucracy is to think of sorting out the 'mess' in it without IT. If any processes in public bureaucracy are perceived to be messy or problematic and need sorting out, then that should be done by adjusting the institution itself rather than depending on IT. For example, if employees' attitudes are perceived to be problematic, translating into their messy information management processes, then these should be addressed by institutional change efforts.

One useful approach to institutional change in public bureaucracy is to understand it in terms of constitutive and variable characteristics of the bureaucratic order (Kallinikos 2004). The variable characteristics such as standardised and centralised operating procedures, which allow for distinguishing the contextual variations in bureaucratic forms, can be reassembled, recombined and reshuffled to deal with contingences that emerge. DiMaggio and Powell (1983) provide useful insights on the sources of these variable characteristics and how they cause institutional homogeneity in public organisations. Institutional homogeneity refers to those characteristics shared by public organisations to make them so similar. By their insights, public organisations are typical instances of public bureaucracy shaped by external constraints imposed by the state, employee migrations, and the professions. Interestingly, these sources lie outside the influence of public organisations, making it difficult for the changes to be initiated from the organisational level. The external influences make it even more difficult to depend on the instrumental order of IT to change the variable characteristics of the bureaucratic order. Changes in these external sources should be the bases of institutional adjustment in public bureaucracy that will, hopefully, translate into changes in operating procedures and employee roles. These will ensure faster information gathering, processing and transmission through public organisations, and timely transformation of decisions into courses of action. If the changes are not possible or slow, then the institutional reality should be acknowledged when thinking about IT adoption.

6.2 Suggestions for adjusting IT

To approach IS innovation from the institutional reality of IT is to think of adjusting the institution itself to make it fit for alignment with public bureaucracy. This is a call to depart from visions of appropriation of IT by employees and structuration of their processes at the institutional level. Institutional adjustment of IT can be achieved by restraining IT commitments and expectations in respect of the various IT projects ongoing or intended in public organisations.

Though quite unusual because of the unquestioned momentum of the IT institution in e-government projects, restraining IT commitments is a prudent choice for public organisations. It suggests a lowering of expectations from IT in terms of efficiency, rationality, and entrepreneurship, as in the NPM agenda. It also suggests aiming IT projects not at automating all public organisational processes, but only the few that are already reasonably rationalised and efficient. This will substitute those processes with automated versions, thus confining the regulative regime of technology to them only (Kallinikos 2009). The institutional reality of IT also suggests that they can be programmed to include a very wide variety of functions that can provide options for various users in public organisations. This means that the technology can be designed to accommodate high degrees of customisation. Aiming for technology that has this capability underscores the institutional adjustment argument of this paper because the technology itself becomes the target of transformation. Institutional adjustment of IT aims at making technology amenable and constructible by public organisations instead of making it the determinant.

7 Conclusion

The aim of this paper is to analyse, from an institutional perspective, the labyrinths of IS innovation in public organisations. An important aspect of this perspective is the perception of IT as an institution in its own right. Previous attempts at analysing IT integration in public organisations have approached the issue from perspectives other than institutional. This is in spite of the fact that ITs exhibit social structures that are chronically reproduced in their development, and owe their adoption and use by individuals and organisations to relatively self-activating processes. Institutional theorists refer to such phenomena as institutions. The oversight of IT as an institution has left unexplained how the institutional essence of IT relates with the established institution of public bureaucracy. However, the institutional analysis of this paper has enabled an application of the history of social conditions that have shaped the two institutions to the case of IS innovation at London's Lambeth Borough Council. The analysis has revealed that if each of IT and public bureaucracy are adjusted properly at their institutional levels, then their alignment at the organisational level will be less problematic. At the organisational level, their interaction in operations will be more effective and useful for equity and impartiality in the delivery of public services. Taking the institutional approach to IS innovation in public organisations is, therefore, important for analysing the tensions between IT and public organisations.

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