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Electronic records management systems implementation in the Pakistani local government

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Abstract

Purpose – The purpose of this paper is first to present a case study where standardized case handling processes have been transferred from a manual system to an IT system, and then to demonstrate the implications of implementing an electronic records management system (ERMS) in an environment – the Punjabi province of Pakistan – which is unfamiliar with the features embedded in ERMS.

Design/methodology/approach – The methodology is a case study with first hand data observations, meetings, log files and secondary data (reports).

Findings – Although ERMS implementation to date has been limited, the ERMS has led to increased efficiency and effectiveness of the government, increased transparency and accountability in decision making, and enhanced delivery of efficient and cost effective public services to citizens. Furthermore, the case indicates that IT implementation challenges are universal rather than dependent on the nature of the country.

Practical implications – Lack of adequate training and design of user interface are key indicators of the limited success of implementation of ERMS in the department under investigation. Power and control are major challenges in ERMS implementation in Pakistani government departments.

Originality/value – This paper investigates ERMS in local government in Pakistan, which is unfamiliar with the features embedded in ERMS.

Keywords Records management, Pakistan, Public sector organizations

Paper type Research paper

Introduction

When discussing IT in the public sector from an internal perspective, the agenda is often related to streamlining processes, efficiency and productivity gains. Many good arguments for why this route is not as straightforward as one could expect have been well described in the literature (see for example, Osborne and Gaebler (1992) and Fountain (2001)). Regardless of the pros and cons of efficiency and streamlining of processes, there is a rich tradition in the public sector of following the maxims of bureaucracy: precision, speed, unambiguity, and reduction of friction in case handling (Weber, 1922/1997). Max Weber identifies these as the ideal “organization of work” for governmental institutions and other institutions adhering to bureaucracy. One of the means for achieving this ideal organization of work is to standardize processes. Over decades, practices have built upon record keeping and records management, which generally apply a standardized format of case handling. These standardized procedures of case handling are today seen as fundamental building blocks of a functioning public administration (Barata and Cain, 2001). The practices and the efficient execution of the practices have, to some extent, been reinforced by the advent of e-government and the implementation of electronic records management systems



(ERMS) which promise advantages such as less coordination effort, higher quality, higher efficiency, and higher maintainability (Reijers *et al.*, 2003).

It is widely known that implementation of ERMS is a long and complex process (for example, Gregory, 2005). However, it is also recognized in the academic literature that implementation of ERMS is worthwhile due to the numerous benefits that ERMS holds (Johnston and Bowen, 2005). It is thus widely accepted that ERMS can lead to less coordination effort, higher quality, higher efficiency, and higher maintainability (Reijers *et al.*, 2003) and that it can stimulate transparency and accountability of government institutions (Sprehe, 2000), thus providing an unbiased, accurate and recorded account of responsibility (Engel and Wettengel, 2003).

One perspective which has caught our attention, in particular in the context of the study of local government in Pakistan, is the one presented by Barata and Cain (2001). They base their analysis on countries which have their “financial management systems established according to the British administrative tradition”, which is also the case with Pakistan.

The objective of this article is to present a case study where standardized case handling processes have been transferred from a manual system to an IT system and to demonstrate the implications of implementing an ERMS in an environment which is unfamiliar with the features embedded in ERMS. The case study focuses on the implementation of an ERMS in the local government of the Punjabi province of Pakistan. The Punjabi local government is a leader in the promotion of IT within government. Implementation of a regulatory environment, standards and office automation tools is therefore seen as a means to support this position. Before the launch of the new ERMS, the locally developed DocWrx system, which is a paper-based system, required manual data entries in diary registers. Additionally, searching for a document or file was very slow, and required manual shifting through large numbers of pages of diary registers at multiple officers’ desks. Several work processes were delayed due to lack of transparency in document handling. Moreover, citizens and businesses were not able to get instant responses to their queries. Office automation was seen as a key requirement to address these problems.

The article begins with a selected review of IS implementation literature, including the framework used for interpreting the implementation of ERMS in the local government in Pakistan, followed by a presentation of the concept of an ERMS and its implications for public sector institutions. The research method used, details about the case study organization and an analysis and discussion of the case are presented. The article ends with concluding remarks and a discussion of the implications of the study.

Implementation of IT systems

When referring to implementation of IT in organizations, we relate to the conceptualization provided by Kwon and Zmud (1987) who refer to implementation as the final stage in the organizational innovation process. Installation and maintenance activities take place during this stage (Kwon and Zmud, 1987) and the organization seeks to realize the expected benefits from the innovation (Rogers, 2003).

For decades implementation of IT in organizations has been a central topic in IS research and has been studied from several perspectives. Larsen *et al.* (2002) observe that explanatory factors related to implementation generally cluster around three overall themes: technological attributes, organizational attributes, and market

characteristics. This approach to the study of IT implementation is generally referred to as the factor oriented approach. The approach assumes that if certain characteristics are present, then successful implementation will take place (Wolfe, 1994). The factor oriented approach to explaining IT implementation has been challenged by researchers who argue that implementation should be viewed as a process consisting of a sequence of generic stages (Newell *et al.*, 2000; Wolfe, 1994) which may or may not contain attributes that go beyond positivistic measures. It is argued further that even though certain characteristics of the innovation and the potential adopting unit are present, this is not a guarantee that implementation will take place (Markus and Robey, 1988). Instead, more interpretative approaches to the study of implementation of innovations are suggested. One aspect of the interpretative approach is related to politics as explanation for implementation and, in particular, non-implementation (Markus, 1983).

The assumption in the political research stream is that IT implementation is associated with vested interests among stakeholders, and that these stakeholders act to influence the direction of implementation (Markus, 1983). As observed by Kwon and Zmud (1987), the political approach suggests an explanation for implementation that “many seemingly irrational or inconsistent implementation behaviors and outcomes can be understood when all of the consequences of IS [information systems] implementations on all stakeholders are considered.”

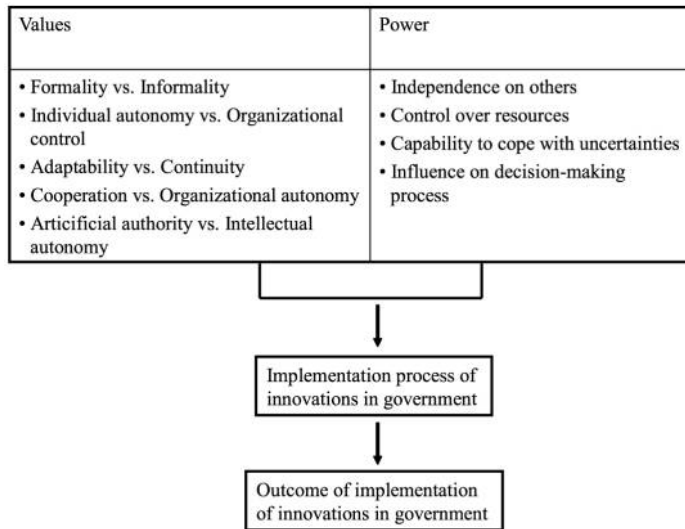
Meijer (2001) considers it a serious problem that IT generally is perceived as a simple tool shaped in order to fulfill the needs of an organization. Heeks (2002) provides a vivid distinction between the hard rational design and the soft political actuality in which technology is viewed as “a simple enabling mechanism” and “a complex, value-laden entity: a status symbol for some, tool of oppression for others.” It is often ignored that the shaping of the tool in itself can be highly controversial when applied to electronic records management in the public sector (Meijer, 2001). Meijer (2001) points out that problems can arise with respect to social relationships, privacy and social control, as well as system safety and social vulnerability. It is therefore necessary to move beyond a pure instrumental perspective towards a value perspective when analyzing implementation of ERMS in the public sector. Meijer (2001) articulates five potential value conflicts:

- (1) Conflict between formality and informality (on the record and off the record).
- (2) Conflict between autonomy and organizational control.
- (3) Conflict between adaptability and continuity.
- (4) Conflict between cooperation and organizational autonomy.
- (5) Conflict between artificial authority and intellectual autonomy.

In the present analysis of the implementation of an ERMS in local government in Pakistan, the power (Markus, 1983) and value (Meijer, 2001) perspectives are used as the interpretive frame. The research method used to explore the case of ERMS implementation in local government in Pakistan is positioned within this theoretical context (see Figure 1).

Electronic records management systems – aim, scope and challenges

For centuries, records have served as a tool for keeping track of events and as instruments of control. In recent history the colonial rules have implemented robust



Source: Adapted from Meijer (2001) and Markus (1983)

Figure 1. Framework for analysis of ERMS implementation in local government

mechanisms for record keeping so that assets can be monitored from a distance. Over time the tools for record keeping have advanced from the quill to the ink pen, and to the typewriter. All these means of record keeping have recently been outmaneuvered by the most radical technological change in record keeping and management, namely the computerization of processes. One of the latest chapters in that ode is the electronic records management system, ERMS, which is marketed as a panacea for records management.

For the purpose of this article, records management is defined as “. . . the process of managing the creation, maintenance, use and disposal of records throughout their life-cycle” (Thurston, 1997). Basically, records management represents the core of public sector activities; records are the institutional memory of any agency. Thus, records management is a tool for establishing internal and external accountability (Sprehe, 2000) and a means for creating standardized work-routines. There is a robust tradition for standardized work-routines in public administration: “The management of the office follows general rules, which are more or less stable, more or less exhaustive, and which can be learned” (Weber, 1922/1997). This suggests that developing an information system, which supports work in the public sector, should be more or less straightforward, given that procedures for handling cases are mostly rule based.

O’Shea (1997) argues that ERMS implementation is a strategic challenge rather than a technological challenge. We completely agree with this stance, but there are a few issues, which still have to be observed with respect to the technological perspectives, especially in a setting where a radical shift from manual record keeping to ERMS takes place.

Thurston (1997) argues that the management of all types of public sector records has become immensely more complex with the introduction of computerized

information systems. She lists the problems in terms of capacity to read, retrieve, decode or access electronic records. The reasons can either be due to poor entering of information and documentation at the creation of the data, meaning human error, or it can be due to software/technical errors, which make it impossible to interpret information later on. Lazinger *et al.* (2002) discuss the problem of preservation of digital records further. They argue that the storage of digital information creates new problems, related to technological obsolescence. Data once stored on digital media have to be transferred when new media are introduced. Another challenge is backward compatibility. When software is updated, institutions have to make sure that old records can actually be read in the new version of the software. Institutions, which implement ERMS have to be aware of these challenges and the costs, given that public sector institutions often have an obligation to keep records for a long time. The listed concerns represent some of the technological challenges, which create demands for new administrative routines.

Another concern, beyond pure managerial matters, relates to the legal status of electronic records. Discussions about what is to be defined as a record (Sprehe, 2000) have their offspring in law, the ultimate goal being to reach a point where it is ensured that electronic records are just as legally acceptable as paper records (Waldron, 2004). Traditionally, records have represented a particular category of information, given that they have evidentiary value and can be legally verified (Thurston, 1997). Pakistan is in the process of implementing regulatory initiatives, which aim at supporting the transformation to a digital society. Effective implementation of ERMS must take into account the legislative and policy environment and, as observed by Barata and Cain (2003), one approach may be effective in one country while it is not appropriate in another setting due to the environment in which the implementation takes place.

Research method

Qualitative data was collected in Pakistan over a period of 18 months and during four visits. The case material consists of primary and secondary data. The authors collected primary data consisting of direct observation and interaction with stakeholders in the department where implementation took place. Interaction mainly took the form of visits to the unit where the ERMS was implemented and seminars where benefits of IT in government were discussed with managers from local government. The role of the authors was to act as experts within the domain of IT in the public sector. They also had close interaction with the local software developer in personal meetings, on-line interaction and via e-mail. Data on usage of the system were extracted directly from the system by the software developer. After implementation of the software, the developer still had direct access to the system. Secondary data included descriptions and documents from governmental units and the software developer's involvement in the project.

Shortcomings of the data-collection method used include lack of control of validity of opinions stated by informants, limited choice of informants and the researchers' unfamiliarity with the environment. These potential sources of error are closely interrelated. The researchers, from Denmark, were solely dependent on the informants that were placed at their disposal by the software consultant who was the local link with the representatives of local government in the Punjabi province. Cross checking of information was not possible because of the controlled selection of informants.

Unfamiliarity with the local language and culture prevented insights from informal communication and actions.

When doing a case study it is important to understand informal communication during breaks, etc. Although the informants were very polite, speaking English when addressing core issues, the local language was still used for comments during the sessions and in the informal breaks. The structure prevented researchers from getting in contact with subordinates and end-users in the administration, feedback, which would have been valuable to collect. In spite of these shortcomings, it is still believed that the primary and secondary data provide a robust foundation for interpretation of the implementation of ERMS in this case study. Although it is recognized that the validity of the statements of the local informants can be questioned due to organizational structures in the local government, the “hard and objective” data speaks for itself – a low rate of implementation, which is our starting point for understanding implementation mechanisms in this Punjabi local government.

Background to the case study – local government in Pakistan

The overall vision for Pakistani IT policy is to harness the potential of information technology as a key contributor to the development of Pakistan. The National IT Policy of Pakistan states that both Federal and Provincial Government must be committed to the promotion of e-government projects in areas of ICT infrastructure and applications for digital processes. This is in order to meet the need for higher efficiencies within the government and also to promote better access to information and government services for businesses and citizens. The government prepared an Electronic Transaction Ordinance in 2002, which allows organizations to digitally exchange documents with electronic signatures. This is a step in the direction of process digitization and electronic transactions between government departments to enable significantly higher performance and efficiencies. Hence, there is established support at the policy level to strengthen the implementation of IT in government.

Under the old paper based system, all administrative record keeping was done manually. The process was designed approximately 80 years ago under the former British rule, and was generally regarded as quite robust for its time. However, with the growth in government operations and the increase in its responsibilities, the paper process brought efficiency down to severely mediocre levels. Files and documents were placed in filing rooms with limited records of where documents were kept. Further, as one of our informants explained, there were no formal procedures for recording the rooms, offices, desks, or cabinets in which the files were kept.

Similar to other local government units, the Punjabi government needed to reform the way it handled its basic administrative tasks and decided to implement a workflow solution for document and file management, movement tracking, and search/retrieval functions. In order to test its robustness, it was decided to implement the system in one department first. Against this background, an ERMS was developed and implemented.

A local software company was in charge of developing and implementing the document handling system for the Punjabi local government. The solution, DocWerx, is file and document management software that integrates document management, document movement, document tracking, report generation and other inter-personal communication. DocWerx was built to follow the guidelines of the Official Secretariat Rules that are followed in public administration in Pakistan. The software supports a number of tasks

which are essential in public administration, e.g. monitoring correspondence between sections/departments within the ministry and external ministries; creation of all types of incoming, outgoing and internal documents; automatic assigning of diary number to all document and file movement; scanning and importing tools to bring documents into the system; attaching documents to a file and copying from one file to another; securing storage; and quick retrieval of documents and files.

The portfolio of tasks supported by the software illustrates that the IT tools are available, or rather that the system is developed to support most tasks related to document handling in the Punjabi local government. Furthermore, the choice of the local developer increases the likelihood that updates and adjustments can be done on a continuous basis. With regards to the above-mentioned problems of technological compatibility, the challenges of ERMS can be overcome fairly easily. However, as the next section demonstrates, implementation of IT in organizations is not only a matter of technological compatibility and availability, organizational compatibility also needs to be considered (Gregory, 2005; O'Shea, 1997).

Use of the ERMS

In the initial phase of the reported project an immense need to develop regulations to streamline standardized tracking and storage of documents and files in the Punjabi Government was identified. Although the guidelines from the manual of the Official Secretariat Rules are applied officially, there are always deviations from normal procedures. These deviations created problems with the implementation of the system.

However, the main constraints to implementing office automation were the limited technical abilities of the Punjabi IT Department (PITD) in developing regulations to streamline office automation and training of IT management staff in the operation, maintenance and updating of office automation tools (ERMS). The main constraint to process digitization in the Punjabi government was the lack of previous experience in such initiatives in Pakistan. Migrating staff from process systems that were predominantly manual and hierarchical to automated transparent process systems posed key constraints in terms of technical abilities of staff and user mindset. It was observed that key target groups engaged in implementing and managing process digitization needed knowledge transfer and capacity building in the development of a regulatory framework for process digitization covering organizational procedures, reporting structures and standards for communication. Suitable user training and operational adaptability to digital processes hence had to be provided. This indicated that the organizational compatibility to the system was not optimal. As Figure 2 demonstrates, this is also reflected in the actual use of the system.

Figure 2 illustrates the activity in the DocWrx system on a particular day, June 20 2006 – fourteen months after the system was implemented. The four types of activities illustrated in the figure are described as follows:

- (1) "Stock of files" represents how many files are currently lying on a user's desk. On a daily basis, it is tracked through the system and used to remove bottlenecks in the workflow of the department. However, it is noteworthy that the workflow solution uses the concept of an owner of the file, that is, once a case is processed, the file is returned to the owner of the file and is shown in his pending tray. Therefore, this number is not a true reflection of what is pending on a user's tray.

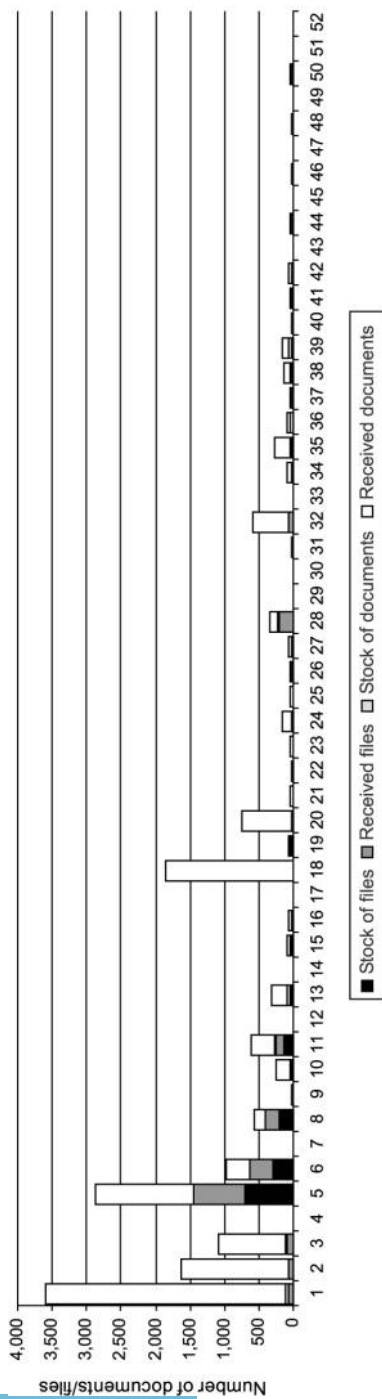


Figure 2.
Activity in the DocWerx
system, 14 months after
implementation

- (2) "Received files" represents how many files have come to a user's desk in the course of the workflow.
- (3) "Stock of documents" (like stock of files) represents the number of documents lying at a user's desk. This is an important tracking parameter, which is used to remove bottlenecks in the system. So, for example, if on the 20th of June, there are 36 documents in User 1's Stock of document tray, then it is advantageous to have the number go down in the next few days so that the work does not get clogged up at the secretary's office.
- (4) "Received documents" (like Received files) shows the number of documents that have passed through a user's desk. User 1, by the 20 June, 2006, had 3,486 documents pass his desk in the workflow routine.

The columns in Figure 2 demonstrate that there is a big variation in how diligently the different employees at the PITD use the system. In this context it is especially interesting to look at the frequency of the parameter Stock of documents, which shows how much a user actually uses the system. The figure clearly illustrates the implementation of the system has not been massive. Furthermore, it becomes transparent how many documents are channeled to the various users of the system. User 1 in the figure still has control over most of the flow of information in the organization. What are the possible explanations for the diverse implementation and/or the reluctance to adopting the system?

Discussion of findings

At the macro level, the implementation of the DocWerx system fits well into the overall goals in the Pakistani IT policy on using IT to: increase the efficiency and effectiveness of the government, increase the transparency and accountability in decision-making, and enhance delivery of public services to citizens in an efficient and cost effective manner. Basically, DocWerx has the ability to support processes securing the goals outlined in the Pakistan IT policy. It mirrors the standardized procedures of Pakistan's public sector; these were codified by the British command during the colonial empire. Although the empire dissolved in 1947, the procedures are presently still followed more or less rigorously. Today, however, there is a detailed description of all procedures, which have to be followed.

As stated above, one of the central discussions in IT implementation is related to power (Markus, 1983). One implication of bureaucracy as it is seen in most public sector units is that the organization is hierarchical with distribution of authority, resources and responsibility (Weber, 1922/1997). Implementation of technology can challenge this distribution (Markus, 1983) and generally, managers do not voluntarily give up their powerbase (Elbanna, 2003) with the implication is that the organization's status quo remains after IT implementation. Danziger *et al.* (1982) and Kraemer (1991) concluded that implementation of IT in public sector institutions has been observed to reinforce powerbases. This pattern can be confirmed merely by looking at the distribution of tasks and documents depicted in Figure 2. User 1, for example, holds a central position in the organization; his position is reinforced by the bulk of documents placed at his "desk" in the system.

About 15 years ago Kraemer (1991) stated that technology driven reforms were most unlikely to happen. He concluded that reform depends on political and

administrative power and an ability to implement technology. Technology implementation is often, similar to the Pakistani case, explained by the rationale of efficiency and effectiveness, whereas the real driver might well be political and managerial considerations. The development of the document management system confirms this hypothesis. Originally, it was planned that the project should support the implementation of the DocWerx document handling system in three departments in the local government in Punjab. However, after the first twelve months the system was only implemented in one department, the Punjabi IT Department (PITD).

As illustrated in Figure 2, only a few users were actually using the system 14 months after implementation. One explicitly stated explanation as the lack of training to use the system. As described in the case, from the beginning of the project it was noted that employees in the PITD needed training. According to the local software developer in charge of training the staff, training required a lot of resources because staff were not familiar with more advanced office computing. The workforce had to be trained in the usage of such an automated system, and they had to be self sustainable so they could continue the re-training process for new employees. Johnston and Bowen (2005) and O'Shea (1997) also reached the conclusion that training is necessary in order to achieve implementation success. They based their observations on studies in the UK and Australia. This suggests that there is no difference whether ERMS implementation takes place in developing or developed countries. Users do need training in order to adopt the new system to their daily routines.

Another obstacle observed during the development period was that user interfaces needed to be standardised to provide a homogeneous operating environment for staff across different departments. The constraints in developing suitable standards had mainly to do with balancing technology requirements with usability. The technology had to be flexible and open to accommodate different models of interaction and provide necessary information in a user-friendly simplistic environment. This could be observed independently of the type of nation. Lack of usability is a well-known phenomenon throughout the world when implementing IT in organizations.

However, after having visited the department it is our interpretation that training needs to go beyond the use of hardware and software and its usability. Training should rather be related to a change in the mindset of the employees. As stated by Gregory (2005), implementation of ERMS is about more than a piece of software; it also implies cultural change. There is a strong hierarchy in the Pakistani administration and a clear distribution of tasks among the different groups of employees. By implementing DocWerx, transparency is achieved and ultimately this can lead to redistribution of power if the system is capable of redirecting or suggesting redirection of cases from one user to another.

This interpretation is in line with the issue of managerial resistance to change (Markus, 1983) which is closely related to the power perspective on IT implementation. The implementation of an ERMS can mean that management deposits its power to the system and to those in charge of building the system. From a power perspective, management becomes dependent on others and they are no longer entirely in control of the workflow in the department. The function "Stock of documents" illustrates this situation eminently. The software developer describes this function as a tool for removing bottlenecks in the system. The system creates transparency, but at the same time highlights weaknesses in the system that have exclusively been in the domain of

the managers before implementation of the system. Markus (1983) suggests that one of the features of power in relation to IT implementation is influence on the decision-making process. By letting the system take over the assessment of when action should be taken in relation to delegation of workload, those in power lose control and influence.

The case also demonstrates the conflicts related to values (see Figure 1). One example of this is that the system was developed to meet the guidelines of the Official Secretariat rules. However, deviations occurred and that fuelled the conflict between formality and informality (Meijer, 2001). Another example is that the system, in principle, was designed to enhance individual autonomy and cooperation, but redistribution of power and transparency did not fit well with the organizational culture and the mindset of both employees and managers who were unfamiliar with the situation of getting more autonomy and giving away control, respectively.

Our study of ERMS implementation in the local government in Pakistan does not directly indicate that there is a particular need for special models for nations which have been under colonial rule as claimed by Barata and Cain (2001), nor that traditional models for IT implementation are incapable of capturing the process in non-industrialized countries. Chen *et al.* (2006) argue that it is necessary to define an e-government implementation framework, which focuses on issues other than the traditional implementation frameworks. They argue that a definite problem with implementation frameworks so far has been that they are based on experiences of developed countries. The same frameworks may not apply as well to developing countries. Although the present study includes only a single case, does the case not confirm what has been observed in IT implementation studies in the Western world for decades?

Conclusion

Even though the first wave of IT in the public sector leading to office automation has become a dinosaur belonging to a distant phenomenon of the 1970s (Danziger *et al.*, 1982) and the second wave of IT in the public sector labeled e-government is beyond its youth, there is still room for improvement with respect to the deployment of IT in the public sector. Regardless of whether the change initiated by IT in the public sector is labeled office automation, e-government or ERMS, it is a valuable exercise to look at how IT is implemented in public sector institutions because it is only when IT is implemented and utilized that the benefits derived from IT are materialized and can be observed.

However, as the Pakistani case demonstrates, the benefits of ERMS are not that easy to reap. When a robust IT system corresponding to the official practices of the administration is implemented, it does not change the embedded hierarchical structures. By applying the theoretical elements from Markus (1983) on power and Meijer (2001) on values, these issues were highlighted.

The implications of the study are related to the suitability of the suggested framework. Instead of applying a pure factor-oriented approach to the study of implementation of ERMS in the local government in Pakistan, a more interpretative approach was used. The study suggests that IT implementation faces similar challenges throughout the world and, in particular, that implementation challenges are more related to the administrative culture with respect to developed or developing countries than to the status of the nation.

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