

Accountability in an Information Age

Opportunities and Risks for Records Management

Albert Meijer (*Archival Science*, Vol. 1, Nr. 4, 2001, pp. 361 – 372)

Keywords

Accountability, Electronic Records Management, Expert Survey

Summary

Electronic records of government organizations are becoming increasingly important for accountability. Managing electronic records, however, proves to be difficult since information and communication technologies confront organizations with various opportunities and risks. In this paper the findings of an international expert survey on electronic records management are presented. These findings identify opportunities and risks for e-mail systems, database management systems, office systems, web technology systems and smart systems. They also point to five crucial questions that must be addressed in order to guarantee the availability of electronic records for accountability.

1. Introduction

In public administration, information and communication technologies (ICTs) are increasingly used to support various processes. This appears to have consequences for many aspects of public administration (Snellen and Van de Donk, 1998). One of the aspects that might be affected by the use of ICTs is the ability of organizations to account for their actions. Seemingly, contradictory findings are presented in the scientific literature about ICTs and accountability. Duranti (2001) argues that the use of ICTs may negatively affect accountability. She suggests electronic records may not be preserved, difficult to find or unreliable. Bekkers (1993), on the other hand, indicates that the use of ICTs improves accountability because these technologies increase the transparency of organizations. The differences in these findings can be explained by analyzing characteristics of technologies and modes of implementation (Huber, 1990). The technological characteristics of ICTs do not determine how the technologies are used but create opportunities and risks. In a certain context opportunities may or may not be used, and risks may or may not be avoided. Knowledge of the opportunities and risks of ICTs is crucial for adequate use of these ICTs. In this paper, the results of an expert-survey are used to explore these opportunities and risks. These results are used to identify five important questions that organizations should address to avoid risks and make the most of opportunities for electronic records management.

2. Accountability

A precise description of accountability is required for a discussion of the opportunities and risks of ICTs. According to Day and Klein (1987: 26) the word 'accountability' passed into ordinary language only relatively recently and is defined in different ways but although there is no generally accepted definition, six general elements of accountability processes can be distinguished:

1. Trigger. There is an event that triggers the accountability process. For legal accountability the trigger may be that a citizen sues a government organization for an inadequate decision, or alternatively, a processes of political accountability may be triggered by press coverage or a disaster.
2. Accountable person. Someone is accountable or is held accountable for what has happened. In some cases a minister may be held accountable by Parliament, in other cases the director of a government organization will have to account for a decision to a court of law.¹
3. Situation. There is an action or situation for which the person or organization is accountable. A minister may have to explain why a certain decision was taken or why a disaster was not prevented.
4. Forum. There is an accountability forum to which a person or an organization is accountable. This forum may be Parliament, a court of law, the media, citizens, peers or scientists.
5. Criteria. Accountability processes require that criteria are applied to judge an action or situation. These criteria may be derived from the law but also from political standards. Parliament will apply other criteria than courts of law.
6. Sanctions. In some cases sanctions may be imposed on the person or organization. A minister may be sacked, a government organization may be forced to take another decision, or fines may be imposed.

This conceptualization of accountability can be complemented by looking at different phases of accountability processes: the information phase, the discussion phase and the sanction phase (Bovens, 1998: 86). In the first phase the forum gathers data from various sources and reconstructs what has happened. In the second phase actions are discussed and judged

¹ It may not be easy to determine who is to be held accountable for certain situations. Complex organizations often present the 'problem of many hands' (Bovens, 1998).

according to certain norms and criteria. In the third phase sanctions can be applied.

The information phase is the central focus of this paper since this is the phase where the availability of records is of primary concern. It is assumed that before the accountability forum can discuss or sanction government actions, it needs to make a reconstruction of what has happened. Data is needed to reduce uncertainties and if sufficient data is available, an accountability forum can make a reconstruction of what has happened. The records of government organizations are an important – and often crucial – source of data for accountability processes. Thus, proper records management is required for government accountability.

To anticipate accountability organizations develop information systems, procedures and structures to warrant that they can be held accountable (Meijer, 2000). One could argue that the requirement to anticipate accountability is integrated in the general design of public administration since an essential element of bureaucracies is the principle of an administration based on written documents (Weber, 1947). Bureaucracies can account for their actions through these documents. If information systems, procedures and structures function well, the availability of records for accountability can be guaranteed. This availability of records, however, is influenced by the use of ICTs.

3. Characteristics of ICTs

It has been widely acknowledged that the implementation and use of ICTs radically alters the way people and organizations deal with information. Various researchers have indicated that the use of ICTs leads to fundamental – albeit ambiguous – changes in public administration (for an overview: Snellen and Van de Donk, 1998). These fundamental changes in public organizations could have serious impacts on the availability of records for accountability but what these impacts exactly are is not yet clear.

In general, the consequences of ICTs depend on the way a technology is implemented and used by an organization and on the technological characteristics which result from the development of ICTs (Huber, 1990). The implementation and use of ICTs is influenced by the way organizations anticipate accountability (Meijer, 2000). In this article the focus is on technological characteristics and the risks and opportunities these characteristics offer for accountability.

In the literature on electronic records management (see Erlandsson, 1997, Bearman, 1994, Duranti, 1998), there has been little attention for technological characteristics. Research had focused on requirements for adequate implementation and use of ICTs. To gain more insight in the characteristics of ICTs and the opportunities and risks for accountability an expert-survey was carried out. The results of the survey are presented in this paper.

4. Expert-survey

In the present survey a panel of experts (academics and practitioners) on electronic records management were asked to reflect on the opportunities and risks of the use of different ICTs in public administration for the availability of records for accountability. The expert-survey was built up around three notions. The first notion was that the possible consequences of ICTs for accountability should be evaluated for different software applications. The second notion was that the consequences of the use of ICTs could be evaluated by looking at the risks of not having adequate information for accountability, opportunities of having more adequate information and problems when trying to find an adequate manner to deal with the software application. The third notion was that the risks and opportunities could be evaluated by ranking four different criteria concerning the availability of information for accountability (information is present, can be accessed, can be interpreted and can be trusted) and problems could be evaluated by ranking three types of problems (technical, organizational and legal problems).

For the survey thirty experts in the field of electronic records management were selected on the basis of membership of international committees², participation in international conferences³, publications of reports and articles on electronic records management, and their involvement in projects in the field of electronic records management. A selection was made of experts in different parts of the world.⁴

In May 1998 the first questionnaire was sent as e-mail message to these experts (most of them had indicated beforehand that they were prepared to participate). The answers were analyzed quantitatively and qualitatively. A summary of the analysis was sent to all respondents. In November 1998 a second questionnaire was sent to the respondent. The objectives of this questionnaire were to verify the findings of the first questionnaire, to explore the differences of opinion between the experts and to find answers to the remaining questions. These answers were also analyzed both quantitatively and qualitatively and reported. A summary of the analysis was sent to all respondents.

The response to the first questionnaire was 70 % and 67% (of the initial number of

² DLM-monitoring committee, ICA/CER - Committee on Electronic and Other Current Records.

³ European Experts' Meeting on Electronic Records, June 18 1997, The Hague, Netherlands; Electronic Records research and Development, June 28-29 1996, Ann Arbor, USA; Working Meeting on Electronic Records Research, May 1997, Pittsburgh, USA; Playing for Keeps Conference on Electronic Records Management, November 1994, Canberra, Australia.

⁴ Experts from the following countries took part: Australia, Canada, Denmark, Germany, Hungary, Ireland, Netherlands, Sweden, Switzerland, United Kingdom and United States.

respondents) to the second. The response was well spread over the different countries and spread evenly over the selection criteria. Some respondents gave long explanations for their answers, others gave no explanation at all. Although interpretation of the rankings was difficult, the comments proved to be very useful in gaining more understanding of the possible consequences of ICTs for the availability of records for accountability. The results reported here are primarily based on a qualitative analysis of the answers.

The most important findings of the expert survey are presented per group of technologies. Risks and opportunities are presented together since they are often connected. A characteristic of an ICT may constitute both a risk and an opportunity. To analyze the findings systematically, they are presented in the two categories: consequences for the creation and capture of records and consequences for the management, retrieval and use of the records.

5. E-mail systems

The first group of technologies presented in the survey was e-mail. An e-mail system is defined as a medium which enables users to asynchronously exchange messages between addressable electronic mailboxes using computers linked by telecommunications (Van den Hooff, 1997: 8). In western societies e-mail systems are increasingly used by government organizations for both their internal and external communication.

Creation and capture of records

The survey made clear that organizations use e-mail for both ephemeral and critical communication. Since control over e-mail communication tends to be highly individualized, organizations need to find a way to separate critical messages from ephemeral e-mail-messages. This problem is aggravated by the volume of e-mail-messages.

The use of e-mail systems both enhances and endangers the capture of context-data. Use of e-mail systems facilitates the capture of certain context-data (sender, recipient, time, date, etc.), however, other context-data (link to business process, other documents, etc.) cannot be captured automatically. Organizations risk that these context-data are not captured or preserved.

A further finding concerns the opportunities e-mail systems offer to capture more records for accountability. Since e-mail messages will partly replace conversations by telephone, records that were previously not captured can now be captured. Many respondents, however, question the usefulness of this additional capture.

Management, retrieval and use of records

According to the respondents the lack of control over the storage of e-mail-messages might have consequences for the trustworthiness of the messages when they are eventually retrieved. E-mail messages can be edited if these messages are managed individually and if they are not centrally controlled or backed-up.

Messages that were previously communicated by telephone are now communicated through e-mail systems and can thus be captured. However, there might be risks in managing and retrieving these e-mail-messages. This is not only a problem for the organization that saves the e-mail messages, but also for the forum in a process of accountability. These problems can be partly solved by the additional opportunities to access records since e-mail systems can make it easier to search (e.g. full-text search) or retrieve messages.

Keeping simple e-mail messages readable over time is not an important risk since these messages are generally in ASCII and therefore it will be easy to access them. For complex messages (multimedia and/or attachments), however, this will not be so easy: long-term access is a serious risk.

6. Database management systems

Database management systems was the second group of technologies researched. Davis and Olson (1984) describe a database management system as a software system that manages the creation and use of databases. These systems are widely used in public administration either to manage transactional data or as a source of information. They are also extremely important as a source of management information because they enable data to be selected, aggregated and analyzed.

Creation and capture of records

Databases are dynamic and organizations that use them take the risk that records will not be saved or cannot be trusted because generally databases allow updates and changes and 'old data' may be deleted in this process. The respondents indicated that this has consequences for accountability because records may or may not be available or accountability for a cannot be certain that records have not been deleted.

A second point concerns the structure of databases. E-mail messages resemble 'paper communication' while databases have a different structure than paper documents. Therefore, the use of database management systems leads to questions about what records should be kept. Depending on contextual factors all of the following data need to be kept for accountability: the underlying data, metadata about these data, data about the query, data that

represent the output of the query and context data about the query.

A third issue concerns the link between records to a work process. Some respondents think that database management systems ‘de-contextualize’ records. Others, however, argue that interpretation would not be a risk because database management systems capture context-data. To some degree differences in opinion can be attributed to the fact that some respondents referred to specific database management systems whereas others referred to generic database management systems. The capture of relevant records relating to business processes is easier for specific database management systems: generic database management systems create more risks for ‘de-contextualization’ of records.

Management, retrieval and use of records

Database management systems facilitate (short-term) access: indeed that is what database management systems are meant to do. Whether long-term access will be a risk, depends on various factors such as type of database and information management. The experts argue that the difficulties of migrating databases are considerable for older database management systems.

7. Office systems

The third group of technologies studied was office systems.⁵ Examples of this type of software are text editors, spreadsheet applications and software for creating slides. These applications are widely available and probably used most by individual civil servants in their daily work. Nowadays, for example, almost every document is created with a text editor.⁶

Creation and capture of records

Just like e-mail systems, office systems also confront organizations with a lack of control over creation and capture records. Although separating ephemeral and critical data does not seem

⁵ The term ‘office systems’ is used only for software applications to support the work of individuals like text editors and spreadsheet applications. Software to support groups such as document management systems, workflow management systems and groupware are excluded from this category (see Laudon and Laudon (2000: 437) for another perspective).

⁶ Interesting ideas about records management in the electronic work environment have been developed at the National Archives of Canada (www.archives.ca/06/0603_e.html). These ideas start from the vision of the integration of records systems with automated work processes. Records of automated work processes are then automatically captured based on rules built into the design of the processes.

to be an important issue, the respondents argued that lack of central control can still have important consequences for the creation and capture of records produced by this ICT.

Management, retrieval and use of records

Lack of central control is also an important risk also for the management of records of this type. On the other hand, the use of office systems provides opportunities for easier and faster (short-term) access to records. The respondents questioned whether this access is guaranteed for the long-term. The frequent update of office systems makes long-term access to the records a major risk.

8. Web technology systems

Web technology systems were the fourth group studied. Laudon and Laudon (2000: 17) describe the World Wide Web as a system with universally accepted standards for storing, retrieving, formatting and displaying information in a networked environment. Government organizations use web technology for promotional purposes but also increasingly for interactions and transactions with clients. The information systems that organizations use can be called web technology systems.⁷

Creation and capture of records

A very relevant issue for web technology systems, concerns the 'hyperlinks' to data on other websites. The essence of web technology systems is that they can easily refer to each other. The respondents argued that this causes risks for accountability because the data or the location of the data are frequently changed.

A website technology system can be regarded as a conglomerate of technologies. In the answers, two views on web technology systems can be distinguished: a website that is only meant to give information to the users, and a website for two way communication (also to be used for transactions). Several respondents indicated that websites are changing from static to dynamic and interactive communication technologies. Static websites 'publish' information

⁷ Extensive guidelines for electronic records management of information available on websites were developed by McClure and Sprehe (1998). A central element in their approach is an 'Accountability Exposure Analysis': "(...) an appraisal of the extent to which the agency is or is not fulfilling its legal and other responsibilities under recordkeeping statutes and other obligations, and the real possibility the agency will be called to account." They draw parallels between this approach and risk analysis.

so that other people can read that information (one-way communication). Dynamic/interactive websites are used for two-way communication and are adapted to the specific user. Dynamic/interactive web technology systems generate many more records that will have to be preserved for accountability than static websites.

There were different opinions on the question of whether web technology systems contain records that should be retained for accountability. Some respondents argued that websites do not contain any records that are important for accountability. Other respondents disagree and argue that websites certainly contain records for accountability. There seems to be a difference between Europe, on the one hand, and North America and Australia, on the other. In Europe many websites still seem to contain promotional material, while in the other continents 'original records' are increasingly being posted on the web. Promotional information may have to be preserved for accountability, 'original records' must always be preserved.

Organizations that use web technology systems risk losing records when websites are updated and 'old data' are not preserved. This risk resembles the risk that was identified for database management systems. The dynamic nature of these technologies creates risks for accountability.

Management, retrieval and use of records

Web technology systems are connected to a network. If they are connected to an open network there might be the risk that records on a website are changed by invaders from outside. Connection to an open network does however offer a strong opportunity to organizations: they can offer better access to records.

Another issue is the legal value of records on websites. These risks concern the dissemination character of web technology systems: it is hard to prove what records were on the website at what time.

9. Smart systems

The last group of technologies examined was 'smart systems' (expert systems and simulation software). Expert Systems can be defined as 'information systems that solve problems by capturing knowledge for a very specific and limited domain of human expertise' (Laudon and Laudon, 2000: 446); Simulation Software is used to simulate developments or processes.

Creation and capture of records

The essential feature of smart systems is that they contain codified knowledge. For organizations that use smart systems it is crucial to capture the logic behind an advice, decision or simulation. During a process of accountability, records about the decision or advice cannot be interpreted or trusted without this logic.

Management, retrieval and use of records

Organizations that use smart software risk the possibility that records for accountability (i.e. input, output and the program itself) become inaccessible in the long-term due to software obsolescence and difficulties of maintenance and migration. One legal risk in using these records for accountability is that results of simulations have little legal value.

10. ICTs and accountability: five crucial questions

Five technologies have been discussed and this has resulted in an overview of the risks and opportunities that these technologies offer for the availability of records for accountability.⁸ The technologies examined exhibit similarities and differences in the risks and opportunities they present for accountability. To conclude this paper the most typical characteristics of the five technologies are presented. This list provides a quick overview of five important questions organizations should address when they start using ICTs.

E-mail systems: how can critical and ephemeral communication be separated?

E-mail systems are often used both for critical and ephemeral communication. Therefore organizations are confronted with the question: how can these messages be separated? What rules and systems for separating the messages should be used? Formal and informal aspects of organizations (Mayo, 1933) need to be suitably balanced to answer this question.

Database management systems: how can 'old records' be preserved?

The main effect of these technologies on organizations is that they focus on up-to-date data. Many databases are continuously updated and 'old records' are replaced by new data. Organizations are confronted with the question of how can 'old records' be preserved.

⁸ The expert survey was conducted in 1998 en 1999. Since technological developments are fast, an expert survey conducted in 2002 could have yielded different results. In Europe, for example, websites are now also widely used for interactive communication. Multimedia e-mail is now also more widespread than it was in 1998 and 1999. In spite of technological developments, however, most of the findings of the expert survey still seem valid. Significantly: the five 'crucial questions' which are presented in this section have not become obsolete by new technological developments.

Database management systems demand that organizations find ways to meet demands for stability and change (Pollitt, 2000).

Office systems: how can the creation and preservation of records be controlled?

The central risk for this software is the lack of control over record creation and preservation: how can reliable creation and keeping of records be assured? How can an organization be sure that all records are kept? Who decides what records should be kept? The organizational choices concerning the control over electronic records should fit within the organization's structural configuration (Mintzberg, 1983).

Web technology systems: how can connected records be separated?

Web technology systems can contain hyperlinks to other documents on other websites. Organizations are confronted with the question how an entity of data (record) can be separated from other data. Can an organization control its own records? To deal with questions of interconnection organizations need to adapt electronic records management to their (legal) responsibilities.

Smart systems: how can both the 'logic' and the input/output be preserved?

Maintaining the internal logic of information systems is crucial for smart systems. Input and output of smart systems do not mean anything without the rules that were used to create the output. How can decision rules and input and output be retained? Requirements tracing is useful to preserve the 'logic of smart systems' effectively (Jarke, 1998).

The consultation of experts has thus resulted in a rich overview of what consequences different ICT-applications – based on their technological characteristics – may have on the availability of records for accountability. Technological characteristics do not determine the use of ICTs since organizations have a choice to use the opportunities ICTs offer and avoid the risks. An understanding of these opportunities and risks can help organizations to adequately implement ICTs and guarantee that records will be available for accountability.

Literature

Bearman, D., *Electronic Evidence. Strategies for Managing Records in Contemporary Organizations* (Pittsburgh: Archives and Museum Informatics, 1994).

Bekkers, 'New forms of steering and the Ambivalency of Transparency'. In: I.Th.M. Snellen and W.H.B.J. van de Donk (eds.), *Public Administration in an Information Age. A Handbook* (Amsterdam: IOS Press, 1998), pp. 341 – 357.

Bovens, M., *The quest for responsibility: accountability and citizenship in complex organisations* (Cambridge: Cambridge University Press, 1998).

Davis, G.B. and M.H. Olson, *Management Information Systems. Conceptual Foundations, Structure and Development* (New York: McGraw-Hill Book Company, 1985).

Day, P. and R. Klein, *Accountabilities, Five public services* (London: Tavistock Publications, 1987).

Duranti, L., *Diplomatics: New Uses for an Old Science* (Lanham: Scarecrow Press, 1998).

Duranti, L., Concepts, Principles, and Methods for the Management of Electronic Records, *The Information Society*, 17, 4 (2001): pp. 271-279.

Erlandsson, A., *Electronic Records Management, A Literature Review* (Paris: International Council on Archives, 1997).

Gordon, T. J., and O. Helmer, *Report on a long-range forecasting study* (Santa Monica: The RAND Corporation, 1964).

Hooff, B. van den, *Incorporating Electronic Mail. Adoption, Use and Effects of Electronic Mail in Organizations* (Amsterdam: Otto Cramwinckel, 1997).

Huber, G.P., A Theory of the Effect of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making. In: J. Fulk and C. Steinfield (eds.), *Organizations and Communication Technology* (Newbury Park/London/New Delhi: Sage Publications, 1990), pp. 237-274.

Jarke, M., Requirements tracing. In: *Communications of the ACM*, 41, 12 (1998) pp. 32-36.

Laudon, K.C. and J.P. Laudon, *Management Information Systems. Organization and Technology in the Networked Enterprise* (Upper Saddle River: Prentice-Hall, 2000).

Mayo, E., *The Human Problems of an Industrial Organization* (New York: McMillan, 1933).

McClure, R.C. and J.T. Sprehe, *Analysis and Development of Model Quality Guidelines for Electronic Records Management on State and Federal Websites*, Research Study Sponsored by The National Historical Publications and Records Commission (1998).

Meijer, A., Anticipating Accountability Processes, *Archives and Manuscripts*, 28, 1 (2000), pp. 52-63.

Mintzberg, H., *Structure in Fives. Designing Effective Organizations* (Englewood Cliffs: Prentice Hall, 1983).

Pollitt, C., 2000, Institutional Amnesia: A paradox of the 'Information age'?, *Prometheus*, 18, 1 (2000), pp. 5 – 16.

Romzek, B.S. and M.J. Dubnick, Accountability in the Public Sector: Lessons from the Challenger Tragedy, *Public Administration Review*, 47 (1987).

Snellen, I.Th.M. and W.H.B.J. van de Donk (eds.), *Public Administration in an Information Age. A Handbook* (Amsterdam: IOS Press, 1998).

Weber, M., *Wirtschaft und Gesellschaft*, (Tübingen: Mohr, 1947).