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Accountability and the Reconstruction of the Past

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Abstract: Many organizations have undergone substantial reorganization in the last decade. They re-engineered their business processes and exchanged proprietary, not integrated applications for more standard solutions. Integration of structured data in relational data bases has improved documentation of business transactions and increased data quality. But almost 90% of the information that organizations manage is unstructured, can not easily be integrated into a traditional database. Just like structured data, unstructured information in organizations are records, meant and used as evidence for organizational actions and transactions. Governments, courts and other stakeholders are making increasing demands for the trustworthiness of records. This is part of a long-term trend toward defining what accountability means in a digital era. An analysis of literature of information science, organization science and archival science illustrates that for accountability, reconstruction of the past is essential. Hypothesis of this paper is that for the reconstruction of the past each organization needs (at least) a combination of three mechanisms: enterprise records management, organizational memory and records auditing. Enterprise records management ensures that records meet the for accountability necessary quality requirements: integrity, authenticity, controllability and historicity. These requirements ensure records that can be trusted. Trusted records enhance the possibility of reconstructing the past. The organizational memory ensures that trusted records are preserved for as long as is necessary to comply to accountability regulations. It provides an information and communication technology infrastructure to (indefinitely) store those records and to keep them accessible. Records auditing audits enterprise records management and organizational memory to assess the possibility to reconstruct past organizational actions and transactions. These mechanisms ensure that organizations have a documented understanding of: the processing of actions and transactions within business processes; the dissemination of trusted records; the way the organization accounts for the actions and transactions within its business processes; and the reconstruction of actions and transactions from business processes over time. This understanding is important for the reconstruction of the past in digitized organizations and improve organizational accountability.

Keywords: accountability, governance, enterprise records management, organizational memory, records auditing

1. Introduction

After attention to the increase of business process efficiency in the 1980s, organizations were faced with a transformation into an information society in the 1990s. Organizations re-engineered their business processes and exchanged not integrated applications for more standard solutions. Integration of structured data in relational databases has improved documentation of actions and transactions and increased data quality. But almost 90% of the information that organizations manage is unstructured, can not easily be integrated into traditional databases. This unstructured information is created by knowledge workers, who create networks of expertise and engage in peer-to-peer knowledge sharing across organizational boundaries. Knowledge work has to do with organization-wide and inter-organizational communication and collaboration. The storage, dissemination and processing of unstructured information require complex information and communication technology (ICT) systems. In this changing organizational environment, accountability became a hot item, especially because ICT systems present unique security and durability challenges that pose a threat for information quality (Boudrez, Dekeyser, and Dumortier 2005; Bearman 2006).

2. Accountability, ICT and the problematic reconstruction of the past

Accountability is the acknowledgement of responsibility for actions, decisions, products, and policies, and the obligation to report and be answerable for resulting consequences. It is a social relation between an actor and a forum. When the *actor* is an organization (as it is here), we talk about 'organizational accountability'. The *forum* is a designated forum (shareholders, citizens, courts, etc.) or a virtual entity ('society', 'the people'). A forum will ask an actor to provide insight in its process effectiveness and the lawfulness or unlawfulness of its actions. The forum passes judgement on the conduct of the actor. It approves or disapproves an account, denounces a policy, condemns behaviour and imposes sanctions. Most actors are part of a complex of relationships, mostly with more than one accountability forum. Bovens (2006) considers five different types of accountability: political (with fora as representatives, political parties and voters), legal (with courts), organizational (with stakeholders, auditors, and controllers), professional (with peers) and social accountability (with interest groups, charities, etc.)

Barata and Cain (2001) prove that accountability without trusted information as evidence of (past) organizational policies, products, actions and transactions is not possible. This means that each 'accountability regime' needs an organizational accountability function to safeguard that evidence. Within this function, corporate governance operates as an accountability agent. It is the system by which organizations are directed and controlled. It operates systems of control designed to ensure that organizational objectives (like accountability) are met (Porter 2009). Within corporate governance, information governance establishes opportunities, rules and authorizations for information management (Kooper, Maes, and Lindgreen 2010). Both types of governance are *means* for reaching the *objective* of organizational accountability (Porter 2009). In order to improve accountability, they have implemented new ICT systems, concepts and methods to structure, organize, process and retain the information that is used within organizational processes (records), as well as all the information that is used to demonstrate and document how actions and transactions have been performed within an organization (meta data).

Ensuring the quality of this information is an important managerial concern of corporate and information governance. It is a daunting task. Redman (2004, p. 22) states convincingly that information quality is an *'unfolding quality disaster'* and that 'bad' information is *'the norm'* in industry. Records and their meta data are inaccessible, unavailable, incomplete, inconsistent, irrelevant, untimely, inaccurate, and / or not understandable. Their provenance is (mostly) unknown, just like their contextual environment (Epler 2006). In addition, ICT creates the problem of technological obsolescence, because records and their meta data have a longer lifespan than the configurations in which they are created or managed (Boudrez, Dekeyser, and Dumortier 2005).

Toebak (2010) states that trusted records and their meta data are indispensable as evidence and necessary for making reconstructions of (past) organizational policies, decisions, actions and transactions. Reconstructions of the past depend on the organizations' captured, retained and accessible records and meta data. Without trusted records and meta data as evidence, reconstruction of the organizational past becomes problematic. This is influencing organizational accountability negatively, because corrupt records cannot be used as evidence of past happenings..

3. Research question

Literature on organization science (Meijer 2000), information science (Walsh, and Ungson 1991; Bussel, and Ector 2009) and archival science (Barata, and Cain 2001; Shepherd, and Yeo 2003; Toebak 2010) suggests that there are several organizational mechanisms that aim at a reconstruction of the past and that try to realize trusted records: enterprise records management (ERM), organizational memory (OM) and records auditing (RA). These mechanisms have only been studied separately. An approach in which these organizational mechanisms are combined has never been considered, probably because they have been developed in different scientific and professional disciplines. In this paper, I want to analyze how ERM, OM and RA contribute to the realization of trusted records and to the reconstruction of the past, especially to find out whether my hypothesis that organizational accountability can be improved with a combination of these three mechanisms, is correct.

4. Mechanisms for reconstructing the past

4.1 Enterprise records management

4.1.1 Records and the 'records value chain'

Records are sets of related data with set boundaries and with standardized form and structure (Shepherd, and Yeo 2003). They are *meant* to be evidence for actions and transactions (ISO / DIS 15489 2001). They can be text, (moving) images, sound, database records, or combinations thereof. They are critical for business process performance, for without them production is almost impossible (Toebak 2010). Meta data, linked to records, document how the actions and transactions the records were part of have been performed. Almost 90 % of the information in an organization are records and their attached meta data.

Widely supported within literature (Toebak 2010; Shepherd, and Yeo 2003) is the definition of ERM in clause 3.16 of the ISO / DIS 15489 (2001) standard: *'the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, in-*

cluding the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records'. According to Bussel, and Ector (2009), ERM organizes the 'records value chain', the chain that ensures that the 'value' of records is used in business processes to improve performance. This chain includes all records processes, from creation or receipt to capture, storage, processing, distribution, structuring, publication, use, appraisal, selection, disposal, retention, security, and preservation. ERM is oriented on records processes, the effects of those processes on business processes, the reconstruction of past policies, products, actions and transactions, and the dimensions and quality requirements of records.

4.1.2 The dimensions of records

Records have two extra dimensions above the seven dimensions normally associated with information. Those seven dimensions are meticulously analyzed in literature, e.g., Liu (2004) and Francke (2005). Those dimensions are increasing density, decreasing longevity, disappearing uniqueness, easy duplicability, exploding mobility, increasing fluidity and problematic connectivity. For this paper, the two extra dimensions for records are important.

The first extra dimension for records is *'contextuality'*: Records only have meaning within a context (Duranti 1997)*. Knowledge of the (environment of the) policies, products, actions or transactions for which the records were generated is necessary for extracting meaning out of records. This knowledge applies to the existing juridical system, the organizational structure, the procedures by which records are generated and the records collection to which the records belong. Groth (2007) suggests that context can *only* be shown with extensive documentation, that it is in the past, and that it is necessary for the tracking and the reconstruction of business processes. The context of records captures and documents a social situation in meta data to allow a reconstruction of the past. The second extra dimension is *'historicity':* Brown, and Duguid (1996) argue that reading the same text creates a sense of community, that is threatened by dimensions as fluidity and connectivity. Latour (1990) impresses the need for *'immutable mobiles',* which express the combination of immutability and mobility. Levy (2001) emphasizes that 'fixity' is necessary to achieve repeatability of communication. Records need fixity, for they are recorded for *later* consultation and used for the reconstruction of *past* happenings. For those reasons their users need to trust them.

4.1.3 The quality requirements of records

In this age of organizational chains, inter-organizational data warehouses, cloud computing, authentic registrations, and computer mediated exchange, it is crucial that actions and transactions can be reliably reconstructed in context. Trusted records are therefore necessary. In information science, there is much work done on the quality of aspects as system development, software systems, systems development organization and ICT infrastructure (e.g., Wang, Funk, Lee and Pipino 2009). This work is focused on structured information. It ignores records and no attention is paid to its extra dimensions (Bussel, and Ector 2009). That may be one of the reasons for the problems with information quality Redman (2004) mentioned.

The focus in ERM is exclusively on the quality requirements of records, their meta data and the 'records value chain'. For *records and their meta data*, four quality requirements are recognized in ERM: integrity (it must be impossible to add or delete data), authenticity (they must have the required presentation and data), controllability (they can be tested on reliability) and historicity (they can be reconstructed). Those requirements realize the fixity of records and enable users to trust them and to use them as evidence. The *'records value chain'* ensures that records are correct and complete in spite of all handling that may be necessary. The requirements for this chain are identical to those for organizational business processes. They are well-known, namely *reliable time of delivery, effectiveness, efficiency, product quality*, *alignment of needs*, *product management*, and *compliance* (Bussel, and Ector 2009).

4.1.4 Enterprise records management and reconstructing the past.

The deficiencies in records and in ERM that existed before ICT was introduced, are still there (Redman 2004). One of the reasons may be the focus on structured information in information science. In ERM the point is made that the failure to realize the quality requirements of records, the 'records value chain' and their meta data, is a threat to the possibilities to reliably reconstruct the past. Because of that failure, the organizational accountability function can not be successful. ERM, managing

the 'records value chain', ensures that records meet the quality requirements necessary for accountability: integrity, authenticity, controllability and historicity. These requirements ensure records that can be trusted and can be used as evidence. Trusted records improve the possibility of reconstructing past actions and transactions. ERM is process-oriented and has only a limited interest in system development, software systems, and ICT infrastructure. That can be a bottle-neck in protecting the quality requirements of records in digitized environments, for defining preconditions for system development, software systems and ICT infrastructures may not be enough to definitely ensure the quality requirements of records.

4.2 Organizational memory

4.2.1 What is the organizational memory ?

Organizations have frames of references, shared beliefs, values, routines, structures, and artefacts that reflect the way they have handled their past experiences. OM is the *'stored information from an organization's history that can be brought to bear on present decisions'* (Walsh, and Ungson 1991, p. 61). It is *'organization's DNA'* (Spear, and Bowen 1999). It is a metaphorical concept that describes storage, representation and sharing of organizational knowledge, culture, power, practices and policy. Kim's (1993, p. 43) view is practical: *'(it) includes everything that is contained in an organization that is somehow retrievable. Thus storage files of old invoices are part of that memory. So are copies of letters, spreadsheet data stored in computers, and the latest strategic plan, as well as what is in the minds of all organizational members'.* Its purpose is to reduce the costs of transactions, to enlarge the speed of access to past experiences, to help in decision-making and to share knowledge. OM is connected with 'organizational learning', the metaphorical ability of organizations to learn from experiences. To learn, reliable reconstruction of the past is necessary.

4.2.2 Contents, repositories and processes

Four types of *memory contents* are distinguished: 'information', 'knowledge', 'paradigms' and 'skills'. 'Information' includes all structured and unstructured information in an organization. 'Knowledge' are mental templates that give form and meaning to an information environment. 'Paradigms' consist of organizational beliefs, values and norms and represent behavioural rules and ethics. 'Skills' are capabilities of people, rooted in action, commitment, and involvement in a specific context (Stein 1995).

It can be assumed that the *repositories* imply memory contents. Walsh and Ungson (1991) modelled the OM as a transcendent infrastructure with five 'retention bins'. Those 'bins' are people, culture, processes, structure, and workplace. Moorman and Miner (1997) consider organizational artefacts, like machines, as 'retention bins', because they embody prior learning. Wijnhoven (1996) recognized ICT systems as a repository. These repositories have different limitations and opportunities for storing and retaining memory, and differ in speed, reliability, susceptibility to degeneration and availability. They are influencing the possibilities for reconstructing the past, for they concern the OM's temporal aspects. These aspects have been avoided in social research, but they are fundamental for reconstructing the past. Memories are, for lack of a better word, time-functions (Stein 1995). A durable and reliable infrastructure for the OM will help an organization to seek competitive advantages, develop the organization learning concept, increase autonomy or be accountable (Croasdell 2001).

Holsapple and Jones (2004) state that the *knowledge processes* of acquisition, selection, generation, assimilation and emission bring past knowledge to bear on present activities. *Acquisition* is acquiring knowledge from external sources and making it suitable for use. *Selection* refers to the activity of identifying knowledge, and providing it to an activity that needs it. *Generation* is producing knowledge by either discovery or derivation from existing knowledge. *Assimilation* refers to the activities that alter the state of knowledge by distributing and storing it. *Emission* refers to the embedding of knowledge into output for release into the environment. It is never stated, but these processes are closely related to the 'records value chain', for knowledge is largely stored within records.

4.2.3 Organizational memory and ICT infrastructure

In OM research, there are two main research directions. The first direction stresses the importance of a reliable ICT infrastructure for the development of an OM to enable the continuous storage and manipulation of knowledge of 'good' quality. Much work is done on 'organization memory information systems', knowledge management systems, hard- and software architectures and software development

(e.g., Wijnhoven 1996). The second direction focuses on the human aspects of OM, that is a tool to stimulate 'organizational learning'. This research tries to make the relationship between human knowledge creation and OM more explicit (Nonaka, Konno 1998). Even in this research direction there is attention for a reliable and durable ICT infrastructure (Croasdell 2001).

An OM is based on *'the will to preserve, in order to reuse [it] later or the most rapidly'* (Ribière, and Matta 1998, p. 130). The ICT infrastructure of the OM continuously captures and analyses the knowledge assets of an organization. It is a collaborative ICT environment where people can query structured and unstructured information in context to retrieve and preserve 'organizational knowledge'. Although within OM-literature records and their meta data are not mentioned, it is clear that they belong to the knowledge assets of an organization, and that they are recorded, stored, secured and maintained within the ICT infrastructure of the OM. This ICT infrastructure safeguards the quality requirements of information over time.

4.2.4 Threats to the organizational memory

The features of the OM are fragile and easily influenced by the restructuring of organizations (Boudrez, Dekeyser, and Dumortier 2005). There are many security and durability challenges (Bearman 2006). The durability challenges to the OM are important here. First, hard- and software configurations are needed for accessing, retrieving and viewing records, which means that a solution for technological obsolescence should be available. Information has a longer lifespan than the configurations in which it is created or managed. Secondly, the large influx of information that confronts the infrastructure of the OM requires automated archiving and retrieval functionalities. The ICT infrastructure needs to adapt, transform, renew and grow (Hanseth 2002). Thirdly, information is of a diverse nature. There is a diversity of object types, operating systems and applications. The handling of this diversity is not self-evident, while at the same time information can be continuously modified. This endangers the trust in a reliable OM. Fourthly, information can only be reliably used, when it can be interpreted by users in its original organizational context. Context and information need to be forever linked to realize access, retrieval and preservation over time and (thus) to allow reconstruction of the past.

4.2.5 Organizational memory and reconstructing the past

ICT infrastructures are the core of OM research. In OM-literature, durable, continuous and reliable infrastructures are almost considered to be self-evident. This may be incorrect. The temporal dimension of the OM operates 'memories', time-functions, that are used to reconstruct past policies, products, actions and transactions. Records and their meta data are never mentioned, but they are part of the knowledge assets of an organization. An important contribution of OM is that *all* organizational knowledge assets are used for reconstructing the past. Although organizational accountability is not mentioned as an aim of OM, it can be the result of using knowledge to reconstruct past happenings. OM is especially concerned with 'organizational learning' when reconstructing past experiences. In general, OM ensures that information is preserved as long as is necessary. It provides an ICT infrastructure to (indefinitely) store information and to keep it accessible.

4.3 Records auditing

4.3.1 What is records auditing?

There is little work done on RA. It may be considered as a specialized part of internal (or operational) auditing. It is independent and is designed to improve an organization's operations. It helps organizations accomplish their objectives by bringing a systematic approach to evaluate and improve the effectiveness and efficiency of business processes (Porter 2009). It is a systematic process of planned, logical and purposeful steps and procedures to assess [1] the management and the quality requirements of records and 'records value chain', [2] the functioning of ERM, and [3] the ICT infrastructure that realizes the OM. RA focuses on both technological as non-technological systems. A records auditor assesses if the records in the OM are accessible, understandable and documented, for only than fact finding and reconstruction of past happenings are possible. RA researches:

- The processing of actions and transactions within business processes;

- The dissemination of trusted records;

- The way the organization accounts for the actions and transactions within its business processes; and

- The reconstruction of actions and transactions from business processes over time.

RA checks for deviations in records, their meta data and the 'records value chain' that result from abnormalities in the execution of business processes and / or the information systems used. The importance of RA increases as the complexity of the records, their meta data en their organizational environment grows. In RA the 'records value chain', combined with the required ICT infrastructure for the OM, is considered to be a critical success factor for the performance of business processes (Bussel, and Ector 2009).

4.3.2 Area's of records auditing

Several area's of RA can be defined (Epler 2006; Bussel, and Ector 2009). First, the *input and output factors* of a business process are problematic. Knowledge workers have difficulties with the excessive amount of records. Records are also often processed in structures, versions and file formats, that cast doubt on their quality requirements. This creates difficulties in the assessment of the reliability of the OM. Secondly, *the 'records value chain'*, as implemented in organizational practice. RA concentrates on the use of records in daily practice and checks if this is in accordance with established agreements. The design of the business processes often does not match the handling of work, leading to problems in accountability. As a solution, organizations can choose to structure the records within the OM according to the organizational processes, or the activities in which knowledge workers perform. Thirdly, the *used ICT infrastructure* affects shape, characteristics and quality of the OM. ICT aspects are, for instance, complex interfaces, the 'unfriendliness' of ICT systems, inadequate system performance, few possibilities to control and lack of interactivity. ICT is hardly tailored to a user's context. Knowledge workers are due to make mistakes, which affect the quality of the records. The potential of ICT to improve the reliability and the durability of records should be used. Fourthly, the *workplace* of knowledge workers. This is a focus because distractions from colleagues, the administrative processing to be performed, the planning of the work, the overall organizational context, and ergonomics, have an impact on a reliable processing and capture of records in ICT systems. Knowledge workers with a stressful workplace make more 'mistakes' and are more likely to ignore procedures of the 'records value chain'.

4.3.3 Records auditing and reconstructing the past

In RA ERM and OM are audited to assess the possibility to reliably reconstruct past organizational actions and transactions and to offer consultations on adaptations and alterations for improving ERM and OM. RA assesses the processing of actions and transactions within business processes and the transformation from input to output, the dissemination of trusted records, the way organizations account for actions and transactions within their business processes, and the reconstruction of these actions and transactions over time. RA is an mechanism for organizations to use to ascertain themselves that the available means for reconstructions are in excellent order and ready to be used.

5. Conclusion

In this paper, I analyzed the contribution of ERM, OM and RA to realizing trusted records and to reconstructing the past. It is my conclusion that:

- ERM safeguards the 'records value chain' and ensures that records and their meta data meet the quality requirements of integrity, authenticity, controllability and historicity and (therefore) can be reliably used in business processes as source of trusted information;

- The OM ensures that records and their meta data (as a knowledge asset) are preserved. It provides an ICT infrastructure to (indefinitely) store records and keep them accessible.

- RA audits ERM and OM periodically to assess the possibility to reliably reconstruct past actions and transactions.

ERM and OM have a *direct* contribution to the realization of trusted records and their meta data. RA checks them to verify it is possible to use them to reconstruct past actions and transactions. Its contribution is *indirect*. All three organizational mechanisms assist organizations in reconstructing the past and can be used for improving accountability. Theoretically, combining these three mechanisms will certainly improve accountability more than implementing only one of them. ERM and OM are

complementary, Combining the process-oriented emphasis of ERM with the infrastructure-oriented emphasis of OM will have positive effects on maintaining trusted records and on reconstructing the past over time. RA will ensure that both mechanisms keep doing what they have to do: creating and maintaining trusted records, against all odds. My hypothesis seems theoretically viable, but still has to be validated in practical case studies.

6. Future work

Governments, courts and other stakeholders are making increasing demands for the trustworthiness, accuracy, and reliability of records. Those demands are creating a need to more clearly define the 'records value chain'. Research is needed to see if recognition of this 'chain' will be a solution for the problems mentioned in this paper. The preservation of records in the OM is critical. There is as yet no preservation strategy that guarantees the preservation of records and their contextual meta data in the long term. It is here that much of the future research should be focused, for the ICT infrastructure is extremely important for preserving records.

Acknowledgements

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