

# The information management risk construct: identifying the potential impact of information quality on corporate risk

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**Abstract:** Many organisations face problems in managing records. Increasingly, technology is causing responsibility for records/information management decisions to pass to the end user. At the same time organisations face a plethora of legislation and regulation relating to organisational records. This paper proposes that the management of organisational records, irrespective of format needs to be considered a component of information quality. The relationship between information management, information risk, information quality and corporate risk is explored and an Information Risk Construct proposed as a means for organisations to assess their information management functionality, to improve weak areas, and to improve overall information quality.

**Keywords:** information quality; information management; organisational records; corporate risk; operational risk; information risk; risk construct.

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## 1 Introduction

A report by Hawley et al. (2003) claims that many organisations are at risk because of lack of sufficient attention to the risks associated with poor information quality. This claim would appear to be supported by media coverage over recent years in relation to fraudulent practices at organisations such as Enron, BATAS, HIH and WorldCom accompanied by information and recordkeeping irregularities. Such media coverage has resulted in increasing recognition of information management as a critical component of information quality. However, despite such recognition and acceptance of the role played by information quality in controlling corporate risk there is no generally accepted definitions of the key terms involved.

This paper proposes a broader view of organisational information which incorporates organisational records. It proposes that the effective management of records (referred to as information management), irrespective of media, is an important component of information quality and that information quality can be improved through high standards of information management. The link between information quality that includes information management and corporate risk is then explored. A brief overview of corporate risk is provided and the relationship between information quality, information management and corporate risk is discussed. The paper then overviews the information risk construct developed by Pullen (2005) as a result of research investigating information management practices within the Australian public and private sectors. The authors propose that Pullen's risk construct could be useful for organisations in revising their information management practices in order to ensure effective recordkeeping as an element of information quality improvement and corporate risk reduction.

## 2 Organisational information

### 2.1 Defining organisational information

Despite wide recognition of the importance of information, few authors provide a succinct definition of information or clearly differentiate between data and information. Sen (2001, p.968) suggests that data represents "facts about events, agents, transactions that a business encounters during its operations". Jashapara (2004, p.16) suggests that to inform, data needs to be organised and that information can be regarded as "data endowed with meaning, relevance and purpose". This paper accepts both these definitions along with the somewhat more expansive definition of organisational information provided by National Archives of Australia, i.e.,

"Information includes published and unpublished documents, such as monographs, journals, newspapers and technical literature and data collections. Information contributes to an organisation's knowledge base and helps it to achieve its goals. Such information may be collected in relation to business activity and support such activity, but does not, itself, provide evidence of that activity." (NAA, 2001, p.4)

### 2.2 Defining records

Information which does provide evidence of business activity forms the basis of Standards Australia's definition of a record. AS ISO 15489 describes records as "information created, received and maintained as evidence and information by an organisation or person, in pursuance of legal obligations or in the transaction of business" (AS ISO 15489, Part 1, p.3).

NAA (2001, p.4) describe records as a 'subset of information' and propose that records possess a number of characteristics that set them apart from other kinds of recorded information. For example,

"records are fixed, that is they are the product of particular actions that occur at particular times. To retain their value as authentic and reliable evidence of particular actions, they must not be altered or tampered with. Records derive much of their meaning, and therefore their usefulness and value as evidence, from the context in which they are created, maintained and used, and how they are managed over time."

Dietel (2000, p.18) adopts a somewhat different view of corporate records describing them as "those materials in which information likely to be needed in the future is recorded". Dietel (2000, p.20) emphasises the importance of records in today's knowledge age pointing out that much of the increasing volume of information and knowledge placed in corporate records needs to be preserved as 'institutional memory'.

In a digital information environment, decisions regarding which electronic documents will be declared as 'records' and when declaration will occur will be determined by corporate policy and the "record-keeping requirements of business processes" (Public Records Office, 2002, p.3). It is vital that essential record components such as structure and metadata have been captured in the process to ensure that records represent reliable and authentic evidence of the business activity or transaction (Public Records Office, 2002). The capture of these essential record components can only be assured when all business processes and procedures employed by an organisation encapsulate recordkeeping functionality i.e., they must be capable of capturing, maintaining and providing evidence of its business activities over time (NAA, 2001). These processes which may employ, for example, database applications or web content managers, need to incorporate the capability to create full and accurate records and to routinely perform fundamental recordkeeping processes i.e., creation, management, access and disposal.

Unfortunately records are often perceived in terms of traditional paper records which were regarded as serving only clerical or historical functions. Cox (1998) suggests that information management professionals should move away from such thinking and understand that records serve as valuable, even critical assets to an organisation and to society and that records can protect organisations from corporate risk. Garcia (2003, p.42) claims that the "proliferation of information and communication technologies has had a huge impact on the state of recordkeeping" citing the opinion of a senior public service training director who claims that "the types of good practices that were once well known and used in the traditional paper recordkeeping environment had not been translated to the digital environment".

Part of the problem in dealing with records in the digital environment is the potential difficulty in distinguishing between electronic records and electronic documents. The Queensland Government (2006) provides some guidance in this regard stating that, for a document to adequately function as a record, it must be captured into a recordkeeping system and include the relevant structural data (e.g., document type and format) and contextual data (e.g., author, date, title and function or activity to which it relates). This process is unlikely to occur without clear records and information management processes in place.

## 2.3 Management of records and information

NARA describes records management as

"the ability to apply controls to the creation, receipt, maintenance, use and disposal of records, including processes for capturing and maintaining evidence of, and information about, business activities and transactions in the form of records (which may include documents or aggregations of documents)." (NARA, 2006, p.39)

NARA claims that this functionality is usually provided through dedicated Electronic Records Management Software (ERMS) software, although they recognise that other forms of business information systems may also incorporate records management capabilities.

The terms records management and information management can cause confusion. Bouthillier and Shearer (2002) claims that the nuances between Information Management and Records Management and a third term Information Resources Management are subtle because "all these terms tend to be used interchangeably".

Pullen (2005) describes how, accompanying the transition from paper to digital records, the term 'records management' has tended to be replaced by 'information management'. A convenient way of looking at the difference between records and information management is to propose that, whereas information managers are concerned primarily with the management and retrieval of information, records managers have a role as managers of the business rules that surround an organisation's records, their generation, management and disposal.

Marchand et al. (2000) present a somewhat different view of the disciplines surrounding the management of information and records. Marchand refers to two information based management disciplines. These two fields are described as

- the information-technology field
- the information-management field.

Marchand describes the information management field as involving librarians, records managers and website content managers. Marchand (p.70) uses the term 'information orientation' as an overarching term describing "a company's capabilities to effectively manage and use information". Marchand proposes that information orientation encompasses three information capabilities i.e.,

- information technology practices
- information management practices
- information behaviours and values.

Marchand suggests that the combination of these three capabilities will assist companies in doing more than excelling at investing in

and deploying IT and will allow them to “combine those capabilities with excellence in collecting, organising and maintaining information and with getting their people to embrace the right behaviours and values for working with information/records” (pp.69, 70). Marchand’s concept of information orientation would appear to provide a useful view of what is required to assist in ensuring information quality.

However, despite the many arguments in favour of the need for effective information management policies to help ensure information quality, many businesses lack commitment to information management (Hare and McLeod, 1997). Poor information management is likely to detract from information quality and add to corporate risk.

### **3 Information quality and organisational information**

Lillrank (2003) cites several studies e.g., English (1999), Ferguson and Lim (2001) and Crump (2002) which indicate that poor, incomplete, late or missing information is perceived as a most serious quality problem. Whilst the literature supports the importance of and recognises the difficulties involved in assuring the quality of information, Ballou et al. (2004, p.10) claims that this task is made even more difficult by the fact that different parties have different views of what constitutes success in this task. Ballou claims that these differing views may be a result of the transition from IQ, traditionally represented as data accuracy in accounting and financial systems, to IQ within the increasingly complex context of information as a strategic resource.

The transition in the use of information and the increasing difficulty encountered in assuring information quality could reflect Juran’s definition of quality as “fitness for intended use” (Juran, 1999 cited in Al-Hakim (2007)). However, Sen (2001, pp.976, 977) claims that, because there are many potential uses of data generated from organisational systems, “it is often difficult to define measures of quality in terms of the uses of the data”. Generally, “quality is defined in terms of the primary data that are recorded and stored in the system”. This may result in an incomplete definition of information quality.

Evans and Lindsay (2005 cited in Al-Hakim, 2007, p.xi) support the proposition that considerable confusion exists in relation to what constitutes information quality. They assert that individual roles bring different perspectives and dimensions to people’s view of quality and that the “meaning of quality continues to evolve as the quality profession grows and matures” Gackowski (2007, p.226) suggests that while it is not possible to summarily assess quality directly, it may be indirectly measured through its impact on operations.

Al-Hakim (2007) provides a succinct overview of the dimensions of information quality as developed by Wang and Strong (1996), Wang et al. (1998) and Lee et al. (2002). This paper uses Wang and Strong’s frequently cited list of information quality dimensions categorised as intrinsic (incorporating believability, accuracy, objectivity and reputation), contextual (incorporating value-adding, relevance, timeliness, completeness, appropriate amount of data), representational (incorporating interpretability, ease of understanding, representational consistency, concise representation) and accessibility (incorporating accessibility and access security). However, it is proposed that this traditional view of the dimensions of information quality needs to be expanded to include recordkeeping functionality to ensure that, in an increasingly digital environment, evidential, compliance and risk management objectives can be met. This expanded definition of information quality sits well with Sen’s (2001, p.969) description of the cost of quality as “the sum of (cost) of conformance and (cost) of non-conformance” and also supports Marchand’s view of information orientation which could be described as a necessary precursor to information quality.

Ensuring that recordkeeping functionality is included as a dimension of information quality will ensure that organisations can rely on quality information to ensure compliance and to support litigation (Iron Mountain, 2002). Within the legal context, there have been increasing demands on information managers to produce the records and information needed for litigation to proceed to resolution (Montana, 1998). Many organisations do not address the costs associated with lost, missing or poor quality information until something goes wrong, by which time it is too late. It is therefore clear that ensuring information quality through the use of information management programs should be seen as an integral part of the way in which organisations do business (Hawley et al., 2003) and reduce corporate risk.

### **4 Information quality and corporate risk**

#### **4.1 Corporate risk**

Corporate risk can be defined as a significant risk, requiring reference to and monitoring by directors, which has a high impact on business, a high likelihood of occurring and which results in direct or indirect loss resulting from failed internal processes, people and systems or from external events (Williams, 2002). Good information quality programs are important in limiting an organisation’s exposure to corporate risk.

In order to adequately manage corporate risk, potential risk factors need to be identified. Williams (2002) identifies five key components of corporate risk i.e.:

- environmental
- legal
- political
- financial and market

- operational.

Of principal interest to the purpose of this paper is operational risk.

## 4.2 Operational risk

Operational risk could perhaps be considered the most important of the five components of corporate risk identified by Williams because it is the only fully internal component, and therefore the component of risk over which an organisation can exercise most control (Williams, 2002). Operational risk comprises personnel, physical assets, data/information loss, relationships, technology and information management. Because of the composition of operational risk it is obvious that information quality is a key factor affecting this aspect of corporate risk. Information quality is also important in controlling the levels of legal and political risk by ensuring that an organisation can produce the required documentation to comply with legislation and regulation.

Therefore, in order to reduce information risk and the overall level of corporate risk, and to improve an organisation's efficiency, customer service and image, effective and efficient information management practices are needed to enable the production and maintenance of high quality information (Iron Mountain, 2002; Price, 2001; McCaig, 2002).

## 4.3 Information risk

Information affects all business inputs, processes, outputs and outcomes; therefore it needs to be appropriately addressed in any risk management strategy (Treasury Board of Canada Secretariat – Information Management Division, 2004). Managers make decisions based on information available to them and most organisations have experienced the adverse effects of decisions based on information of inferior quality (Huang et al., 1999; Fisher and Kingman, 2001). Organisations must either provide the quality information expected by their customers or run the risk of legislation that forces them to provide such information (Al-Hakim, 2007).

The increase in information risk faced by organisations can be witnessed from a number of recent corporate collapses involving such large national and multinational organisations such as Enron, WorldCom, HIH and BAT. BAT, Enron, WorldCom and HIH exposed themselves to inordinate amounts of corporate risk through the actions of shredding documents to deceive auditors and destroy evidence of fraudulent activities (Michaels, 2002; Lyke, 2002; Seitzinger et al., 2002; Rankin, 2003; Hodel, 2002). As a result of the contribution of inappropriate information management to such corporate collapses, Dietel (2003) suggests that information managers need to expand their thinking and responsibilities to focus on dealing with, and more actively managing, an organisation's records. Hughes states that

“A defined and controlled information management policy will ensure that an organisation is protected against risks such as litigation or disaster, and that records practices meet complex regulatory requirements.” (Hughes, 2003, p.29)

As previously stated, high quality information management improves information quality and minimises the level of corporate risk an organisation is exposed to through improved compliance to laws and governmental regulations concerning the operations of business (Pullen, 2005, p.38). This statement is supported by Hawley et al. (2003) who claim that a sound appreciation of recordkeeping helps to ensure an organisation can deal positively with legal and other risks.

With the escalation of the pace of technological change many organisations are becoming increasingly concerned about their ability “to preserve those records which are needed to support the delivery of programmes and services and to meet accountability and archival obligations” (Public Records Office, 1999). Concerns discussed in the Public Records Office document include

- loss of records that should be kept for legal and accountability reasons
- problems with authenticity and reliability of the record
- confusion between different versions of the record
- lack of context to understand records properly

- technological change rendering records inaccessible and incomprehensible (Public Records Office, 1999, p.10).

The same publication by the Public Records Office (p.34) expressed concern that “electronic records systems tend to devolve more control to end users at the time of record capture” with end users becoming responsible for identification of electronic documents which are appropriate for capture as electronic records because of their business function or content

- creation of electronic records, including the capture of relevant contextual information and metadata describing the records, that are consistent and reliable

- capture of electronic records which authentically document the activities in the course of which they were produced
- initiating the filing of electronic records by the appropriate method

- appropriate use of existing records, and cooperation with any audit trail mechanism.

These concerns identified by the Public Records Office almost a decade ago are still likely to negatively impact upon information quality in both the public and private sector. This paper proposes that information quality as a risk reduction strategy should encompass the three elements of operational risk identified by Williams (2002) i.e.,

- data/information loss
- technology
- information management.

This paper focuses on information management as a component of information quality as this aspect has received less attention in the literature, and proposes that information management encompasses the management of information irrespective of format.

Organisations create and maintain an increasing volume of electronic information. Computer users are empowered to create e-mail, letters, spreadsheets, databases, and a variety of other potential records. Instead of maintaining traditional paper files as official records, more information is being created and maintained by users solely in electronic form, allowing workers to produce more information in less time. However, this has also created major information quality and legal challenges (Skupsky, 1999). Poor electronic information quality has the potential to pose a significant increase in the level of corporate risk an organisation may face.

Chua and Toorn (2005) supports the views of Skupsky stating that “Digitisation has enabled organisations to store, manipulate

and retrieve very large amounts of data at very low cost". Chua also suggests that this has generated its own set of problems such that "organisations without a well-organised records management policy and system face the risk that 'discovery demands' in litigation may produce expensive search costs for the required documents" (p.10).

Electronic records pose a unique challenge when used for legal purposes, and if stored, retrieved or used in an inappropriate manner, can increase an organisation's corporate risk. When information managers reproduce electronic business records for operational, reference, or legal purposes, they may be called upon to explain how those records were first stored, then retrieved using a particular software (Phillips, 1999). Storage and retrieval of electronic data is extremely important in determining the validity of a record. Electronic records must be maintained in such a way that their authenticity, reliability, integrity and usability is ensured and this in turn guarantees that the information can be used for any legal purposes if needed (Provenance Systems, 2000). The information manager must know how the recordkeeping software stores data and database records in order to fully explain why a particular set of electronically recalled business records should be considered authentic and therefore admissible in court (Phillips, 1999).

Quality information, produced through effective information management practices is important in limiting an organisation's exposure to the factors which contribute to corporate risk (Kennedy and Schauder, 2000). Information management ensures that business activities are appropriately documented in organisations and that compliance with government, social and legal obligations can be demonstrated (Kennedy and Schauder, 2000). Appropriate documentation of business activities is critical because, for an organisation to visibly comply with government, social and legal obligations, it must have records that account for its actions (Williams, 2002). If these records do not exist, or information quality cannot be confirmed, an organisation's exposure to corporate risk is increased because they cannot prove themselves to be innocent or cannot pursue legal actions against other parties. The Risk Management process is continuously dependent on the quality of information (Gilb, 2006).

#### 4.4 Risk management

Standards Australia provides the following definition of risk management:

"Risk management is the term applied to a logical and systematic method of establishing the context of, identifying, analysing, evaluating, treating, monitoring and communicating risks associated with any activity, function or process in a way that will enable organisations to minimise losses. It is also about minimising the probability of the threat leading to undesired effects by designing, implementing and operating internal controls that mitigate, avoid or transfer risk." (Standards Australia, 2000, p.2)

An alternative definition of risk management is set out in the Australian/New Zealand Standard for Risk Management (Standards Australia (2004), Section 1.3.20) i.e., "Risk Management is defined as the culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects".

The link between information management and risk management is made clear in the Queensland Government's (2002) Information Risk Management Best Practice Guide which defines information management not in the traditional sense, but rather as Information Risk Management. Information risk management is seen as adapting the generic process of risk management and applying it to the integrity, availability and confidentiality of information assets and the information environment of an organisation, with the aim of ensuring information quality (Queensland Government, 2002).

The link between information risk, information quality and management of corporate risk is emphasised by McCaig (2002) who states that the incentive to take risk management more seriously comes from directions other than those dealing with financial costs and ownership rights. A major pressure to deal with risk comes from external sources. Such external sources include statutory and legal requirements, government legislation, expectations of shareholders and institutional investors or the wider community (such as pressure groups or consumers). Many organisations believe their primary type of risk is financial. Felton and Watson (2002) claim that non-financial risks usually only receive anecdotal treatment, and most management/governance boards do not understand the risks their companies face. This claim is supported by the results of a survey by McCaig (2002) of chief executive ownership of risk management which found that only 10% of CEO's took responsibility for the effectiveness of their organisation's risk management. Instead, financial directors tended to take the main responsibility, which may explain why many organisations believe their primary type of risk is financial.

The Information Management Division of the Treasury Board of Canada Secretariat has developed a number of options for mitigating information risks i.e.,

- controlling information quality
- developing and implementing information policies
- ensuring information availability
- managing information access, sharing and dissemination
- minimising liability by establishing appropriate audit trails and using disclaimers and disclosures
- protection of confidential information
- providing management of information training and communications
- pursuing horizontal approaches
- respecting privacy rights
- selecting and implementing security controls
- strengthening management of information governance and accountability.

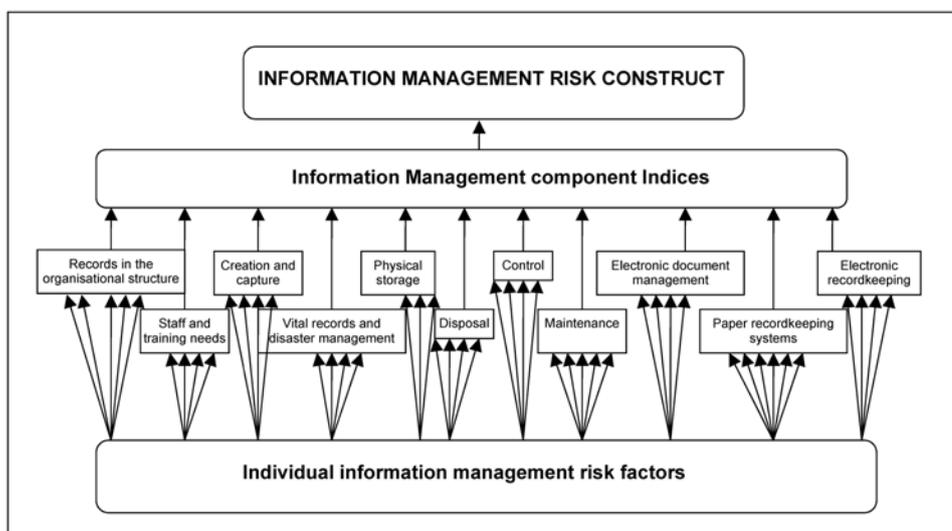
The increasing emphasis on information quality as an important deterrent to corporate risk and the growing recognition of the potential contribution of effective information management to information quality formed the basis of Pullen's research and the development of an information management risk construct which is described in Section 5.

## 5 Development of the information management risk construct

As suggested throughout this paper, the degree of potential risk an organisation faces can vary greatly as a result of the quality of information management practices employed by an organisation. Research undertaken by Pullen (2005) involved a comparison of the level of corporate risk to which private and public sector organisations were potentially exposed as a result of information management practices. This was achieved through the development of an information management risk construct.

The development of the risk construct was guided by several issues identified by key authors and Government authorities as being essential components of a recordkeeping/information management system. Sources including Cox (1998), Roberts (2001), Standards Australia (2002), Queensland Government (2002), Dietel (2003) and Hawley et al. (2003) have identified 11 components as being essential to any effective information management program. These components guided the development of a survey used by Pullen to gather data from a stratified sample of 226 Queensland private and public sector companies in relation to potential risk exposure resulting from their information management practices. The degree of information management risk faced by any organisation needs however to be stated more specifically than simply declaring that an organisation is exposed to a certain level of risk as a result of information management practices. It is also important that organisations are able to identify the problematic components of their information management program as well as specific individual factors causing concern. These considerations guided the design of Pullen's information management risk construct (Figure 1).

Figure 1 Information risk construct



The information risk construct was developed using data from the non-demographic sections of the questionnaire (Appendix A) administered to the person responsible for records and information management in each of the organisations surveyed as part of Pullen's research. The individual questions provided data as to the potential risk resulting from each of the individual factors making up the 11 components being investigated. The factor data was collated to develop a component index expressed on a 1–3 scale (1 = low risk; 2 = medium level of risk; 3 = high risk) and the mean of risk scores for all components was assessed to provide an overall risk construct score. The higher the score resulting from the risk construct, the higher the potential risk to which an organisation was exposed as a result of its information management practices. These scores were compared by industry sector to identify differences in the perceived potential risk a sector could be exposed to as a result of information management practices. The three levels of the risk construct i.e., the overall risk construct itself, the component indices and risk factor scores can be used by individual organisations to identify

- overall potential risk faced as a result of information management practices

those components, for example, creation and capture, reporting the highest level of risk

the individual factors within each component needing most urgent attention, for example, lack of policy for e-mail within the creation and capture component.

## 6 Research results

Approximately 62% of the organisation's surveyed were exposed to a medium level (1.7–2.3 on a 3 point scale) of risk as a result of information management practices. The survey revealed that respondents perceived data and information loss, information management and regulation as the top three potential causes of corporate risk for their organisation. Analysis of the data identified several inadequate components of information practice which could severely detract from the quality of an organisation's information including Records in the Organisational Structure; Staff and Training Needs; Vital Records and Disaster Management; Physical Storage of Records; Disposal of Records; Creation and Maintenance of Records; and Electronic Recordkeeping. Each of these components is discussed below.

### 6.1 Records in the organisational structure

Results indicated that a number of organisations were failing to meet basic information management requirements. Almost 40% of respondents could not indicate that they had an identifiable records management program in place. A similar percentage of

respondent organisations indicated that documentation and communication of recordkeeping responsibilities were not provided to staff. Such results have significant implications for business. An effective information management program is a vital component of the operations of any organisation. Without such a program, an organisation could potentially expose themselves to high levels of risk, because accurate and relevant records and information may not be accessible. This implies that, without information responsibility being clearly identified in the organisational structure, information quality could be compromised.

## 6.2 Staff and training needs

Results show that staff were not receiving adequate training in regards to organisational recordkeeping practices. Approximately 44% of respondents indicated that their staff were not provided with training relating to information management practices and the use of organisational records and systems. At the component level, almost one-third of respondent organisations were at high risk as a result of staff and training issues within their information management program. This result could indicate severe organisational vulnerability. If staff are not adequately aware of their recordkeeping responsibilities with regard to the creation and use of organisational records and systems, all vital records may not be kept and maintained as required. Lack of knowledgeable staff and an absence of appropriate training could seriously compromise information quality.

## 6.3 Vital records and disaster management

Results clearly show that the majority of the sampled organisations were inadequately prepared for disaster, and if such disaster occurred, would be unlikely to successfully recover. Almost 59% of organisations indicated that they could not identify and list their vital records, while more than 65% indicated that their organisation did not have disaster reaction and recovery plans currently in place. An organisation holds many forms of records which are critical to the ongoing operations of the business (vital records). If these vital records are lost or prematurely destroyed, research suggests that very few of those organisations will successfully recover. At the component level, over one quarter of sampled organisations faced high potential risk resulting from their vital records and disaster management practices. Failure to identify vital records and to adequately plan for retention of such records over time jeopardises information quality.

## 6.4 Physical storage of records

Results indicated that physical storage of electronic records is considerably less likely to be approved and documented than that of paper records. Approximately 40% of paper records storage locations had not been approved by a records manager compared to almost 65% for electronic records. The storage location for paper records was not documented in 35% of organisations compared to almost 58% for electronic records.

To ensure that records are maintained over time, they are required to be stored within environmentally controlled storage facilities. However, without the approval of storage locations by a records manager, paper records in particular may be in danger of being stored in inappropriate conditions, leaving them vulnerable to being tampered with, or destroyed by environmental hazards. In addition, if the storage location of records is not documented, they may become lost or forgotten about, making them hard or impossible to locate.

At a component level, 56% of organisations were at a potentially medium level of information management risk exposure resulting from lack of processes and procedures for records storage. Inappropriate storage of records may compromise accessibility, security and preservation, which could negatively impact upon information quality.

## 6.5 Disposal of records

Results show that almost 63% of organisations did not regularly dispose of paper records and approximately 81% of respondent organisations did not regularly dispose of electronic records. These figures alone suggest that many paper and electronic records are being retained unnecessarily.

The literature commonly states that electronic records are becoming the main form of records kept by business. However, based on the data, the vast majority of organisations did not regularly dispose of this information. Electronic records are subject to the same type of risk exposure and legal discovery issues as paper records, and therefore, should be maintained with the same degree of care. Additionally, 23.3% of respondents indicated that they never disposed of electronic records.

Approximately 49% of organisations indicated that they did not have documented procedures for the disposal of paper records. This figure was considerably more for electronic records, with almost 81% of organisations indicating that they have not documented procedures for the disposal of electronic records. Destroying a record too early, or keeping a record longer than legally required may result in risk based upon legal discovery requirements.

At the component level, over half of both public and private sector organisations were potentially exposed to a medium level of corporate risk resulting from their disposal processes and practices. Inappropriate disposal can result in overcrowded and expensive records storage, premature destruction and slower than necessary retrieval times – all of which detract from information quality.

## 6.6 Creation and maintenance of records

Over 51% of organisations had not identified and documented their electronic recordkeeping requirements whilst 37% of organisations had not identified and documented their paper recordkeeping requirements. Additionally, results indicated that approximately 58% of respondents had not incorporated the Australian recordkeeping standard AS ISO 15489 into recordkeeping practices. The lack of identification and documentation of electronic recordkeeping requirements could result in failure in relation to electronic records being kept or maintained as legally and operationally required. With the devolution of many aspects of

recordkeeping functionality to end users, lack of clear communication of requirements and expectations regarding the creation and maintenance of records (regardless of format) may have dire consequences for information quality.

## 6.7 Electronic recordkeeping

Almost 54% of respondents indicated that their organisation had not developed organisational policies for electronic records, and 60% had not developed user guidelines for electronic records.

Organisations which had not developed policies or guidelines for the use of electronic records face a substantial risk that employees may not know how to manage their electronic records and therefore not keep appropriate organisational records and/or delete legally and operationally important organisational records.

Another concerning element of electronic recordkeeping revealed by the survey was the lack of strategies for maintaining electronic dependant records over time. Almost 70% of respondents indicated that they had not developed such strategies. With constant advancements in technology, existing record formats become quickly outdated. Without strategies to ensure that existing records can still be accessed in 5, 10 or 20 years time, organisations may find that old electronic/technology dependant records can no longer be accessed.

At the component level, almost three-quarters of the organisations surveyed were at a potentially medium to high level of information management risk resulting from electronic recordkeeping practices. This is consistent with earlier discussions where the possibility was discussed that devolving recordkeeping functionality to the end user could increase information risk. The failure of organisations to encapsulate recordkeeping functionality into the processes dealing with electronic records could result in serious errors relating to creation, retention and migration of this type of record with serious consequences for information quality.

Electronic recordkeeping was the component with the highest potential exposure to corporate risk. Other components with medium to high levels of risk exposure included staff and training needs, vital records and disaster management, storage of records, and disposal of records.

## 7 Contributions made by the study

As information quality becomes more relevant to today's leadership, so does the requirement to effectively manage it (Deloitte Development LLC, 2006).

The study by Pullen makes a potential contribution to the literature relating to information management and information quality as well as to the information management industry. The study makes a contribution to industry by examining the relationship between corporate risk and information management practices through the development of the Information Management Risk Construct. The risk construct can be used to help raise awareness of the importance of information management as a component of information quality and to illustrate the potential impact that poor information management practices can have upon the organisation in terms of increasing corporate risk. The study makes a number of potential theoretical contribution by

adding to the limited body of literature relating to information management practices within both the public and private sectors

proposing records and information management as an important component of information quality  
establishing a link between information management, information quality and corporate risk.

The risk construct described herein is not organisation specific and provides two main opportunities for organisations within both the public and private sectors. The study provides objective measures for analysing any organisation's information management practices, and produces practical results by helping identify the components and individual factors within an organisation's information management program which are creating potential risk.

The results outlined above suggest that electronic records could be posing a serious challenge to information quality within organisations. A number of aspects of electronic recordkeeping identified in the study could seriously detract from information quality, for example

lack of policies  
lack of user guidelines  
lack of strategies for maintenance of electronic records  
lack of control over the creation of electronic records

- lack of control over disposal and retention of these records.

The data also revealed many areas of concern relating to both electronic and paper records. For example:

Results indicated that both paper and more commonly electronic records were being disposed of without the approval of relevant authorities.

The data suggested that many paper, and specifically electronic records were being retained unnecessarily.

Many organisations indicated they did not use information management products to assist in managing paper records. The continued use of manual systems for managing paper recordkeeping could mean the perpetuation of higher than necessary recordkeeping cost.

- The majority of organisations stated they had failed to produce strategic plans for the maintenance of electronic records over time. As stated by Roberts (2001), the failure to develop such strategies highlights the risk to organisations of losing long-term records critical to the on-going business of the organisation. The lack of strategic planning for information management may also result in a lack of ability to attract funding to this functional area.

The study also sought data relating to a number of current and future issues that respondents identified in relation to records management. Prominent issues identified by respondents included the need to  
improve user awareness of the benefits of recordkeeping/information management

to improve organisational commitment to recordkeeping/information management.

Additionally, budget constraints, which were limiting current records management programs, were identified as a concern. These issues have traditionally faced records and information managers over time.

The study revealed a clear link between information management and corporate risk. The majority of organisations sampled were facing a potentially medium level of corporate risk as a result of their information management practices. This level of risk could not be considered acceptable for any organisation. The burgeoning importance of information management and the risk that inadequate information management poses to organisations means that information management should be managed systematically and not allowed to 'just happen'.

## 8 Conclusion

Best practice dictates that records should be kept to reduce risk and provide evidence should it be required in litigation. However, despite what best practice dictates, Yusof and Chell (1998) claim that many organisations tend to ignore the evidence that, without an information quality program, they are automatically at risk. Despite the media coverage of the role played by inappropriate information management in the fraudulent activities resulting in many high profile corporate collapses "few academic studies have focused on the integration of risk management, compliance and internal control" (Rikhardsson, 2006, p.10). This paper attempts to help fill that gap in the literature.

This paper proposes a view of information quality which encapsulates recordkeeping/information management functionality. In the current increasingly regulatory and legislative business environment the management of both paper and digital records is becoming increasingly complex. At the same time the digital environment devolves responsibility for many aspects of the recordkeeping environment to the end user. Organisations need to assess and continually improve the processes and procedures which can guarantee information quality. The Information Risk construct described in this paper provides for organisation a means to carry out these tasks. The construct is built around data relating to a number of factors relating to 11 components of an effective information management program. Data is provided at individual factor level, component level and overall risk construct level. The construct assists organisations to identify those aspects of their recordkeeping functionality which might be compromising information quality and exposing the organisation to risk. The construct will help organisations ensure that "integrated strategies and tools for the management of all types of information do not compromise the characteristics that give records their evidential value" (NAA, 2001, p.4).

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## Notes

1

Records management program: a plan of action for achieving control of the records of an organisation. An integrated records management program takes into account the information needs of the organisation as a whole, and recognises the interdependence between the different information management functions in the organisation.

2

Making and maintaining complete, accurate and reliable evidence of business transactions in the form of recorded information.

- <sup>3</sup> Records: information created, received, and maintained as evidence and information by an organisation or person, in pursuance of legal obligations or in the transaction of business.
- <sup>4</sup> Those records that are appraised as having continuing values.
- <sup>6</sup> Recordkeeping systems: information systems which capture, maintain and provide access to records over time.
- <sup>6</sup> Records management needs analysis: an analysis of records management solutions for an organisation in the light of requirements, and the value, costs, and practicability of the solutions. It involves seeking management support, establishing detailed terms of reference, gathering information, analysing the information and developing alternatives, carrying out a cost benefit analysis and finally preparing and presenting a report. The process can take from as little as a month or two to several years.
- <sup>7</sup> Vital records: those records without which an organisation could not continue to operate. They are the records which contain information needed to re-establish the organisation in the event of a disaster which destroys all other records.
- <sup>8</sup> Semi-active records: a category of records in between active and inactive records. 'Previous Year' records which are needed for reference when the current year's work is being done are an example of semi active records.
- <sup>9</sup> Inactive Records: those records which are seldom accessed, but which must be retained for occasional reference, or for legal or archival reasons. <sup>10</sup> Disposal: a range of processes associated with implementing records retention, destruction or transfer decisions which are documented in disposition authorities or other instruments. <sup>11</sup> Destruction: process of eliminating or deleting records, beyond any possible reconstruction.
- <sup>12</sup> Retention periods: the specific time periods for which records are kept prior to their destruction. Statutory retention requirements: legislation requiring the retention of specific categories of records of documents relating to various business or administrative activities, such as personnel, tax and audit.
- Disposal authority: a formal instrument that defines the retention periods and consequent disposal actions authorised for classes of records which are prescribed in it.
- General disposal authority: a disposal schedule covering the disposal of records common to a number of public offices, for example, central government accounting, building and services, stores and transport, and school records, and also common categories of municipal records.
- <sup>13</sup> Movement: moving records from one location to another.
- <sup>14</sup> Classification: systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, methods, and procedural rules represented in a classification scheme.
- <sup>15</sup> Thesaurus: an alphabetical listing of allowed and non allowed terms, usually with cross references to link the non allowed and allowed terms, and to suggest related allowed terms. Also referred to as control vocabulary.
- <sup>16</sup> Tracking: creating, capturing and maintaining information about movement and use of records.

## Appendix A

Sections C–M of questionnaire utilised in Pullen's (2004) research relating to information management in public and private sector organisations.

### Part C: Records in the organisational structure

1 Does your organisation have an identifiable records management program?<sup>1</sup>

Yes No (If no, go to Question 13) In progress



1



2



3

2 Where is your records management program located within your corporation's organisational structure?

.....

.....

3 Is responsibility for records management assigned to an appropriate management delegate?

Yes 1 No (If no, go to Question 11) 2

4 What is the title of the person to whom responsibility for records management is assigned?

.....

.....

5 Has your organisational model for the records management program been based upon industry accepted models or developed in house? Based on industry models 1 Developed in-house 2 Unsure 3

6 Is your records management program regularly reviewed and assessed against its plans and objectives?

Yes 1 No 2 Unsure 3

7 Are recordkeeping<sup>2</sup> responsibilities of staff documented and communicated to all staff of the organisation?

Yes 1 No (If no, go to Question 15) 2

8 Which method/s are used to communicate these recordkeeping responsibilities? (Please tick the appropriate box/es)

Procedures manuals 1 Statement of duties 2 Policy statements 3 Circulars and/or newsletters 4 Internal computer network/intranet 5 Other (please provide detail) 6

9 Does your organisation produce a documented strategic plan for management of records?<sup>3</sup>

Yes 1 No (If no, go to Question 18) 2 Currently being developed 3 Unsure 4

10 Which of the following are covered by your strategic plan? (Please tick the appropriate box/es) Paper records •

Electronic records • E-mail • Active records • Archival records<sup>4</sup> • Unsure • Other (please provide detail) •

11 When was your organisation's strategic plan for records management last updated? 2003 1 2002 2 2001 3 2000 4

1999 5 Unsure 6 Other (please provide details below) 7

12 Does your organisation have a records management policy?

Yes 1 No (If no, go to Question 20) 2 Currently being developed 3 Unsure 4

13 What type of records does this policy incorporate? Paper records only 1 Electronic records only 2 Both paper and electronic records 3 Unsure 4

#### Part D: Staff and training needs

14 Are all organisational staff provided with training about recordkeeping practices and the use of organisational records and systems?<sup>5</sup>

Yes 1 No (If no, go to Question 24) 2

15 If applicable, is either of the following provided with training about recordkeeping practices and the use of organisational records and systems?

Contractors 1 Consultants 2 Not applicable 3 Unsure 4

16 Which methods are used to provide training in recordkeeping practices to organisational staff? (Please tick the appropriate box/es) Induction program 1 Formal internal training 2 Formal external training 3 Briefing sessions on specific issues 4 Practical hands-on sessions 5 Internal publications and leaflets 6 Other (Please specify below) 7

17 Does training in recordkeeping practices address: (Please tick the appropriate box/es) Paper recordkeeping issues 1 Electronic recordkeeping issues 2 Search and retrieval 3 Classification 4 Records disposal 5 Capture of records into organisational recordkeeping systems 6 Other (Please specify below) 7

18 Does your organisation perform a needs analysis<sup>6</sup> upon records management staff?

Yes 1 No (If no, go to Question 26) 2 Unsure 3

19 How often is the training needs analysis of records management staff performed?

Annually 1 At regular intervals 2 Occasionally 3 Once only 4 Unsure 5

**Part E: Creation and capture of records**

20 Has your organisation produced policies or guidelines for documenting the following:

Voice Mail Yes 1 No 2 Email Yes 1 No 2 Fax Yes 1 No 2 Minutes Yes 1 No 2 Correspondence (internal/external) Yes 1 No 2 Oral decisions/communications Yes 1 No 2 Telephone discussions Yes 1 No 2 Other (Please specify below) 3

.....  
.....

**Part F: Vital records and disaster management**

21 Has your organisation identified and listed its vital records?<sup>7</sup>

Yes 1 No 2 In progress 3 Unsure 4

22 Does your organisation have current disaster reaction and recovery plans in place for records and records storage throughout the organisation?

Yes 1 No (Go to Question 30) 2 In progress 3 Unsure 4

23 Do these disaster management strategies make provision for electronic records?

Yes 1 No 2 Unsure 3

**Part G: Physical storage of records**

24 Has the location for storage of corporate paper records been approved by a records manager?

Yes 1 No 2 Unsure 3

25 Has the location for storage of corporate electronic records been approved by a records manager?

Yes 1 No 2 Unsure 3

26 Has the location for storage of corporate paper records been documented?

Yes 1 No 2 Unsure 3

27 Has the location for storage of corporate electronic records been documented?

Yes 1 No 2 Unsure 3

28 Where are your organisations semi-active<sup>8</sup> and inactive<sup>9</sup> paper records stored?

In-house Yes 1 No 2 Unsure 3 Outsourced with commercial storage providers Yes 1 No 2 Unsure 3 Backed up Yes 1 No 2 Unsure 3

29 Where are your organisations semi-active and inactive electronic records stored? In-house Yes 1 No 2 Unsure 3

Outsourced with commercial storage providers Yes 1 No 2 Unsure 3 Online Yes 1 No 2 Unsure 3 Offline Yes 1 No 2 Unsure 3 Backed up Yes 1 No 2 Unsure 3

30 Are paper records of continuing value maintained within environmentally controlled storage facilities?

Yes 1 No 2 Unsure 3

31 Are electronic records of continuing value maintained within environmentally controlled storage facilities?

Yes 1 No 2 Unsure 3

32 Are records storage areas used specifically (solely) for storage of records and/or records and library items?

Yes 1 No 2 Unsure 3

33 Are your records storage facilities intruder resistant and/or access controlled? Yes 1 No 2 Unsure 3

**Part H: Disposal of records**

34 How often does your organisation undertake disposal<sup>10</sup> of its paper records?

Regularly 1 Occasionally 2 Never 3

35 Are there documented procedures for disposal of paper records (eg in procedure manuals)?

Yes 1 No 2 Unsure 3

36 How often does your organisation undertake disposal of its electronic records?

Regularly 1 Occasionally 2 Never 3 Unsure 4

37 Are there documented procedures for disposal of electronic records (eg in procedure manuals)?

Yes 1 No 2 Unsure 3

38 How does your organisation document its disposal information? Using records management software 1 Manually 2 Other (Please specify below) 3

.....

39 How are records disposed<sup>11</sup> of? (Please tick the appropriate box/es) According to disposal requirements 1 All are shredded

2 All are thrown in a bin 3

All are burnt 4 Electronic records are erased 5 Other (Please specify below) 6

.....

40 How are records retention periods<sup>12</sup> established? (Please tick the appropriate box/es) From published authorities 1 From Governmental requirements 2 From industry guidelines 3 From in house developed guidelines 4 Other (Please specify below) 5

.....

41 How does your organisation ensure that appropriate retention periods are applied to records? Electronic methods 1 Manual methods 2 Other (Please specify below) 3

.....

### Part I: Control of records

42 Does your organisation document and track the movement<sup>13</sup> of paper records?

Yes 1 No 2

43 Does your organisation restrict access to paper records?

Yes 1 No 2

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44

Does your organisation restrict access to some or certain Yes No Unsure electronic records? 1 2 3

45 Does your organisation control the creation of electronic records to ensure that they are captured onto the organisations server? Yes 1 No 2 Unsure 3

### Part J: control and maintenance of records

46 Has your organisation identified and documented paper recordkeeping requirements? Yes 1

No 2

47 Has your organisation identified and documented electronic recordkeeping requirements? Yes 1 No

2 Unsure 3

48 Has your organisation incorporated the Australian Standard AS ISO 15489 or AS 4390-1996, Records Management

into its recordkeeping practices? Yes  No  Unsure

49 Has the records management program or system been examined or redesigned as a result of any of the following activities in your organisation? (Please tick the appropriate box/es)

Business re-engineering Yes  No  Total Quality Management Yes  No  Functional Reviews Yes  No

Certification -Quality Systems Yes  No  Risk Assessment Yes  No  Investigation or Audit Yes  No

Compliance to new standard Yes  No  Other (Please specify below)

### Part K: Electronic document management

50 Does your organisation use document management products?

Yes  No (If no, go to Question 59)  Unsure

51 Which document management product do you use?

PCDocs  RecFind  Objective  TRIM  Product developed in house  Other (Please specify below)

52 Are the above product/s or tools being used to manage electronic records?

Yes  No  In Progress  Unsure

### Part L: Paper recordkeeping systems

53 Does your organisation use information management software to assist in managing paper records?

Yes  No (If no, go to Question 62)  Unsure

54 Which software product does your organisation use to manage its' paper records?

55 Is this system used for: Classification<sup>14</sup> – external thesaurus<sup>15</sup>

Yes  No  Classification-inbuilt thesaurus Yes  No  Tracking<sup>16</sup> Yes  No  Running Reports Yes  No  Applying retention periods Yes  No  Bring Ups Yes  No  Other (Please specify below)

56 How does your organisation maintain reliable paper recordkeeping systems? Regular performance audits of the recordkeeping system Yes  No  Standard procedures for reporting system failure Yes  No  Regular testing of guidelines Yes  No  Training of staff Yes  No  Compliance with standard Yes  No  System is adequate – none of the above is required Yes  No  Other (Please specify below)

57 Does your organisation document changes made to paper recordkeeping systems?

Yes  No  Unsure

### Part M: Electronic recordkeeping

58 Has your organisation developed, specifically for electronic records, either of the following?

Organisational Policies Yes  No  Unsure  User Guidelines Yes  No  Unsure

59 Does your organisation maintain its electronic records and messages in one or more of these ways?

Use software that has records management functionality Yes  No  Use software that has records and/or document

management functionality Yes 1 No 2 Within the system in which they were created (eg, Microsoft Word/Excel) Yes 1 No 2 **By printing or transcribing and filing these records** Yes 1 No 2 In electronic form within a system designed specifically to capture and maintain electronic messages (for example, Outlook or similar email systems) Yes 1 No 2 Other (Please specify below) 1

.....

60 Has your organisation developed strategies for maintaining electronic/technology dependant records over time?

Yes 1 No (If no, go to Question 69) 2 Unsure 3

61 Do these strategies involve: Migrating electronic records to new software and hardware platforms Yes 1 No 2 Creating and/or keeping electronic records in formats conforming to accepted standards that outlast technological change Yes 1 No 2 Retaining original technology Yes 1 No 2 Other (Please specify below) 3

.....

62 Are the retention strategies outlined above applied in practice?

Yes 1 No 2 Unsure 3

63 Are any of the following measures adopted to assist in ensuring the effectiveness of maintaining electronic recordkeeping systems?

Staff training Yes 1 No 2 Standard procedures for reporting systems failure Yes 1 No 2 Adequate security controls Yes 1 No 2 Regular performance audits of the recordkeeping system Yes 1 No 2 Regular testing of guidelines Yes 1 No 2

64 Does your organisation document changes made to electronic recordkeeping systems?

Yes 1 No 2 Not Applicable 3 Unsure 4