ESARBICA JOURNAL

JOURNAL OF THE EASTERN AND SOUTHERN AFRICA REGIONAL BRANCH OF THE INTERNATIONAL COUNCIL ON ARCHIVES

Volume 36

2017

ISSN 2220-6442 (Print), ISSN 2220-6450 (Online)

A PROACTIVE AND HOLISTIC INFORMATION MANAGEMENT APPROACH IS CRUCIAL TO E-GOVERNMENT DEVELOPMENT

Proscovia Svärd
School of Interdisciplinary Research and Post-Graduate Studies, University of South Africa
proscovia.svard@sh.se

Received: 20 May 2015
Revised: 15 June 2016
Accepted: 10 February 2017

Abstract

This article highlights developments that are taking place in the Swedish information management field amidst e-Government development. It also confirms the change in attitude which has led to the involvement of the Swedish National Archives as an important partner in e-Government development. The National Archives was charged with the responsibility to develop two important functions that uphold the open governance structure of Swedish government administrations; namely e-archiving and e-registration. European governments are investing in e-Government development to create more efficient public institutions and to make their information flows available to the citizens. A proactive and holistic information management approach is crucial to the effective management of government information. This requires an information infrastructure that will facilitate the management of the entire information continuum and employees who understand the value of information to promote its effective use. The article draws on the author's PhD research that identified eight Enterprise Content Management (ECM) factors that are considered by the ECM proponents as crucial to robust information management. These eight factors include; enterprise architecture, business process management, collaboration, system integration, knowledge management, change management, re-purposing of information and the life cycle management of information. Some of these factors are currently being adopted in the Swedish information management environment which further confirms their relevance. Furthermore, Sweden enacted a directive on the repurposing of government information in compliance with the European Public Sector information directive (PSI). The European PSI directive gives different stakeholders in European societies a right to access government information and to develop new electronic services hence boosting innovation. The pluralization of information as per the PSI will require the adoption of the Records Continuum Model (RCM) thinking. This is because the RCM emphasizes the management of information in a way that facilitates its pluralization in different environments. It further combines archives and information management activities which should promote the integration of information resources. This is suitable for the e-Government environment since it would promote the re-purposing of government information. If the e-Government objectives are to be realized, government institutions must adopt best- practice, the ECM factors, and progressive models such as the RCM.

Keywords: Information Management, Public Sector Information, e-Government, Information Culture, Enterprise Content Management and Records Continuum Model.

Introduction

Information is the lifeblood for economic, cultural and political achievements, enhanced by information technology (Svärd 2014). Though information has become the fuel that drives organizations today, it creates challenges if poorly managed. Its rapid growth , increasing types of data, people and infrastructural changes, regulatory and legal requirements and the complexity of managing information across virtual, physical, hybrid and cloud infrastructures call for new information management models and require the involvement of all organizational

employees, (Coleman 2000). This article draws on the author's Ph D research that she completed in May, 2014 and which explored the concepts of Enterprise Content Management (ECM), records management and information culture. It focuses on the eight ECM factors that the Ph D research identified as crucial to a proactive and holistic information management approach and compares them with the developments that are taking place in the Swedish information management landscape. These eight factors include; enterprise architecture, business process management, collaboration, system integration, knowledge management, change management, re-purposing of information and the life cycle management of information.

e-Government development has led to an increase in information and hence the new demands on information management practices (The International Records Management Trust, 2004). e-Government aims to create more efficient public institutions and to make their information flows available to the citizens (Statens Offentliga Utredningar (SOU), 2009:86). Lind, Östberg and Johannisson (2009:38) defined it as "the use of information and communication technology in public administrations combined with organizational change and new skills to improve public services and democratic processes and strengthened support to public policies." Nordfors, Ericson, Lindell and Lapidus (2009) postulated that the Swedish e-Government definition includes; e-Services which is the development of government services and the exercising of public authority using electronic channels; e-Government - the development of internal efficiencies and between other government bodies and e-Democracy - the development of the possibility for the public to influence and participate in the political sphere. The Swedish government is therefore working hard to promote government information sharing across state, regional, and the private sector. The use and re-use of government information is further regulated at both the European and national levels through the Public-Sector Information Directive (PSI) which offers European citizens a golden opportunity to explore government information resources to develop new electronic services (Lundqvist 2013). This information must be made available for re-use under open terms and conditions. The directive also includes cultural heritage institutions such as public archives, museums and libraries (Keller, Margoni, Rybickab and Tarkowskic 2014)

e-Government development requires robust information management regimes if information is to be leveraged, in a manner that will lead to efficient government administrations and information sharing among the various stakeholders. It has led to changes in the Swedish information management landscape. The Swedish National Archives that oversees the overall management of government information and that has traditionally taken care of the administrative residues of government institutions in form of archival records, is now considered to be of central importance to the active management of information. This further demonstrates the importance of managing the entire information/records continuum, that constitutes; processes of creation, capture, organize and pluralize, if information is to be managed and leveraged to its fullest potential.

Archmann and Iglesias (2010) argued that e-Government requires thinking organizations, a change in processes and in behaviours. This means that organizations should re-engineer their business processes to create efficiencies and to identify important information. They further need to facilitate an understanding of the value of information among their employees if it is to be created, managed, used and re-used in a manner that promotes business success and the e-Government objectives (Hammer and Champy 1995; Oliver, 2010; Svärd 2014). The change in both business processes and behaviors which the above scholars refer to also requires embracing best-practice models such as the Records Continuum Model to facilitate the establishment of robust information management regimes and the pluralization of public

information. The Record Continuum Model is a progressive digital information management approach which combines archives and records management responsibilities (McKemmish 1997). It constitutes four dimensions; create, capture, organize and pluralize. These dimensions highlight the different activities that organizations need to undertake to effectively manage their information resources. The RCM facilitates an understanding of information management activities by all organizational employees (Upward 2001). It therefore suits the e-Government environment where information is supposed to be used in different contexts and by different stakeholders to develop new services. This paper presents an introduction which gives background information on the issue being researched, a method that helped the author to achieve the presented results, research findings and a discussion and conclusion.

Method

Information management involves; people, systems and processes and this combination poses challenges to the information management landscape. To explore this complexity, qualitative research was undertaken to cultivate a deeper understanding of organizational and information management issues. Jabareen (2009) argued that qualitative research methods serve as adequate tools for exploring complex phenomena. It offers a rich variety of methodological combinations such as interviews, documentary analysis and observations (Patton 2002:248). The article draws on the author's Ph D research that was conducted between 2009 – 2014. Through an extensive literature review the author identified eight factors that are of paramount importance to a proactive and holistic approach to information management. These factors include; enterprise architecture, business process management, collaboration, system integration, knowledge management, change management, re-purposing of information and the life cycle management of information(Svärd 2011, Svärd 2014).

The objective of this study was to establish whether the ECM factors were being considered in the changing Swedish information management environment. To achieve the research objective, the author conducted document analysis on developments in the Swedish information landscape. It entails the systematic evaluation of both digital and paper-based documents where the researcher has to interpret the identified documents in order to gain an understanding of the researched phenomenon (Bowen 2009).

Research findings

The section below presents a model that resulted from the literature review on Enterprise Content Management (ECM) and offers a brief presentation of the factors. These factors were published in the author's licentiate thesis entitled "The Interface Between Enterprise Content Management and Records Management in Changing Organizations" and the Ph D Thesis entitled "Information and Records Management Systems and the Impact of Information Culture on the Management of Public Information" (Svärd, 2011, 2014). The section also presents the developments that are taking place in the Swedish information management environment that is impacted by e-Government development.

The ECM Model

Figure 1: The model derived from a literature study on ECM (Svärd 2011)

Enterprise Architecture

Enterprise architecture promotes good decision making processes regarding information systems and how they fit the existing IT environment (Johnson and Ekstedt 2007). The enterprise architecture models include; applications, business processes, information and the organization's IT infrastructure. Enterprise architecture is crucial to organizations because it facilitates an understanding of the impact of technology investments on overall operations as well as assisting them with legislative compliance. It also provides the essential framework for the communication, interpretation, and implementation of corporate objectives through a well aligned IT environment (Butler Group 2004).

Business process management

Vom Brocke, Simons and Cleven (2009) argued that business processes are a foundation for assessing an organization's content and Enterprise Content Management Systems' functionalities. Business processes analysis enables the identification of weaknesses in business processes and of vital information that is created and received in organizations. It therefore, helps organizations to improve business operations in their entirety focusing on the input, output, the customer and the value of the output (Hammer and Champy 1995; ISO/TR 26122: 2008).

Change management

Change is inevitable in today's business world and therefore, it's successful management is crucial to organizations (Todnem, 2005). Once instituted, it is important that the reasons for change are effectively communicated to the personnel (Rockley, Kostur and Manning 2003). Todnem (2005:369) quoted Moran and Brightman (2001) who defined change management as, "the process of continually renewing an organization's direction, structure and capabilities to serve the ever-changing needs of external and internal customers." Flexibility and responsiveness are key and they require organizational change capabilities, strong leadership, change in organizational culture and values and a focus on customer service (Sundberg 2006). Todnem (2005) further contends that organizational change is closely linked with organizational strategy which in turn makes the management of organizational change a managerial skill.

Collaboration

Collaboration is key in today's organizations and enables employees to dynamically work towards a common goal while capturing, storing, and archiving the content they produce. It is about openness and knowledge sharing and Hockman (2009) argued that collaboration involves:

- Awareness of documents that are shared between departments;
- Communicating internal knowledge and experience;
- Coming up with common search terminology that will be meaningful to different departments as indexing terms;
- A shared vision for process improvement; and
- Input from every department to encourage buy-in (Hockman 2009).

Knowledge management

Knowledge management is of increasing importance to modern organizations especially given the constantly changing environment they operate in (Svärd 2011). King (2009:4) posited that knowledge management is the planning, organizing, motivating and controlling of people, processes and systems in organizations in order to ensure that an organization's knowledge-related assets are improved and effectively used. ECM implementation within organizations is underpinned by the idea and practice of information sharing. This enhances knowledge capture and knowledge transfer. Where in the past knowledge has been retained in the heads of the employees, it is hoped that ECM will help organizations to retain it within the organization (Butler Group 2004; MacMillan and Huff, 2009).

System integration

Abu Baker (2003:38) quoted Khun (1990) who defined systems integration "as the practice of joining the functions of a set of subsystems, software or hardware, to result in a single unified system that supports the requirements of an organization." System integration therefore allows systems to 'talk' to each other and eliminates information silos (Rockley et al. 2003). Access to accurate and timely information hinges on how well aligned information systems are with business operations (Svärd 2014). The real value from information systems, is derived from the integration of disparate applications, so that they can support processes across the whole value chain (Themistocleous 2004).

The life cycle of information management

The life cycle of information and records must be managed and this encompasses creation, management, review, distribution, storage and eventual disposition of information and records (MacMillan and Huff 2009).

E-Government Development and the Changing Information Environment

The Swedish e-government delegation

Sweden has a long history of e-Government development and is one of the leading countries (Lind et al. 2009). Prior to the establishment of the e-Government Delegation, the Swedish government had in 2007 announced its objective to strengthen the governance of developments that are common to all public administrations (eGovernment Delegation 2009). This was to be achieved by addressing the following:

- ensuring that the administration developed common principles for simplifying the exchange of information in public registers;
- ensuring that agencies used uniform formats for other information transfer and communication when necessary;
- ensuring that central government administration in collaboration with municipalities and county councils developed and applied methods for safe electronic communication and document management that are common to all public administration;
- identify important pilot projects to be co-financed, develop the forms for such financing and distribute coordinating responsibility for these projects, and;
- strengthen the follow up and scrutiny of government agencies' IT-based development (e-Government Delegation 2009).

In 2009, it established a specific agency called the e-Government Delegation to co-ordinate and facilitate a coherent management and financing of e-Government projects. The delegation constituted sixteen heads of government agencies and representatives from the Swedish Association of Local Authorities and Regions. The e-Government delegation was charged with the following tasks:

- to suggest a third-generation e-Government policy;
- to coordinate the development of e-Government-projects in Sweden;
- to follow-up the results of e-Government at national level;
- to co-ordinate ICT-standardization at state level;
- to support government in the international e-Government work.

The third-generation e-Government focuses on a demand-driven development of services, third- party collaboration in service development that is, the citizens, increased re-use of public sector information and flexible responsibility for adding value to information and services. To achieve this, the Swedish e-Government Delegation proposed collaboration among major government agencies such as, the Swedish Companies Registration Office, The Swedish Tax Agency, The National Land Survey and the Swedish Transport Agency (eGovernment Delegation 2009). The E-Government Delegation finished its work in December, 2014.

Electronic archiving and registration

To address how information should be effectively managed, the e-Government Delegation charged the Swedish National Archives with the responsibility to develop two important functions that uphold the open governance structure of Swedish government administrations namely; e-registration and e-archiving. It is through the registration of cases submitted to government institutions that traceability and their equal treatment can be achieved. E-archiving facilitates the management of government information as an integrated resource. Access to public information/records can only be achieved by undertaking archiving and registration. All government administrations are, per the Archival Law required, to manage their information in a manner that promotes access (Bohlin 2010). The registration of public records is regulated by law (Gränström, Lundquist, and Fredriksson 2000). The project to develop the e-registration and e-archiving for government administrations is based on the premise that. without effective information management regimes it would be difficult to uphold the right to access government information and to achieve e-Government objectives of increased efficiency and transparency. The project was conducted between the 1st of June 2011 - 30th of June 2014 and it was a collaboration between national, regional and local government agencies (Riksarkivet n.d.). The project's objectives were to develop common specifications for government agencies that would:

- facilitate the transfer of digital records between records management systems and an electronic archive;
- to test and quality assure the specifications; and
- to propose an organization that would implement the common specifications.

The project aimed to facilitate information retrieval, re-use, and transfer of information held by public authorities to the archive. Achieving e-Government goals also requires government agencies to find common solutions to effectively utilize government resources at hand (Riksarkivet n.d.).

The development of common specifications for interoperability

The e-archiving and e-registration project also developed what is referred to as *Förvaltningsgemensamma Specifikationer* - FGS literally translated as Administrative Common Specifications. A common specification is defined as "a structured description of the functional and technical requirements that meet the needs of all or part of the government administration. A specification provides guidance when developing regulations, specifications for system procurement and when writing contracts (Riksarkivet n.d:2)" The purpose of an FGS is to create the desired functionality and interoperability within the administration and when dealing with citizens and businesses. The FGSs are a prerequisite for the establishment of inter-agency information sharing and long-term information provision. They are also meant to simplify the development, procurement and deployment of unified solutions. The goal is to reduce costs and create conditions that facilitate retrieval and re-use of information in the records (Riksarkivet n.d.).

The creation of business process oriented archival descriptions

The identification of important information/records in an organization is intrinsically linked to the analysis of business processes (ISO/TS 23081-1 2004). In 2008 the Swedish National Archives issued a regulation requiring all government agencies to embrace process based

archival descriptions by year 2009 (Riksarkivet 2008). This work is still on-going and it has not been an easy task. Thus, some agencies have not yet fully implemented the new system. It is argued that the process oriented archival description system suits the digital environment better. It links the information/records to the processes from which they emanate (Samuelsson n.d.). The 100-year archival description classification system is in the current complex digital information environment seen as insufficient. This system was hierarchical in structure and was based on series and volumes that described the types of records instead of focusing on the content (Sundberg 2013). In the meantime, since not all government agencies have implemented electronic archives, the two systems are still being used. Most of the digital information has for a long-time been printed on paper as a way of preserving it for long- term use (Svärd 2011), which means the old hierarchical system is still needed. Business process oriented archival descriptions require the involvement of all organizational employees in the identification of important information/records that are generated by the processes they are involved in. This has brought about a positive development which has made information management issues a concern for the entire organization and not only for records managers and archivists. The National Archives has however been criticized for lack of pedagogical instructions regarding the implementation of the business oriented archival description system (Thorn 2015). It is still to be established if the new system will last as long as the old system did, 100 years.

Discussion

The aim of this article was to establish if the eight ECM factors that the author identified through an extensive literature review were reflected in the Swedish changing information management landscape amidst e-Government development The eight factors include; enterprise architecture, business process management, collaboration, system integration, knowledge management, change management, re-purposing of information and the life cycle management of information. The author also proposes the use of the Records Continuum Model thinking as a model. The RCM best suits the digital information landscape and would facilitate the pluralization of government information flows in accordance with the e-Government objectives and the PSI directives. Sweden is currently investing in the third-generation e-Government development which is supposed to be demand driven and meant to involve all society actors. Both at the European and national levels, government information is looked upon as a gold mine that various stakeholders should exploit to develop new electronic services and products. Access to government information is therefore promoted through the Public-Sector Information directives (both at the national and European levels).

However, the effective use and re-use of information will require robust information management regimes and modelling of information in a manner that will serve the various stakeholders. The Records Continuum Model (RCM) promotes integration of information management activities (records and archives management) and should lead to the consolidation of government information flows.

The review of the current Swedish information management landscape confirmed changes that have put information at the center of e-Government development. This has been achieved through the involvement of the Swedish National Archives in the development of e-archiving and e-registration project. These two functions are key to the promotion of transparency and accountability of government institutions through information access. The two functions are a foundation for an information infrastructure that would promote the effective management of information. A new way to describe archives had also been introduced which led to the phasing out of a 100-year-old system that has been used by all government agencies in Sweden. This system used to divide records into series regardless of the processes

that generated them. The new system which is process-based focuses on the description of information/records per the processes that produce them. The adoption of business process oriented archival descriptions has made information management a concern for all organizational employees. Records Managers and Archivists are no longer the only employees responsible for the management of government information. Other categories of organizational employees can no longer afford to regard information as something that does not concern them. Therefore, it is important that everyone in the organization who creates information also understands how it should be managed. To promote information exchange among government institutions a project had been pursued to promote the interoperability of government information management systems.

A comparison of the above developments with the eight ECM factors confirmed that some of the ECM factors systems such as repurposing of information, collaboration, system integration and business process management were being espoused. In order to implement the business oriented archival descriptions, business processes need to be analysed, the inclusion of the National Archives in e-Government development demonstrated the need to collaborate around information management issues, especially in the current complex digital information environment, the project systems to address interoperability issues systems to exchange systems information among government institutions also meant that systems integration was being considered if systems were to "talk" to each other and finally, through the PSI directives and e-Government development, repurposing information was also being promoted.

Conclusion

The research findings confirmed the importance of the factors highlighted in the ECM model that the author presents on page 4. The factors that were being espoused in the Swedish information management environment included; repurposing of information, collaboration, system integration and business process management. The re-purposing of information is emphasized through the Public-Sector Information directive. The development of e-archiving and e- registration functions are supposed to facilitate information access. Collaboration among public administrations is expected to be promoted through the creation of common specifications to facilitate information exchange. Information exchange will require well integrated information management systems that would bring together all government information resources. The creation of the common specifications to solve interoperability issues is a good example of how government institutions should effectively utilize the resources at hand to find common solutions to the challenges of information management. In conclusion, some of the factors that the ECM model presents are clearly being considered as important to effective information management. The achievement of a proactive and holistic information management approach will require e-archives and this is an aspect that is still under development. The author did not identify any discussion relating to the use of RCM model in the Swedish information management landscape. The existing discussion is pursued by academics. Therefore, the challenge before information scholars is to translate theoretical and best practice models such as the RCM into usable tools that can be espoused in practice.

References

Abu, B. Z. 2003. Benefits of systems integration: qualitative or quantitative? *Malaysian Journal of Computer Science* 16(2):38-46.

Alavi, M. and Leidner, D. E. 2001. Review: knowledge management and knowledge management systems: concepetual foundatios and research issues. *MIS Quarterly* 25(1):107-136.

Archmann, S. and Iglesias, C. J. 2010. eGovernment – a driving force for innovation and efficiency in Public Administration. [Online]. Available WWW: http://www.eipa.eu/files/repository/eipascope/20100519110452_Eipascope_2010_1e Government.pdf (Accessed 22 May 2013).

Bowen, G. A. 2009. Document analysis as a qualitative research method. *Qualitative Research Journal* 9 (2):27-40.

Bohlin, A. 2010. *Offentlighetsprincipen* (Åttonde Upplaga ed.). Mölnlycke: Elanders Sverige AB.

Butler Group. 2004. *Enterprise architecture. an end-to-end approach for re-aligning IT with business aims*. Hull: Butler Group.

Coleman P. 2000. Information management - a global enterprise challenge. [Online]. Available WWW: http://www.thedatachain.com/materials/global_report.pdf (Accessed 3 March 2012).

eGovernment Delegation. 2009. Strategy for the government agencies work on eGovernment. Summary of SOU 2009:86. [Online]. Available WWW: http://www.edelegationen.se/Documents/Remisser,%20bet%C3%A4nkanden%20mm /SOU2009_86_Summary_0.pdf (Accessed 12 April 2015).

Gränström, C., Lundquist, L. and Fredriksson, K. 2000. *Arkivlagen, Bakgrund och kommentarer* (Vol. andra upplagan,). Göteborg: Graphic Systems AB.

Hammer, M. and Champy, J. 1995. *Re-engineering the corporation. a manifestor for business revolution*. London: Nicholas Brealey Publishing.

Hockman, H. 2009. Change management: ensuring ecm success by preparing end-users for automation, optical image technology. [Online]. Available http://www.docfinity.com/reference/change-management-ensuring-ECM-success.htm (Accessed 2 March 2010).

ISO/TS 23081-1. 2004. Information and documentation – records management processes – metadata for records. Part 1 Principles.

Jabareen, Y. 2009. Building a conceptual framework: philosophy, definitions, and procedure. *International Journal of Qualitative Methods* 8(4):49-62.

Johnson, P. and Ekstedt, M. 2007. *Enterprise architecture, models and analyses for information systems decision making*. Pozkal: Studentlitteratur.

Keller, A., P., Margoni, T., Rybickab, K. and Tarkowskic, A. 2014. Re-use of public sector information in cultural heritage institutions. *International Free and Open Source Software Law Review* 6(1):1-9.

King, W. R. 2009. Knowledge management and organizational learning. *Annals of Information Systems* 4:3-13.

Lind, M., Östberg, O. and Johannisson, P. 2009. Acting out the Swedish e-government action plan - mind and mend the gaps. *International Journal of Public Information Systems* 2:37-60.

Lundqvist, B. 2013. Turning government data into gold'': the interface between eu competition law and the public sector information directive—with some comments on the compass case. (IIC 44): 79-95.

MacMillan, A. and Huff, B. 2009. *Transforming infoglut! a pragmatic strategy for oracle enterprise content management, manage corporate-wide content and intellectural property*. United States of America: The McGraw-Hill Companies Inc.

Nordfors, L., Ericson, B., Lindell, H. and Lapidus, J. 200) eGovernment of tomorrow - future scenarios for 2020. [Online]. Available http://www.vinnova.se/upload/EPiStorePDF/vr-09-28.pdf (Accessed 30 April 2015)

Riksarkivet. 2008. *Riksarkivets författningssamling*. [Online]. Available WWW: http://riksarkivet.se/Media/pdf-filer/RAFS%202008-4.pdf. (Accessed 17 April 2015).

Riksarkivet. (n.d.). The e-Archive and e-Diarium Project, eAR. [Online]. Available WWW: http://riksarkivet.se/Media/pdf-filer/Projekt/eARD_informationstext_eng.pdf (Accessed 17 April 2015)

Rockley, A, Kostur, P. and Manning, S. 2003. *Managing enterprise content, a unified content strategy.* Indianapolis, Ind: New Riders.

Samuelsson, G. (n.d.). The new information landscape. the archivist and architect – drawing on a common map? [Online]. Available WWW: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/mow/VC_Samuelsson_28_D_1110.pdf (Accessed 17 April 2015).

Sundberg, H. 2006. *Problems in public e-services development. doctoral thesis.* Sundsvall: Mid Sweden University.

Statens Offentliga Utredningar (SOU). 2009. Strategi för myndigheternas arbete med e-förvaltning. Betänkande av E-delegationen. Stockholm. [Online]. Available WWW: http://www.sweden.gov.se/sb/d/11456/a/133813 (Accessed 30 December 2011).

Statskontoret. 2014. Delegerad digitalisering. en utvärdering av e-delegationen. [Online]. Available WWW: http://www.statskontoret.se/upload/Publikationer/2014/201412.pdf (Accessed 30 April 2015).

Sundberg, H. 2013. Process based archival descriptions – organizational and process challenges. *Business Process Management Journal* 19(5):783-798.

Svärd, P. 2011. The I*nterface between enterprise content management and records management in changing organizations. lecentiate thesis*. Härnösand: Mid Sweden University.

Svärd, P. 2014. Information and records management systems and the impact of information culture on the management of public information. Doctoral Thesis. Amsterdam, University of Amsterdam.

Themistocleous, M. Irani, Z. K., Jasna, L. and Peter, E. D. 2004. Extending the information system lifecycle through enterprise application integration: a case study experience. *Proceedings of the 37th Annual Hawaii International Conference on System Sciences*. doi: 10.1109/HICSS.2004.1265558

Upward, F. 2001. Modelling the continuum as paradigm shift in recordkeeping and archiving processes, and beyond – a personal reflection. 1-21. [Online]. Available WWW: http://infotech.monash.edu/research/groups/rcrg/publications/frank-u-rmj-2001.pdf (Accessed 12 February 2012).

vom Brocke, J., Simons, A. and Cleven, A. 2009. Towards a business process-oriented approach to enterprise content management: the ECM-blueprinting framework. *Inf Syst E-Bus Manage* 1-22.

Yin, K. R. 2009. *Case study research, design and methods.* 4th. Thousand Oaks: Sage.

Young, R. and Jordan, E. 2008. Top Management support: mantra or necessity?. *International Journal of Project Management* 26(7):713-725.