

A cost-benefit analysis of document management strategies used at a financial institution in Zimbabwe: A case study

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Background: Choosing a cost-effective document management approach has become a priority to many organisations, especially in view of the rapidly changing technological environment in which information is being created and managed. A literature survey indicated that document management strategies have the potential to provide some substantial cost-saving benefits if they are used judiciously.

Objectives: This study investigated a commercial bank's document management approaches in a bid to ascertain the costs and benefits of each strategy and related issues.

Method: A quantitative research approach was employed through a case study which was used to gather data from a sampled population in the bank.

Results: The document management approaches used were not coordinated to improve operational efficiency. There were regulations governing documents management. The skills and competences of staff on both document management and cost analysis are limited. That is partly due to limited training opportunities availed to them. That means that economies are not achieved in the management of records. That has a negative impact on the overall efficiency, effectiveness and legal compliance of the banking institution.

Conclusion: The financial institutions should create regulations enabling periodical cost-benefit analysis of document management regimes used by the bank at least at quarterly intervals as recommended by the National Archives of Australia. A hybrid approach in managing records is recommended for adoption by the financial institution. There should be on-the-job staff training complimented by attendance at relevant workshops and seminars to improve the staff's understanding of both the cost-benefit analysis concept and document management.

Background to the study

Information created and used by a business is managed in documents, usually captured as records stored, maintained, distributed or communicated in some format. Broadly, electronic, paper and micrographic document management strategies are used by many organisations in managing their information (Ngulube 2011:1; Svärd 2011). Choosing a cost-effective document management approach has become a priority to most organisations, especially in view of the rapidly changing technological environment in which information is being created and managed (Wang *et al.* 2003; International Records Management Trust 2006; Ngulube 2011). Business managers have seen the importance of choosing suitable document management plans that fit with their technological environment and anticipated growth. Ngulube (2011:1) notes that 'document management strategies have the potential to provide some substantial cost-saving benefits if they are used judiciously'.

Document management challenges affect all types of business, including commercial banks. Financial institutions exist to enhance the financial welfare of citizens and to generate profit. Profit is partly used to measure the success of such business institutions. They have stakeholders such as owners, citizens, government and external funders who provide them with the resources. The effective management of documented information attracts the interest of all the stakeholders of the financial institutions. Public assurance of privacy, confidentiality and security of information; government requirements for retention and disposal; and the financial institution owners' interests on efficiency and effectiveness warrant some degree of professionalism and analysis of business processes in document management to ensure cost effective and beneficial document management.

Cost-benefit analysis (CBA) has been used to determine the most cost-effective and beneficial strategy for document management (Megill & Schantz 2000:109; National Archives of Australia 2003). The cost-benefit analysis guidelines given by the International Records Management Trust

(2006:4) define a cost-benefit analysis as 'a systematic approach to estimating the strengths and weaknesses of technology alternatives that satisfy agency business requirements'. Cost-benefit analysis is a technique that is used to determine options that provide the best approach for the adoption and practice in terms of benefits in labour, time and cost savings (Ngulube 2011; Báeza & Herrero 2012). This article seeks to investigate a cost benefit analysis of document management strategies at a selected financial institution in Zimbabwe.

Contextual setting

The financial institution under study is one of the long-established financial institutions in Zimbabwe. It has a substantial amount of documents managed using various document management strategies and it affects a relatively large number of citizens. A quantitative case study design was employed to determine the document management strategies employed by the financial institution. Specifically, the research investigated the financial institution's two departments: namely the information technology (IT) and Software Library Department (SLD); and the Securities, Safe Custody and Archives Department (SSCAD) as these two departments were involved in the management of both electronic and paper records and documents. Their records included customer applications, records from report generating programmes, client transactional receipts and ledger registers.

The financial institutions also used computer-based databases to store and retrieve accounts payable and accounts receivable records. These databases are stripped from the information technology department which runs the database management system (DMS) for the bank. Safe Custody and Archives Department also stores these stripped-off databases on designated computers for both back-up and retention purposes. These databases mainly contain both accounts statements and general ledger statements which could be requested by the creating departments for reference. The use of information technology generates a lot of documented information that inevitably requires a documentation strategy that is both effective and efficient. The departments therefore provided a good case that would enable the researchers to answer the research questions.

Apart from handling a substantially large amount of documents that inevitably need a viable document management strategy, the two departments were chosen because their activities are regulated by law. The financial institution cannot re-engineer these departments' business processes in document management in any way it desires because the law stipulates crucial regulations regarding the retention and disposal as well as the format of the documented records that would be admissible as evidence in the case of litigation. *Statutory Instrument 23 called the Serious Offences (Retention of Documents) Regulations of 1995 [Act 20/90] section 3(b)* prescribes that every commercial bank in Zimbabwe should retain physical documents for not less than six years (Government of Zimbabwe 1995). Furthermore, the *Banks*

Act 5/1999 of Zimbabwe requires financial institutions including banks to maintain the information they generate in a manner that will promote transparency, accountability and accessibility (Government of Zimbabwe 2004).

The proliferation of compound documents, unstructured information on local area networks (LANs), and virtual private networks (VPNs) commonly used by banking institutions; as well as mail servers, hard-drive storage solutions, and office documents (Svärd 2011:5), is posing challenges regarding the best possible document management strategy that a banking institution should take in order to realise the benefits of efficiency, effectiveness and usability of documented information. A survey on African banks by the World Bank (2009:12) reflects that documented information in banks is continuously being used, distributed, controlled, maintained and stored by electronic means.

With the increased tendency of creating too much information enabled by too many technological devices in the banking sector (Ambira & Kemoni 2011), especially from clients undertaking transactions, (Megill & Schantz 2000:109) it becomes even more difficult to efficiently and effectively select and utilise documents management methods, which impact negatively on the overall efficiency of the banking industry. Here, the choice of the strategy is even more critical. Many organisations in a East and Southern Africa Regional Branch of the International Council on Archives (ESARBICA) operate through a parallel document management plan involving electronic and paper-based systems (Ngulube & Tafor 2006; Ambira & Kemoni 2011). Whilst surrogates can be helpful as back-up, this approach often causes duplication of efforts and resources (Roper & Millar 2009). As such, strategies for identifying, adopting, implementing and maintaining cost-effective systems have become important.

Our preliminary investigation revealed that the document-creating departments were experiencing an unprecedented accumulation of paper-based and electronic records, forms and files. More so, SSCAD which acted as the intermediate storage facility for both semi-current and non-current records - mainly those records that were retained as required by law- was becoming over-capacitated by large volumes of files, withdrawal slips and other computer print-out records. There was also a high likelihood that essential records and vital records deposited with SSCAD for secure storage may possibly get mixed up with non-current records pending disposal, and this poses difficulties when it comes to the retrieval of the required information. Creating departments, the police and legal departments which often consult these departments to retrieve records when they need information for various reasons such as operational use, fraud investigation and lawsuit may find themselves failing to access the records.

This state of affairs inevitably prompted the researchers to investigate the possibility of coming up with a workable solution to champion a more standardised, coherent, cost-effective and beneficial document management strategy for enterprise-wide adoption at the institution.

Justification of the study

Cost-benefit analysis is pertinent to this study because it may provide organisations with valuable information about the status of its documents regimes and available alternatives by identifying, analysing and presenting results about the costs and benefits of documents management approaches it uses. The aim was to recommend on the more cost-effective options so as to stimulate the institution to operate effectively. The results from this study may also be used as a basis for doing research in other financial institutions about cost-benefit analyses of document management systems. It is also expected to sensitise records managers and business managers about analysing, monitoring and evaluating the costs and advantages of using different document management strategies.

Ngulube (2011:2) argues that cost-benefit analysis of document management solutions does not seem to be a major concern to many records managers, especially in sub-Saharan Africa (SSA) and worse still, in banking institutions. Furthermore, the extensive studies on document formats by ALOS Micrographics Corporation (2009:7), Alaska State Archives (2009) and Missouri State Archives (2011) further indicated that on average 34% of many corporate organisations' documents are not managed in the right format resulting in the organisation suffering increased operational overhead costs. All these studies accentuate the need for investigation into the most effective strategies of managing records in a cost effective way.

Therefore, as a narrowly researched area, this study also added to research literature on the topic. The significance of the study is mainly centred on stirring the financial institutions in Zimbabwe and SSA to realise the best available document management practice strategies, and to use cost-benefit analysis in adopting the most appropriate strategy.

Statement of the problem

Cost-benefit analysis is fundamental in choosing and utilising economic, effective and efficient document management schemes because it provides the possibility of identifying cost-effective and beneficial document management strategies for different types of information. Little research has been done in the banking and finance industry about the use of the cost-benefit analysis in document management. Arguably, cost-benefit analysis of document management approaches does not seem to be a major concern to many records managers (Ngulube 2011; Svärd 2011). Not surprisingly, many scholars have expressed concern over the deteriorating state of records management in SSA reflecting the need for such an analysis (Akotia 2003; Akussah 2002; Mnjama 2003; Ngulube & Tafor 2006; Wamukoya 2000). As stated by Ngulube (2011:14) further research is required to demonstrate both the need for the cost analysis and the efficacy of each document management approach.

Objective of the study

The main objective of the study was to investigate the costs and benefits of different document management approaches

used by a selected financial institution with a view of making recommendations that may inform document management practice.

The study was guided by the following objectives:

1. Establishing the staff's understanding of document management and cost benefit analysis at the selected financial institution.
2. Identifying the document management strategies used by the selected financial institution and ascertaining their cost and benefits.
3. Determining the skills and competences of the records management staff at the financial institution about cost-benefit analysis of document management systems.

Scope of the study

The study was limited to the institution's two departments, the Software Library Department (SLD) and the Securities, Safe Custody and Archives Department (SSCAD) as these departments shepherd the management of records at many financial institutions in Zimbabwe (Commercial Bank of Zimbabwe 2011). All the staff in the two departments formed the target population of the study. The document management strategies covered by the study were paper, microforms and electronic formats. The study was not wide enough to cover related document management concepts and practices such as enterprise content management and document imaging systems. These were considered to be advanced stages of document management frameworks which are predicated on the fundamentals of electronic documents management. No organisation may embrace these without first embracing the electronic document management as a strategy.

Review of scholarship

Literature on the cost-benefit analysis of document management has been limited in Africa. An informative study by Ngulube (2011) has been the most influential in an African context. This is complemented by studies carried out on records management and risk management in banks in Kenya by Ambira and Kemoni (2011) and on the effectiveness of records management by Akotia (2003) and Mnjama (2003).

However, in the international arena great strides towards more comprehensive literature on the cost benefit analysis of documents and records management has been made. This is characterised by the manual on records keeping and cost-benefit analysis created by the National Archives of Australia (2003) and the records management project management guideline on cost-benefit analysis by the International Records Management Trust (2006). These resources were written in a consortium amalgamating several researches. There are also influential independent case studies published on document formats (Alaska State Archives, 2009; ALOS Micrographics Corporation 2009; Missouri State Archives 2011; Western Micrographics Imaging Systems 2008), on document management cost-effectiveness in the medical field (Wang *et al.* 2003), in relation to technology (Megill & Schantz 2000), and on the benefits of enterprise content management (Svärd 2011).

The cost-benefit analysis concept: A cost-benefit analysis provides an economic framework to evaluate the viability of a proposed or operating project (International Records Management Trust 2006:67). It can be defined as the systematic gathering of technical and financial data about a given business situation or function (Ngulube 2011:7). Information gathered and analysed through this method assists decision-making about resource allocation and making the right choice in selecting the appropriate alternative. A cost-benefit analysis specifies the return on investment (ROI), that is, financial inputs and expected returns from a given project. It compares the 'with' and 'without' situations (International Records Management Trust 2006). The results of this analysis can be used to evaluate alternative options. It can strongly support a bid for management endorsement and resource allocation. To undertake a cost-benefit analysis the scope, purpose and objectives of the proposed project must be explicit.

The cost-benefit principles are mostly explained in the context of undertaking design and implementation of records keeping systems (DIRKS) projects (National Archives of Australia 2003:56). This type of analysis enables records and information management staff to assess the likely impacts, advantages and disadvantages of implementing DIRKS. The same principles used are applicable to the cost-benefit analysis of documents management strategies. For instance, the need to conduct a needs assessment is equally important in conducting a cost-benefit analysis as it enables the identification of the specific needs of the institution and thereby the rationale or justification for the project.

Objectives of the cost-benefit analysis: It is important to understand the purpose and business objectives and benefits that a cost-benefit analysis project is expected to realise. The study by Ngulube (2011) identifies such justification by articulating expected benefits. He explains that the significance of any document management scheme in an organisation is primarily evident in the exploitation of available technology to reduce costs in maintenance, retrieval and storage of documented information whilst promoting the usability of the documented information, ensuring legal safeguards and thereby transparency, accountability, economy, efficiency and effectiveness of business operations.

Ngulube (2011:3) lists the expected benefits of adopting a documents management strategy as follows:

1. reduction of enterprise wide operating costs
2. high level of support on decision making
3. protection of the rights of stakeholders
4. compliance with legislation and regulations (for instance tax, company, safety, promotion of access to information)
5. provision of evidence of transparency and accountability
6. contribution to organisational efficiency and good governance
7. increase in productivity and individual accountability
8. high level of information related risk management
9. the preservation of corporate memory.

Factors to be considered in undertaking a cost-benefit analysis: The two major factors that should be considered are cost and benefits. The *DIRKS Manual – Appendix 10* attempts to provide a dollar figure for each cost incurred in purchasing and using any object in documents management (National Archives of Australia 2003). Costs to be considered include the acquisition and maintenance of equipment; the upgrade, redesign or enhancement of current networks; acquisition, testing and maintenance of software; the development and delivery of training for support staff and users; the conversion of records from the current system; and the system administration.

Costs associated with intangibles, although not easy to quantify, need to be recognised as they can impact on the overall costs of a document management approach in place or under consideration. The cost-benefit analysis should acknowledge non-quantifiable costs, even if they may not be factored into the calculations in the analysis. Depending on the document management regime in question, some intangible costs to consider may include: the impact of non-compliance with legislation; impaired document management (exacerbated by decentralised operations); diminished corporate memory (compounded by administrative change and high staff turnover); the impact of not achieving best practice standards, such as complying with the International Standards Organisation Records Management Standard (ISO 15489-1) (2001); potential litigation costs due to inadequate records management and information management; reduced accountability in decision-making and actions; and reduced organisational productivity.

On the other hand, benefits are the returns expected from a project. Most benefits are articulated in terms of improvements or cost savings. Like costs, benefits can be quantifiable (tangible) and non-quantifiable (intangible). To be precise, and for determining achievement, it is important to attempt to provide a dollar figure for each benefit. The cost-benefit analysis guideline from the National Archives of Australia (2003) stipulates that one should seek advice from financial staff and that it is important to bear in mind that secondary benefits may also be derived from a project; that is benefits that will be achieved because other benefits were delivered. They must be practical and realistic. The best way to achieve this is to investigate benefits over a reasonable time frame (National Archives of Australia 2003:34).

Benefits that may accrue to the organisation include: compliance with the International Standards Organisation Records Management Standard (ISO 15489-1) (2001) compliance with legislative requirements; compliance with government-wide policy initiatives; universal access to records; delivery of services in a consistent, coherent and equitable manner; enabling of order and in business; reduced risk of loss of vital records; meeting the requirements to create and keep records; keeping track of the documentation of all business transactions; support and maintenance of corporate memory; and cost savings generated from better recordkeeping and records management practices.

Document management: The activities involving the capture or receipt of documents, version and format control, their storage, maintenance, retrieval and disposal entail document management. The complexity of documents management is that they come in various formats and this prompts the need for critical thinking in selecting the most appropriate approach which saves resources whilst meeting documentation needs (Alaska State Archives 2009). For instance, the invoice that comes as a paper record could be quite possibly obvious however, if it comes as part of the whole relational database of an accounting system, hyperlinked to a remote server and other subsidiary databases could have different management needs than its paper counterpart (Alaska State Archives 2009:8).

The mostly discussed document management approaches in the literature (Ngulube 2011:5; Tough & Moss 2006; Williams 2006) are paper, micrographics, electronic formats and hybrid regimes. Following Ngulube (2011), document imaging which encompass software based computer systems is beyond the scope of this study because document imaging is a documents management tool that integrates various document management systems. As noted by Ngulube (2011):

document imaging may be part and parcel of a suite of tools that may be used to capture, manage, store, preserve and deliver content and support business processes, what is often termed enterprise content management. An analysis of literature on several proprietary and open-source software systems reflects that they are much bent towards enterprise content management. Therefore, the discussion of document management systems such as Documentum®, eFileCabinet®, ImagePlus®, Hummingbird®, SharePoint®, TRIM Context®, Universal Content Management® which are proprietary systems and Open-Source Systems such as Alfresco®, Archivista®, Knowledge Tree® and OpenKM® are equally beyond the scope of this study. (pp. 5–6)

Ngulube's (2011) study reflects that document management strategies that aim to improve the effectiveness, efficiency, consistency and coherence in the management of records in a continuum, through the specific stages of the life cycle of records, require different management regimes without necessarily delving into an enterprise wide content management system.

This article focuses on three major document management strategies: paper, micrographics and electronic formats. Even though most organisations and business enterprises accept and have confidence in paper formats for document management, it has disadvantages that should not be overlooked. Dexter's (2011:34–36) study on paper documents in public sector agencies of the state of Iowa, United States of America showed that most delays in government, poor clientele service provision and even the loss of revenue, good will and competitiveness could be attributed to the paper-based records management systems widespread in the agencies. Indeed, 'changing the format of paper documents to microfilm or digital can help an organisation to maximise storage space and make records easier to access by multiple users' (Ngulube 2011:7). As a more cost-effective format than paper, micrographics can provide many advantages and

benefits. However, Ngulube (2011:8) warned that 'vendor portrayals of micrographics and its possibilities have at times been overly simplistic and misleading'. For instance, case studies by Western Micrographics Imaging Systems (2008), Missouri State Archives (2011), and by Dexter (2011) have shown that the cost of microform-based document management systems is more expensive than optical disk and the retrieval is time consuming where the film is sequential, requiring sequential retrieval.

The application of information technology to document management has been identified in literature as one of the best ways to improve records management, enabling a continuum of care of records. Electronic documents generation is growing at an increasingly alarming proportion in the banking sector (World Bank 2009). The advantages of electronic formats are well documented in the literature (ALOS Micrographics Corporation 2009; Ngulube 2011). However, the literature also identifies some drawbacks in electronic document formats if used as a strategy for managing organisational information. The Alaska State Archives (2009), Missouri State Archives (2011), Dexter (2011) and Ngulube (2011) indicated that electronic records have a serious security concern and the digital media are pricked by obsolescence.

The advantages and disadvantages of the various formats have led to the rise of hybrid systems or mixed media approach. A hybrid system is a combination of two or more approaches to document management. Saffady (2003:7) and Ngulube (2011:9) point out that because each document management strategy has different costs and benefits, the strength of one approach complements the limitations of the other. Ngulube (2011) argues that a hybrid system can be the most viable approach to managing a continuum of records through their life cycle by allocating appropriate document management regimes at different stages and being flexible enough to change to different formats and media especially in dynamic and technology-based enterprise systems. Thus, 'a hybrid approach that relies heavily on tapping into the advantages of paper, microfilming and electronic formats may offer the best records management solution in a cost-effective manner' (Ngulube 2011:9).

The theoretical framework that underpins the study

The theoretical framework is the standard or benchmark by which a researcher measures variables in a study. Unlike qualitative research which often builds up theories, quantitative research is informed by theories to investigate phenomena (Ngulube 2009). It helps the researcher see clearly the variables of the study; provides a general framework for data analysis and determines whether a topic or area of study is researchable or not (Khan 2011:5).

The researchers identified the records continuum theory as a suitable concept to use as a theoretical framework for understanding issues regarding effective document management regimes. This is because as noted by Svärd (2011:14), the model promotes a pro-active approach that

emphasises the effective management of the entire records continuum. The records continuum theory promotes the effective creation, capture, dissemination, repurposing, use and preservation of documented information, for organisational businesses (An 2003).

Furthermore, the model provides a framework for understanding the continuum of records management responsibilities (McKemmish 2001; An 2003). Unlike the traditional life-cycle theory which recognises that records are created, used, maintained then disposed of, either by destruction as obsolete or by preservation as archives for their ongoing value; the continuum concept suggests that four actions continue or recur throughout the life of a record: identification of records; intellectual control of them; provision of access to them; and physical control of them (Roper & Millar 2009). It challenges the traditional view that separates records keeping phases and supports a more holistic approach that offers continuity and consistence. It may be defined as:

a consistent and coherent regime of management processes from the time of creation of records (and before creation, in the design of record-keeping systems), through to the preservation and use of records as archives. (Chachage & Ngulube 2006:5)

According to the records continuum model records management is a continuous process that focuses on activities that create records. Svård (2011:16), supporting McKemmish (2001), also purports that the model promotes record-keeping that connects the whole organisational functioning, and is stable enough to deal with a dynamic and changing context that can be influenced by legal, political, administrative, social, commercial, technological, cultural, and historical variables across time and space.

The records continuum model is characterised by progressive principles that can well be applied to document management in an endeavour to make choices on the best possible approach to manage documents in an effective and cost-efficient way. Therefore, the mechanisms of the best practice behind the records continuum model were observed as ideal for use as a theoretical framework for identifying effectiveness and efficiency in document management, because they focus on consistency, continuity, integration, coherence, efficiency, effectiveness, interdisciplinarity, accountability, authenticity, and appreciate the dynamism of and continuous need for interface with technologies (National Archives of Australia 2003; Roper & Millar 2009; Svård 2011).

Research methodology

The quantitative research methodology was used in the study. It has a range of research approaches that include descriptive or observational studies, and experimental studies. The descriptive case study design which focuses on the grounded interpretation and understanding of research subjects by collecting data using techniques such as observation, questionnaires, interviews and documents analysis was chosen (Chimbari *et al.* 2011; Richards 2011; Rubin & Rubin 2005).

This study specifically used the questionnaire and interviews as research instruments for data collection. Data was collected from all the 15 employees working in the two departments working with records as outlined above (also see Table 1a and Table 1b). Of this number, four were ICTs technicians, five were records clerks two were records supervisors, one was an archivist and three were from top management comprising a Managing Director and two General Managers. All the respondents were employees of the commercial bank who had over two years' experience in handling documents and records in the institution. This was the basis of choosing these respondents for data collection.

The analysis of data entailed establishing the frequency of ideas, attitudes or concepts within the whole body of collected data and using several presentation methods to make these ideas visible. This involved the following steps: data examination, data tabling, and data charting. Examining the data involved grouping the responses under major categories according to the research question being answered. This was tabled into text, frequency, cumulative or scattergram tables depending on the type of data in question. From these tables, several graphs were drawn to enhance visual display of the results yielded by the study. Microsoft Access[®] and Microsoft Excel[®] application programmes were used in the data analysis and presentation processes.

Results and discussion

The aim of this section is to provide meaningful summaries through a range of presentation techniques from the collected raw data and as a quantitative study, tables, graphs, matrices and charts were basically the main presentation tools used (Chimbari *et al.* 2011). In analysing the data from the semi-structured interviews and questionnaires, the researcher decided to group the findings together since the interview guide was adapted from the questionnaire and created to complement data from the questionnaire. The arithmetic

TABLE 1a: Document format benefits and constraints matrix as reflected by respondents.

Format	Benefits	Constraints (Costs)
Paper	Preservation standards are known	Requires large storage space
	Legally admissible as evidence	Cumbersome nature affects retrieval
	Easy to determine authenticity	Bulky nature affects security
	Adheres to document retention regulations and legislature	Expensive to deliver were remote, multiple and simultaneous access are necessary
	Not technology dependent	Slow down business processes

TABLE 1b: Document format benefits and constraints matrix as reflected by respondents.

Format	Benefits	Constraints (Costs)
Electronic	Timely availability of information	Not legally admissible as evidence
	Promotes remote, multiple and simultaneous access	Preservation standards are unclear
	Overcomes the space problem	Difficult to determine authenticity
	Speed up business processes	Unstable or volatile storage media
		Manipulability compromises security
	Technical skill for support is expensive to employ, contract or hire	
	Technology dependence triggers obsolescence	

calculations and percentages were rounded off to the nearest whole number to simplify the analysis.

The population of the study comprised of 15 staff members: five from the IT and SLD and seven from the SSCAD and three from the top management. It included the managing Director, general managers, supervisors, IT staff and other clerical staff.

Questionnaire response rate was 100% from the two departments since all the respondents returned the completed questionnaires. Interviews were successfully conducted with the managing director, one general manager, two supervisors, two IT staff and two clerical staff. Though this was a purposive sample, the aim was to ensure that informants were recruited from both the two departments included in the study. There was an excellent response rate because the respondents were interested in the outcome of the study.

Staff understanding of documents management and cost-benefit analysis

Data collected showed that the top management had a higher understanding of both document management and the cost-benefit analysis concept. Using a rating scale of 1–30, the top management had a higher score of 25; followed by 13 from general managers; eight from supervisory staff and five from both technical and clerical staff as shown on the comparative scatter graph in Figure 1. However, it is evident that since technical and clerical staff was more involved in document management in their daily activities, they understood it better than their immediate supervisors who said that they need training courses to improve their appreciation of both document management and CBA.

Document management strategies used by the selected financial institution and their costs and benefits

This analysis presents the participant's responses to the question regarding the costs and benefits of document management approaches used by the institution. The document management strategies of choice were paper and electronic formats (see Figure 2).

The responses are summarised in the cost-benefit matrix shown in Table 1a and Table 1b. The responses reflect that the bank was comfortable with the paper as a records storage medium over the electronic format mainly because of its trusted security, legal acceptance and technology independence. As further shown in Figure 2, the electronic format was mostly preferred for a creation and immediate use purposes. Whilst there was mention of the computer output microfilm (COM) its wide acceptance and use in the bank had not yet been fully experimented with as a preferable document management format as evidenced by its limited utilisation in the archival stage of the records.

The following figures which were obtained from a single response by archivist regarding the rate of paper documents accumulation in the storage area are instructive:

1. 42m³ per quarter in 2009
2. 34m³ per quarter in 2010
3. 44m³ per quarter in 2011

An average for the last three years given was calculated using the mean as follows:

Mean (\bar{x}) = Sum of Responses OR $\sum(x)$ (Where x is the response and n is Number of Responses n the number of responses)

$$\sum(x) = 42m^3 + 34m^3 + 44m^3 \quad [\text{Eqn 1}]$$

Therefore $(x) = 120$, and the Sum of the Number of Responses = 3. Therefore, Mean = $120 / 3 = 40m^3$. Using results from the calculation above; on average, the rate of paper accumulation at the bank is 40m³ per year. Over a year this means that a storage area of averagely 120m³ (a standard classroom) may be filled up by paper files or archival boxes. Considering that the archival repository was in an expensive city centre environment and the space was bound to be filled up in less than five years at the rate given above; the cost of the paper as a document storage medium is higher surpassing the benefits put forward for it.

Data about the name, range and types of electronic document management software used by the bank, initial installation costs, support and updates costs as well as corresponding

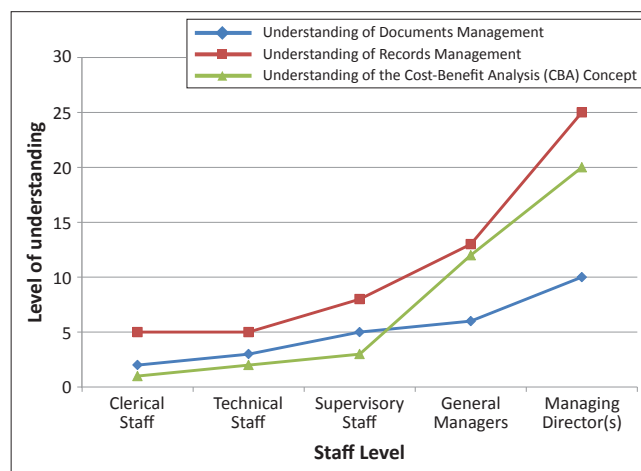


FIGURE 1: Level of staff understanding of document management, records management and the cost-benefit analysis concepts.

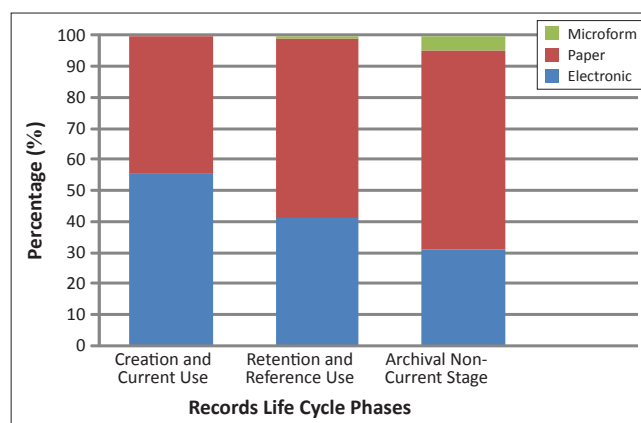


FIGURE 2: Document media ranges as the records moved in the continuum of records care through the records life cycle at the Commercial Bank of Zimbabwe.

maintenance costs was not provided on the grounds of being classified information according to the bank's Information Policy.

However, the information regarding tangible costs, which is valuable information about the bank was only one aspect of 'costs' needed to establish findings for questions guiding this study. The actual costs, or tangible costs was only a single aspect of the 'costs' of document management regimes to be measured so the other aspect, that is, intangible costs was dwelt with as illustrated in Table 1a and Table 1b. Options for electronic records storage at the financial institution are illustrated in Figure 3.

According to the respondents, electronic document formats were not fully utilised as result of costs related to acquisition and maintenance of equipment; upgrade, redesign or enhancement of networks; acquisition, testing and maintenance of software; training for support staff and users; document conversion; and system administration.

Skills and competencies of the records management staff at financial institution regarding the cost-benefit analysis of document management

Information about staff skills and competencies was categorised based on interview responses captured from different staff at different levels. Their responses regarding choosing the appropriate document format were measured against a standard drawn using the records continuum model. On the other hand, their responses regarding carrying out the cost-benefit analysis were measured against the methods of best practice set out by the cost or benefit analysis guideline set by National Archives of Australia (2003) and the International Records Management Trust (2006). The results are summarised in Table 2.

The following clustered column graph (Figure 4) shows the respondents' perceptions about each document management strategy's costs and benefits on a rating scale of 1–5. From the results it appears that the staff was unsure about the use of microforms as a document management strategy which is similar to Svärd's study results of 2011. Whilst the paper based system is portrayed as more beneficial compared to its costs; and the electronic system is considered to have both high costs and high benefits, microforms are not clearly appreciated as a storage or retention medium for bank records. Considering that many scholars have actually advocated for microforms (Western Micrographics Imaging Systems 2008; ALOS Micrographics Corporation, 2009; Ngulube 2011) because of their space efficiency, stable storage media and relatively easy retrievability, this calls for further probe.

Conclusions and recommendations

The findings may not be generalised because the case study design was used, even though these may have some significant input into the cost benefit analysis and its influence on document management strategies. As noted by

Rowley (2002), the most limiting aspect of the application of a case study research:

is to lift the investigation from a descriptive account of 'what happens' to a piece of research that can lay claim to being a worthwhile, if modest addition to knowledge. (p. 16)

Case studies as a research method or strategy have traditionally been viewed as lacking rigour and objectivity when compared with other social research methods (Rowley 2002:16). Verification and validation of results from case study researches has often been done by comparing with other similar case studies (Rowley 2002). The study is also limited by the fact of it being a relatively new area in the

TABLE 2: Staff competencies regarding the cost-benefit analysis of document management.

Staff Level	Knowledge about the available range of alternative document formats	Choosing the appropriate document format	Carrying out the cost-benefit analysis
Clerical Staff	Paper and electronic	Low competence	Not appreciated
Technical Staff	Paper, electronic and microforms	Low competence	Not appreciated
Supervisory Staff	Paper and electronic	Low competence	Not appreciated
General Manager(s)	Paper and electronic	Low competence	Mildly appreciated
Managing Director(s)	Paper and electronic	Low competence	Appreciated

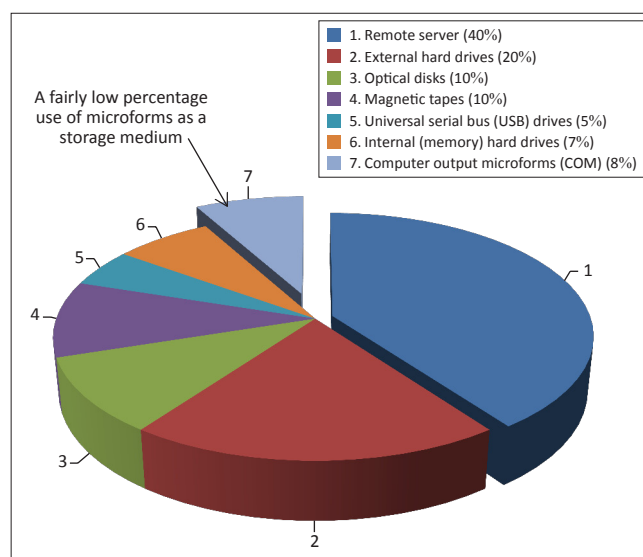


FIGURE 3: Options for electronic records storage at the Commercial Bank of Zimbabwe.

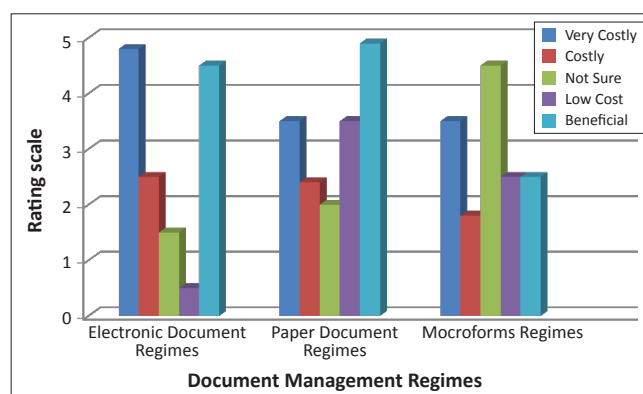


FIGURE 4: Staff perceptions of the costs and benefits of different document management regimes.

banking and finance industry in Zimbabwe and thereby restricting any potential comparisons with other similar studies in the Zimbabwean environment to verify results. We therefore, recommend that more case studies on the subject be conducted in general, and in Zimbabwe in particular in order to marshal evidence from a number of case studies in order to build theory as suggested by Rowley (2002).

A précis of the research findings from the preceding section inevitably calls for multiple conclusions. Each document management approach suited a different part of the records' life cycle and the trend at this particular financial institution was that electronic document systems were mainly employed for creation and current use whilst paper was mainly used as a retention and storage medium. Microforms were not yet considered by the bank as a major document management solution to counter the inadequacies of both electronic and paper approaches. In a nutshell:

- The financial institution is not using periodical cost-benefit analysis to determine document management approaches chosen. The document management approaches used are therefore not coordinated to improve operational efficiency.
- The skills and competences of staff on both document management and cost analysis are limited which has a negative impact on their appreciation of the need for more effective and efficient document management.
- Considering the rate of paper accumulation in the Securities, Safe Custody and Archives Department at the institution, if a document management strategy that enables miniaturisation of document is not adopted, more expensive office space will have to be acquired to store paper-based documents.
- The financial institution should create institutional regulations enabling periodical cost-benefit analysis of document management regimes used by the institution at least at quarterly intervals per year following *Appendix 10 – Recordkeeping cost-benefit analysis set out by the National Archives of Australia* (2011). The analysis should involve the finance department, archives department and relevant legal authorities. This is expected to enable more effective alternatives to be chosen since results of the cost-benefit analysis will weigh both costs and benefits of each and every strategy.
- A hybrid approach that maximises the use of electronic documents for current records management needs, paper based systems for intermediate reference and short term legal requirements and finally microforms for archival preservation is recommended for adoption by the bank.
- Electronic records may be best used for documenting current, active transactions in banks, such as recording customer transactions, filling up and updating ledger profiles capturing applications to open accounts and any other forms of current transactional billings. Paper could then be used for semi-current reference needs, especially for those records under legal obligation for retention by the *Statutory Instrument 23 of 1995, The Serious Offences (Retention of Documents) Regulations of 1995 [Act 20/90] section 3(b)* (Government of Zimbabwe 1995) which

prescribes that every financial institution including banks should retain documents for not less than six years. For long term preservation however, micrographics could then be applied considering that microforms would solve the space problem whilst guaranteeing security, retrievability and legal compliance and countering the cumbersome nature and inefficiencies associated with paper based systems.

- To improve staff competencies and understanding of documents management needs, there is a need to employ a qualified records manager to interface with technicians and clerical staff on one hand and the top management on the other. Secondly, there should be on-the-job staff training complimented by attendance at relevant workshops and seminars to improve staff's understanding of both the cost-benefit analysis concept and document management and their operationalisation.

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Competing interest

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

Authors' contributions

R.D. (National University of Science and Technology) did the literature review, designed data collection instruments and collected and analysed the data. P.N. (University of South Africa) was the project leader, conceptualised the research and dealt with the reviewers' suggestions. A.D. (National University of Science and Technology) assisted in data analysis and the write-up of the article.

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