



An analysis of the issues and benefits in
EDRMS Implementation- A case study in a NZ
public sector organisation

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Preface

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Abstract

Purpose – The purpose of this paper is to study the issues occurred and benefits gained during this recent Electronic Document and Records Management System (EDRMS) implementation within the resolution team, legal team and ministerial services team of a New Zealand public organisation so that it can benefit future organisation-wide implementation.

Design/Methodology/approach –interview questions were developed based on literature review and semi-structured interview was used to collect data from key users of affected business units as well as EDRMS administrators. Interview results were then compared with pre-defined critical successful factors (CSFs) which include: top management support, mature recordkeeping practices, business classification schemes and effective user cooperation, on-going training and support, Well-planned change strategy and communication to find if there is any potential gap within this implementation.

Findings –Issue such as: Lack of early user buy-in or Lack of senior management support arising during the implementations was direct result of violating EDRMS CSFs. Thus, for future deployment, project team needs to correct the issue based on CSFs. However, there are also benefits gained during this implementation which include: Improves overall information quality and efficiency and Enhancing the retention of knowledge base, etc.

Practical implications – Before creating a new file in the EDRMS system, users need to do a search first to check if there is any existing file to avoid duplication. Moreover, business rules around naming convention should be in place before the implementation to guide the users to properly name EDRMS files or folders to avoid duplication.

Originality/value – This paper will assist the case organisation or any other NZ public organisations for any future EDRMS deployment.

Keywords EDRMS, CSF, Vendor, ICT, recordkeeping, semi-structured

Paper type Case study

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1 Introduction

This case study examines an Electronic Document and Records Management System (EDRMS) implementation in a NZ public organisation. The aim is to find how it helps to form a recordkeeping best practice inside this organisation's three business units. Any lesson learnt through this implementation will benefit future organisational-wide implementation.

The EDRMS project is driven by a business need to improve the recordkeeping environment within this public organisation.

An internal review conducted in 2007 revealed that the old document management system (SilentOne) has a high level of user dissatisfaction. It is becoming increasingly difficult to maintain the SilentOne system as the vendor has now moved on to a new product. Apart from that, there are still large quantities of paper-based physical client files within this organisation, which makes it difficult for them to manage and to meet legislative compliance requirements under the Public Records Act and Electronic Transmissions Act. Most of the organisation is reliant on shared drives, which hinder both the effective and consistent management of records as well as the assessment of critical business information.

There are three main drivers behind this implementation, which are:

1. Reputation risks around information handling. Any improper handling of government information will lead to the government department's reputation loss.
2. Efficiency in the use of information impact on service provision. Any inefficient use of government information will undermine its services.
3. Provision of information tools to achieve organisation goals. Necessary information tools need to be provided in order to effectively handle public information and the business objective.

With this background, the project was set up to implement an Electronic Document and Records Management System as this organisation's central document

repository solution. Phase one of this project was rolled out to a limited user group among three business units which are:

1. Resolution Team
2. Legal team
3. Ministerial Services Team

The organisation chose those three business units because most of the employees there are previously Silent One users. The plan for phase two is to extend the roll out to a wider user group across the whole organisation at a later stage. Since, the phase one project has already been conducted as a pilot and the phase two project has not yet commenced, the scope for this study will be only phase one EDRMS implementation.

The case study methodology will be qualitative research and it will use semi-structured interview to collect data from those users within these affected business units as well as candidates from both the vendor side and this internal EDRMS system administrator side. All participants are directly involved in the phase one project. By interviewing them, the case study will capture a more holistic and objective view on the EDRMS implementation within this organisation. The findings will have a direct contribution to the case organisation in terms of deploying EDRMS to any other business units within this organisation and may assist other NZ government agencies.

2 Literature review: EDRMS implementation

With the increased use of information technology (IT) within the workplace, organisational information has changed its nature from traditional paper-based physical files towards electronic forms of documents and records. This significant change has pushed organisations from both public and private sectors to review their existing document or record management systems and to make adjustments in order to cope with both the challenges and opportunities brought on by the change. In addition, public organisations have the responsibility to comply with legislative requirements. “An important lesson for modern organisations is that paper and electronic records must be managed to the same standards and policies. This reduces legal risks and improves operational functions” (Johnston & Bowen, 2005,

p.132). Moreover, Forbes-Pitt (2006) points out that the need to exchange information to facilitate team-working and collaboration, and the need to effectively manage the organisational memory, all contribute to the use of EDRMS.

2.1 Definition of EDRMS

From an organisation perspective, Johnston and Bowen (2005) define EDRMS as “an automated system which supports the creation, use and maintenance of paper or electronic documents and records for the purpose of an organisation’s workflow and processes. An EDRMS includes recordkeeping functionality and also manages documents of informational rather than evidential value. The EDRMS includes the whole of documents, records, methods, procedures, tools, [Meta] data (index terms), knowledge, means and persons with which an organisation operates and fulfils its requirements to preserve evidence of its activities, maintain its memory, and preserve its knowledge” (p.133). This definition explicitly tells us the overall functionality of the EDRMS and its purpose to the organisation.

Secondly, from an application perspective, EDRMS is defined as “an electronic document system whose properties, features and behaviours are defined by system developers in cooperation with the organisation’s records managers, mostly on the basis of existing records management standards, such as ISO 15489” (Foscarini,2010,p.390). From this statement, we can see that EDRMS allows certain degrees of customisation by developers in accordance with guides provided by records managers, in order to meet with the organisational requirements and comply with the industry’s best practice.

Thirdly, from a functionality perspective, according to State Records Authority of New South Wales (n.d.), EDRMS has been defined as “an automated software application designed to facilitate the creation, management, use, storage and disposal of a range of both physical and digital documents and records in an integrated way.” One of the main objectives of EDRMS is therefore to ensure both physical and digital records are being managed in an integrated way throughout the document life-cycle from creation to destruction of the files.

Apart from these three definitions above, EDRMS can also be viewed as “the corporate information repository of organisations to increase the capacity of information services to integrate the vast array of corporate knowledge being generated by organisations and their employees” (Goldschmidt, Joseph, & Debowski, 2012,p.153). From this statement, we can also see that organisations view EDRMS as a central information management system that contains information from all the business units inside the organisation and provides a centralised solution to employees’ information needs within the organisational domain.

2.2 Benefits of implementing an EDRMS

An EDRMS system generally helps the organisation to improve its overall information quality and efficiency. Johnston and Bowen (2005) states that “the basic benefits are that a process (work) is done more easily (less effort required) it is done more quickly; it is done with better quality; it is easier to find out about it afterwards” (p.134). From this statement, we can see that by using EDRMS, it can help boost the overall organisational record management efficiency and increase the productivity for the informational workers within the organisation.

Secondly, by implementing EDRMS, it will help to facilitate the information sharing culture within the organisation, which leads to the improving of individual staff’s competencies. Julibert (2008) points out that “DARWIN can enable the right balance to be struck between the confidentiality requirements of some of the institutional information and the benefits of sharing non-sensitive knowledge and information to increase the organisation’s efficiency and transparency, as well as fostering development of individuals’ competences” (p.195).

Thirdly, an EDRMS system offers a centralised corporate repository where data can be easily retrieved through an access-controlled way. Gunnlaugsdottir (2012) argues that an EDRMS system possesses these important qualities which are considered as must-have features for any quality management system, which includes: version and access control, safe storage in a central database with easy access and retrieval, and tracking and traceability (P.182). This is particularly relevant to those

organisations where information storing is currently largely relies on shared-drivers and spread across the organisation. Users found it not only increases the difficulty of searching for information but they also report loss of information from time to time. By adopting one central repository and tight access-control to the business information, it will help eliminate this issue. Moreover, “Features offered by EDRMS can be a great help to records managers in combining business classification schemes (BCS) with folder structures based on user preferences (e.g. by providing different view options through the use of metadata)” (Garrido,2008, p.190).

Fourthly, EDRMS helps to reduce the data duplication within the organisation. Maguire (2005) points out that the main business reasons for EDRMS besides enabling the sharing of documents across different sites is to stop duplication. By stopping document duplication, it not only can improve the information accuracy within the organisation but also improve the overall work efficiency.

Finally, an EDRMS can enhance retention of a knowledge base. This means when one user leaves the organisation, the replacement user will be able to take over their assigned file easily and find the document easily within the EDRMS (Williams, 2005).

2.3 Issues experienced in EDRMS implementation

Although an EDRMS system is supposed to provide a more integrated and efficient solution for record management within contemporary organisations, it is not a silver bullet to fix all the record management issues in organisations. There are issues around its implementation which, for EDRMS implementers, are worth examining.

The first issue for the EDRMS implementation team to consider is the on-going users support and training. Anderson (2007) states that “Indeed, employer’s training responsibilities do not stop when the induction process is complete; they will only get the best out of their investment in paying the employee if they become learning organisations” (p.99). Anderson (2007) further points out that “Research conducted into EDRMS users’ information-seeking behaviour clearly shows that where users are not trained in thesaurus use, they do not use thesaurus terms as part of their

research strategy” (p.99). This study result clearly shows the importance of training towards an EDRMS implementation.

“EDRMS projects are reported to take on average four or more years to achieve adoption rates of above 75 per cent” (Linton & Dwyer, 2011, p37). On-going training is necessary to guide the users through this process. Besides that, since an EDRMS system will introduce a new file plan which is unfamiliar to the current user as illustrated by Bedford and Morelli (2006,p.173) that “users were not cleared to file any documents within the new file plan until they have received training in its use, including the new policies, naming convention and templates”. Thus, after the initial installation, the project team should provide so called “floor walking” to assist the user, and individual “one-to-one” sessions should also be arranged upon request, where the trainers offer individual support to cover specific learning needs (Di Biagio & Ibiricu, 2008, p.174). Smyth (2005, p. 145) also observes that the in-house training course was intensive, with a mixture of informative and practical sessions over one day and it was hard to fit everyone in within the two weeks allocated. Even though, competency levels for the new EDRMS system were raised internally there was a need to follow this up with additional training for absent staff and within a formal induction programme. From this statement, we can see that due to the complexity of the system itself and the users’ time schedule, on-going trainings are often necessary.

Secondly, it may sound cliché, however lack of senior management support is one key issue which prevents the EDRMS implementation from being successful. In one of the EDRMS case studies carried out at the City of Charles Sturt (CCS), Wilkins, Swatman, and Holt (2009) point out that “The success of the e-Records implementation at CCS was never due to one factor, senior executive support, especially from the CEO, was certainly a vital factor” (p.39). This statement highlights the importance of C-level support towards EDRMS deployment’s success. Di Biagio and Ibiricu (2008) in their EDRMS case study (DARWIN) also states that “a lack of management support is a high risk factor for an EDRMS implementation and that the related change management process and direct involvement of management in the implementation process is key to success” (p.175). Thus, early

buy-in from the senior management team is seen as one of the vital factors for the success of EDRMS deployment.

Thirdly, just like all the other new technologies, an EDRMS system will not work without involving active users' participation. Thus, early user's buy-in becomes an inevitable issue for the EDRMS implementers. This is particularly relevant to the design phase for customised EDRMS environment. On one hand, "Due to the unavoidable interactions between business and technology issues, the introduction of an EDRMS represents not only an interdisciplinary design issue, but also one where creators and users need to work in partnership to ensure the on-going usability of records" (Wilkins, Swatman, & Holt, 2009, p.39). On the other hand, "During the business analysis (discover phase), user representatives are in fact expected to provide the implementation team with detailed information on the business of their units and on the processes leading to the creation of documents" (Di Biagio & Ibricu, 2008, p.172). Thus, early involvement of the key users or business owners into the EDRMS installation process is imperative.

Last but not least, for the success of EDRMS implementation, it is important for the project team to foster a sharing culture within the organisation. Like all the other IT products, EDRMS is not a silver bullet to fix all the records management issue simply by installing it. It is a willingness of users to employ EDRM as their method of choice to achieve such an end and this is an organisational cultural challenge as much as a technological challenge. (Jones, 2008,p.54). In order to foster the information sharing culture, one thing EDRMS implementers can do is to grant full access to the information by default. Just like Smyth states in The Public Record Office of Northern Ireland (PRONI) case that "A culture of sharing information (unless there is a specific legal or privacy requirement) has been successfully introduced to PRONI by giving full access to the entire classification by default" (2005,p.149).

2.4 CSFs for EDRMS implementation

In the previous section, we have gone through some of the issues EDRMS implementers might encounter. In order to mitigate the risks during the

implementation, this section will focus on identifying critical success factors (CSF) for EDRMS implementation.

Nguyen, Swatman, Fraunholz and Salzmann (2009) described that “top management support, good recording awareness and practise, early development of business classification schemes (File Plan/Thesaurus), adequate and on-going training and support; and well-prepared change management strategies are the keys to success in developing enterprise-wide electronic records management solutions.”

Thus, the first CSF to discuss is top management support. EDRMS implementation cannot be a success without the constant support and commitment of top management. “The involvement of senior management will ensure funding for the project and enhance employee awareness of the importance of EDRMS adoption” (Nguyen, Swatman, Fraunholz & Salzmann, 2009). Managerial support will also ensure the early buy in has been generated for the implementation.

Secondly, a good recording awareness and practice among information workers is viewed as another CSF for EDRMS implementation. Thus, forming a mature recordkeeping practices pre-implementation is seen as another key success factor for EDRMS implementation (Linton & Dwyer, 2010). The reason is that end-users will have a certain degree of awareness of managing the records life cycle or records responsibility and so increasing the knowledge or change behaviours by EDRMS is not so difficult (Linton & Dwyer, 2010).

Thirdly, early development of business classification schemes and effective user cooperation is another CSF for the EDRMS implementation. This is particularly true during the business analysis (design phase); user representatives are in fact expected to provide the EDRMS implementation team with the detailed information on the business of their units and on the processes leading to the creation of documents (Di Biagio & Ibiricu, 2008). Northern Ireland Civil Service and Williams (as cited in Nguyen, Swatman, Fraunholz & Salzmann, 2009) also claim that “the development of a business classification scheme (also known as a File Plan or Thesaurus) before EDRMS implementation is crucial to ensure staff understand the

association between records and to assist them in gaining familiarity with record locations.” All these activities cannot be achieved without the input from the key users within the organisation.

The fourth CSF is on-going training and support. Maguire (as cited in Nguyen, Swatman & Fraunholz, 2008, p.528) mentioned that “The complete implementation of EDRMS does not necessarily guarantee users’ adoption of the system. Without on-going and refresher training and timely support, there is a real risk that users will stop using it.” As we identified in the previous section, EDRMS usually will take several years to achieve a high user adoption rate. Thus, during this period, on-going support and customised training which matches with users’ responsibility become critical for the system to succeed. Moreover, effective training will also help individuals to overcome the natural resistance to the change brought by the EDRMS (Di Biagio & Ibricu, 2008). They also point out that “to fully meet end-users’ needs and as a lesson learnt from the pilot, efforts have been made to make the training materials as concise, practical and user-friendly as possible for it to become a valuable support in the day-to-day work of end-users” (Di Biagio & Ibricu, 2008, p.173). Besides that, Anderson (2007) points out that during the training it is important to allow sufficient time for users to consolidate skills before moving on to the next stage, building a skill set.

Last but not least, a well-planned change strategy is another CSF for EDRMS implementation. During the change it is crucial for the implementers to keep on communicating with the end users. As Spong (2006) points out “Communication is a two way thing – we built a relationship with our end users through face to face communication and we listened to their concerns and dealt with them”(p.31). In this way, potential issues can be identified in an early stage of EDRMS implementation. Spong (2006) also states that “It’s important to use as many different channels as possible including face to face meetings, the intranet, house magazine and email” (p. 32).

In summary, the EDRMS literature review on benefits, issues and CSFs will be used to compare with the data collected during the semi-structured interviews in order to

help the study to identify gained benefits and lessons learnt on this public organisation's EDRMS implementation. As mentioned earlier, the aim of this case is to understand the benefits EDRMS brought to these business units within the organisation and also identify a set of lessons and enabling factors for future EDRMS deployment to the whole organisation.

3 Methodology

In order to explore the problems and benefits within this EDRMS implementation, a qualitative research method has been developed with all interview questions derived from literature reviews. A number of reasons underpinned this choice:

1. The aim of this case study is to reveal benefits gained from this implementation.
2. The study seeks to reveal problems (gaps) previously not described in this EDRMS regime.
3. Interview questions were developed for each of the key stakeholders, so as to understand this implementation from different angles.

Initially, it was envisaged that 10 interviews would be conducted with 6 EDRMS users (2 from each business unit), 2 EDRMS administrators and 2 staff members from the vendor side.

In practice, five EDRMS users from three business units participated in this study, and one user withdrew. Two EDRMS administrators from the record management team who were initially involved in this EDRMS implementation project have participated. However, due to business confidential reasons, vendor staff were not be able to participate in this study. In this paper, all participants remain anonymous.

The candidates were invited to participate in an interview of 0.5 to 1 hour. The initial interview script listed a number of questions related to the different themes

previously described in the preceding literature review. Both standard and specific questions were used during the interview. Standard questions ask EDRMS users their view of the project so as to gain understanding of how well the project been done from their perspectives. The specific questions are designed to ask either vendors or EDRMS administrators with the aim to find out their roles in this project and see from their perspectives whether this new system brings any benefits or issues during the implementation process.

Standard questions:

- Describe what training was provided for you to use the new system?
- How was that training been scheduled? Why is that important?
- Explain how the EDRMS system helps to improve data quality and reduce data duplication within your business unit?
- Describe the record-keeping awareness and practices prior to the introduction of this new system?
- Describe how the new system facilitates a more efficient information gathering process in your business unit?
- Describe how the new system improves version-control of the documents and provide a safe storage place?

Specific questions:

- Describe how the senior management team provided support to the EDRMS project?
- Describe how key business users participated in the initial system design?
- Explain how communication took place between this EDRMS project and users during the implementation?
- Describe the EDRMS system facilitates a sharing culture within business units?
- Describe how the EDRMS system enhances retention of knowledge base within organisation?

Approval from a Human Ethic Committee (HEC) was granted before the actual interviews began. All candidates were supplied with an information sheet and were asked to sign the consent form before the interview was conducted. Interviews were held in a private meeting room in one to one sessions, throughout which the confidentiality of the meeting was guaranteed. All interviews were recorded and transcribed.

After the interview transcripts were analysed, the data around issues and benefits were then compared with the CSFs of EDRMS implementation identified in the literature review to find out what is doing well in the project and where the gap is during the implementations that can be improved in the future. After this, recommendations are provided based on the EDRMS CSFs from the literature review.

4 Data analysis

In the literature review section, EDRMS system's definition has been clarified with corresponding issues and benefits addressed. CSFs for EDRMS implementation have also been discussed in the preceding section which includes: senior management support, constant training and good recording awareness and practice, etc. With the aim to understand how the EDRMS system been implemented in this public organisation, this part of the study will analyse the data collected from the participants to find out issues and benefits arising during this implementation that includes lacking senior management support (issue) and enhancing the retention of knowledge base (benefit), about which more below.

4.1 Issues in general

4.1.1 Lack of user training and support

Sufficient user training and constant support have been identified as one of the key factors for EDRMS implementation to be successful. Interview questions “Describe

what training was provided for you to use the new system?” and “How was that training been scheduled? Why is that important?” have been asked during the interviews with all EDRMS users to get ideas from their perspectives.

From the interview, feedback has been given about training with most of the participants expressing their concern over the length of training and the training schedule. For example in two instances:

Participant 2: *“The training was done two months before the introduction of the system. By the time the new system was implemented, we forgot some of the knowledge we gained in the training.”*

Participant 3: *“Before we have the access to the new EDRMS system we have the training. The EDRMS was available on our desktop after we done our initial training. No trainings been provided after we using the system. It would be nice to have refresh training though it might be hard in large organisation.”*

Although, the initial training was organised for users to get familiar with the basic EDRMS functions before they started using the system, there was no further follow-up training organised for users to consolidate the knowledge they gained during the first training. To make matters worse, the initial training was set up too early and, by the time users starting use the system, some of the knowledge was already forgotten.

This viewpoint has also been supported by Participant 4 who described training as below:

“Very little training been provided. One or two hour sessions for once.it could be a bit more training. No prior consultation with the users about some of the restriction with the new system. Several times of walk rounds have been performed.”

Moreover, Participant 7 indicates that although limited training was provided to him, it was still adequate for him to do daily work under the new EDRMS system. His comments as below:

“I was provided the training manual to read through and I have read the relevant sections in this material. I was shown by my co-workers about how to log and create workflows. For the purpose of my job, I think that’s enough training from my colleague.”

On the other hand, in relation to the lack of user support, a naming convention issue about folder structure has arisen which undermines the efficiency of using the EDRMS system.

Participant 2 mentioned that *“During the training sessions, no one telling us how to name the files, the trainer just leaves this to us and we decided how to name our files to store into the EDRMS.”* He further added that *“No follow up trainings been provided, we just been encouraged to ring the helpdesk, Typically, the helpdesk are not able to help us with such issue, all they do is just to record your queries or questions.”*

Participant 1 said that *“The difficulty is that it didn’t actually reduce the data duplication. ... Areas that didn’t have a robust naming convention ended up having documents, files or folders that have already been initialised elsewhere in the department. So the importance of the naming convention became even more important. If people put random name or calling them ‘blank heading’ If it was not specific enough in telling what was contained in the folder, it becomes difficult to understand what the content were in that folder.”*

4.1.2 Lack of senior management support

The issue of the lack of follow-up training has also been compounded by a lack of support from the senior management team. This viewpoint has been addressed by both EDRMS administrators during the interviews.

Participant 5 mentioned in her interview that *“There was not enough support from ICT in terms of the size of this EDRMS project. ICT seems not to be given the*

attention the project is required. The ICT team's input and support seems to be minimal.so therefore we have got lots of technical problems when goes to roll out."

Participant 6 added in his comments that *"However, I still do not think the senior management team provides sufficient support for implementing the system. Specially, when there is an organisational change recently, lots things were put on hold and no updates for the system (lots of delays) and we have to do lots of things ourselves to try to get the system going. We still have vendors to do their bits, but there are not all of the things we want done can be done, because of short of money which affect trainings."*

One result of the lack of senior management support is the minimal input from ICT which has also led to the sluggish EDRMS performance from time to time. For example in two instances:

Participant 2 described that *"Due to the slowness of saving files, for our team we feel the EDRMS actually not provide any efficiency for us. The system performance is not quite stable, there can be whole week of the EDRMS have good performance and whole week of bad performance. It varies."*

Participant 4 also mentioned that *"It's actually easier for me to find the paper files instead of EDRMS. I really depend on paper files because the EDRMS system got lots technical problems."*

4.1.3 Lack of early user buy-in

For an EDRMS implementation to be successful, it needs both the pull from senior management as well as a real push from its staff (Wilkins, Swatman, & Holt, 2009).The involvement of people with the right expertise, including those who understand the business is crucial (National Archive, 2010, p.9). However, in the case of this organisation, early user buy-in has not been achieved during the early stage of the training.

Participant 4 described *“All the network migration was very rushed, maybe that’s why limited training has been provided. No prior consultation with the users about some of the restriction with the new system. For instance, the inability of creating my folder in the new EDRMS system is one of the issues. I have to ask someone else to create for me which is really inconvenient.”* Her feeling of being rushed to migrate to the new system has also been agreed by several other users.

Harris (2009) contended that EDRMS implementation, unless firmly embedded in a more thorough-going programme of organisational change, guarantees user resistance (p.18).

From the transcripts, users’ reluctance to use the new EDRMS system has also been detected. For example in two instances:

Participant 2 pointed out that *“I think it makes things more difficult... Sometimes it takes a long time to save the documents, whilst before I can just drag the document into certain pathway in the local G drive which is very simple.”*

Participant 4 said *“I do not rely on the EDRMS to maintain the data quality and I keep both electronic copy and physical file. It’s actually easier for me to find the paper files instead of EDRMS.”*

4.1.4 Lack of a good records sharing culture pre-implementation

EDRMS per se is not a silver bullet to solve all the record management issues within an organisation. Thus, during the implementation, it is important the project team can deliberately foster a sharing culture within those affected business units. However, in this case organisation, due to the rush of training and some business privacy issues, the forming of a sharing culture has been neglected during the training.

Participant2 said that *“It was a very basic training covers only some of the basic usage of the system.”*

Participant 5 also commented that *“Within the business unit, it kind of depends. For example, in the ministerial team and resolution team because of the privacy issue, there is not a lot of sharing information.”*

4.2 Benefits in general

Admittedly, there were issues occurred during this EDRMS implementation within the case organisation. But the new system also brings tangible benefits to those affected business units as described below:

4.2.1 Improving overall information quality and efficiency

In literature review, boosting the overall organisational record management efficiency has been identified as one of the major benefits brought by the EDRMS system. The interview question “Describe how the new system facilitates a more efficient information gathering process in your business unit?” was posed to all the EDRMS users during the interview to find out their experience with the system.

Overall working efficiency was regarded as improved by the interviewees because, when their colleagues are absent, they can now much more easily pick up their co-worker’s work in the system compared with the previous shared network environment.

Participant 3 mentioned that *“All the documents in our department now can be saved in one area of the EDRMS. We all have access to the same information. Rather than individual holding that documents”*

Participant 7 pointed out that *“Just in absence of staff, the co-worker can pick up his or her work much easier and quicker in the new EDRMS system. It also helps us to produce the reports much 3-4 times faster compared with preparing it manually.”*

Participant 4 also shared the same user experience by adding that *“If I am away, my co-colleagues can access the documents I put into the EDRMS system. For others to find in my absence, so they can do a search in the EDRMS system to find the files I created which makes work become more efficient for others.”*

4.2.2 Helping to facilitate the information sharing culture

Fostering an information-sharing culture within the organisation has been identified as another benefit brought by EDRMS. Interview question “Describe the EDRMS system facilitates a sharing culture within business units?” was asked to both EDRMS administrators to get an understanding.

Participant 5’s comment described that *“For business units without privacy issue, the EDRMS system helps to facilitate a sharing culture among colleagues.”*

Participant 6 agreed with the other administrator on the privacy issue. However he still thought EDRMS made document sharing easier which can facilitate more sharing among co-workers. *“With the new system, user can send a link generated by the system to another user without sending the whole documents. It’s a lot easier to check the files within the new systems in contrast to the old shared drives.”*

Apart from the business reasons which prevent the sharing, overall EDRMS makes sharing a much easier experience within these business units.

4.2.3 Centralised corporate repository with improved version-control

Providing a centralised corporate repository with version control access is another benefit identified in the preceding literature review. The interview question “Describe how the new system improves version-control of the documents and provides a safe storage place?” has been asked to all the users.

Participant1 mentioned that *“In relation to version control process, everything in the new system was standardised and systemised and the best thing about the new EDRMS system is that manager got the audit facility, you can actually see who has accessed particular folder or when the folder been accessed.”*

Other interviewees also agreed that there was now an improved version-control and safe work environment.

For instance, participant3 said that *“Of course it helps, because you can access the earlier version documents. It’s also safe, because it’s been backed up regularly.”*

Participant4 contended that *“only the authorised users can have access to certain folders within the system which helps improve the safe store of the documents especially for confidential documents.”*

4.2.4 Reducing data duplication

EDRMS has been identified as helping to reduce the data duplications within the organisation. A specific question has been asked to users in this area and mixed responses were generated.

For instance, participants 3 and 7 believed the new system has helped in reducing the data duplication. Their comments are described as below:

“The document link provided by the EDRMS system also helps to reduce data duplication as each link is a unique identifier in the system.”

“It improves the data quality, obviously we got this select functionality in EDRMS system which allows entering the select values which put some metadata in the background and you can do that and search.”

However, interview data has highlighted that not all EDRMS users believe the new system has resolved the data duplication issue.

For instance, participant 1 said *“Only in a fact that there were multiple instances where different areas of the business were working on similar cases or similar subject matters and so what was found areas that didn’t have a robust naming convention ended up having documents, files or folders that have already been initialised elsewhere in the department. So I am not sure whether it reduced the data duplication.”*

She also addressed the importance of running a search before actually creating the files in EDRMS in order to avoid duplication.

4.2.5 Enhancing retention of knowledge base

Last but not least, enhancing retention of knowledge has also been identified as another benefit brought by EDRMS. A related question was asked to the EDRMS administrators with positive feedback.

Participant 5 said that *“It provides a safe and secure repository that not existing before. For instance after implementing the EDRMS system, the inspectors can upload their reports or case notes all into one centralised location.”*

Participant 6 added that *“Moreover, when some staff is away, the other colleagues can more easily find the document and carry on the work.”*

5 Findings

Literature-Review Issues mapped against case study organisation findings.

Issue	Case analysis
Lack of user training and support	Yes
Lack of senior management support	Yes
Lack of early user buy-in	Yes
Lack of a good records sharing culture pre-implementation	Partly (apart from business unit with privacy concerns)

Literature-Review Benefits mapped against case study organisation findings.

Benefit	Case analysis
Improves overall information quality and efficiency	Yes
Helps to facilitate the information sharing culture within the organisation	Partly (apart from privacy issue)
Offers a centralised corporate repository with improved version-control	Yes
Helps to reduce the data duplication within the organisation	Partly (naming convention issue)
Enhancing the retention of knowledge base	Yes

6 Discussions

6.1 Measuring against CSFs

In the data analysis and finding sections, issues and benefits have been identified from the transcripts and been summarised in the tables. In this part of the study, interview data collected from the participants will be used to compare with those pre-defined CSFs in order to find if there are any gaps between EDRMS implementation in this organisation and CSFs.

6.1.1 Top management support

The first CSF defined in literature review section is top management support. Hase and Galt (2011) expressed that “As described in Kotter’s (1995) model of

organisational change, without senior management support, and in particular with the resourcing of developments, little would have been achieved” (p.40).

There is a lack of senior management support issue in this case organisation as identified earlier especially when changes were introduced or resources were scarce.

During the interview, EDRMS administrators have expressed that, due to the limited support from the senior management team, it led to a shortened period of training and less support from the vendors. Moreover, other teams like ICT have minimal input into this EDRMS project which also leads to technical difficulties and constraints later on when users commence using the system.

A user also described *“I still do not think the senior management team provides sufficient support for implementing the system. Specially, when there is an organisational change recently, lots things were put on hold and no updates for the system”*

This resonates with what Kwatsha (2010) described that EDRMS projects are more successful if there are champions among the management who understand the system, the needs of their departments, how the system impacts on the organisation as a whole and their units’ processes, especially. (p.30). Constant support from the top management will help to resolve the project’s resource conflicts and help users to overcome their fear of change brought by the new technology, which are essential for the success of EDRMS deployment.

Besides that, potential culture change brought by the new system is another issue requiring senior management support. Introducing an EDRMS system means a new way of thinking and working for a lot of staff who require constant support and effort from the senior management to succeed.

Van Winkelen, Silburn, and Sinclair-Thomson (2007) said that “There can be a resistance to change as a result of either excessive stability in the past or fatigue

from never-end change. Culture change always take more time than you expected” (p.32). Van Winkelen et al. (2007) also expressed that “leaders must demonstrate how specific use of the system makes a difference to what matters in their part of the organisation” (p.32). Moreover, a case study of the implementation of an EDRMS in a major health organisation in the UK, found that it results in immense cultural change and that support by senior management is crucial. (Gregory, 2005, cited in Hase & Galt, 2011)

Several users during the interview expressed that EDRMS offers a new way of storing and saving documents so it takes them a longer time to get used to it. Apart from that, document naming convention issues were also raised during the interview which users believe relates to absence of business rule. Without the firm support from the senior management, those issues brought by culture change and business rules absence cannot be resolved easily.

6.1.2 Mature recordkeeping practices

Secondly, forming mature recordkeeping practices prior to the implementation is another CSF for EDRMS implementation. Maguire (as cited in Nguyen, Swatman, Fraunholz & Salzmann, 2009) argues that, before the EDRMS implementation commences, a good record management culture needs to be formed and staff should be made aware of the importance of recordkeeping and their recordkeeping practice should be enhanced to accommodate the changes brought about by the new technology.

“Unless there is a culture of good records management in place, it will be difficult to fully realise the benefits of an EDRMS” (National Archives of Australia, 2011, p.13). Furthermore, from an EDRMS training perspective, it will be extremely valuable to provide users with general records management training which will help to improve their records management practices in prepare to better use the system (National Archives of Australia, 2011).

During the interview, those users from good record keeping practice business units indicated that a pre-mature recordkeeping practices help them to more easily adapt to the new system. For example in two instances:

Participant 7 expressed that *“Since we have the pre-existing record-keeping practise, it’s not a massive leap for us to adopt the new system. But the two systems shared some similarity in record keeping practice.”*

Participant 6 also mentioned that *“due to the previous good record keeping habits, it helps her to more easily adapt to the new EDRMS.”*

On the other hand, for users from other business units, they hold slightly different viewpoints. Participant2 expressed that *“For us, EDRMS offers a new concept of storing and saving documents so it takes us a bit longer to get used to it.”*

Participant 3 added that *“The old system and new system are so different, that previous record-keeping practise does not really help us to adopt the new system as all the classification of the folder structure are built from scratch.”*

Those comments resonates with Nguyen et al. (2009) i.e. “Technology alone does not improve an organisation’s recordkeeping culture – this comes from the employees’ awareness, attitudes and practice” (p.917). Thus, employees’ recordkeeping practice plays a vital role in determining the success of an EDRMS implementation.

However due to limit training been provided, good recordkeeping practice has not been properly introduced to the users such as proper naming of the files or folders within the new EDRMS. This matches with the shortage of user training and support issue identified in the earlier chapter.

6.1.3 Business schemes development and effective user cooperation

The third CSF is early development of business classification schemes and effective user cooperation. Foscarini (2006) said that “a number of classification systems that claim to be function-based, at a deeper glance turn out to be just a mirror of the agency’s internal structure” (p. 191). This resonates with Bailey and Vidyarthi (2010) point out that functional classification schemes will help to map entire organisation activities with a view to creating a corporate file plan (p.282).

On the other hand, Childs and McLeod (2013) believe that EDRMS training is only a partial solution to raise staff awareness of RM procedures. Solutions appropriate to the complex domain are also required which including user-agreed file-plans (p.203). In order to achieve user-agreed file plans, effective user cooperation thus becomes important especially in the early EDRMS design stage. Bak (2012) argues that “functional classification is not ‘natural,’ but is created by archivists and record-keepers to serve professional recordkeeping purposes” (p.290).

During the interview, both EDRMS administrators were asked specific questions in this areas and participant 5 mentioned that *“Ministerial Services and Resolution teams were mostly involved in the design of workflows and reporting that is out from EDRMS. Because it is important for them to get the reporting right, they worked closely with the vendors to customise and design those reports in the new system. Other business units were not as closely involved.”*

As for the development of business classification schemes, Participant 5 said that *“The business classification scheme was designed by the records management team with advice from the vendor but basically was designed by the records management team.”*

From the transcript, business classification schemes were mostly developed by the EDRMS administrators from the records management team with some help from the vendor. However, there seems to be limited input from the actual business users to this process. Moreover, apart from Ministerial and Resolution teams, other business

units have few participants in the design of EDRMS function like workflows or reports. Both of these factors contribute to the issue of lack of early user buy-in and later on user dis-satisfaction with some EDRMS functionalities within the case organisation later on.

6.1.4 On-going training and support

The fourth CSF is on-going training and support. EDRMS not only offers a new concept of document management for many users within the organisation but also brings underlying culture changes within those affected business units. As described by van Winkelen et al. (2007), “a lack of knowledge and skills about how to use the systems produces ‘laggards’ and many systems are not easy to use to start with” (p.32).

For instance, one user mentioned in the interview that *“It’s actually easier for me to find the paper files instead of EDRMS. I really depend on paper files because the EDRMS system got lots technical problems.”*

In order to unleash EDRMS’s potential and make the users fully accept it, on-going training and support are essential. By making refresher training and support available, it will not only help users to make further gains in EDRMS knowledge but also avoid backsliding. Singh, Klobas, and Anderson (2008) contended that “Once an EDRMS is implemented in the organisation, EDRMS professionals have to invest in training not only during the implementation stage of the EDRMS but also post implementation” (p.31). However, during the interview, several users reported that there was no refresher training provided after the implementation and training was done well before the actual system implementation which means some of the skills they learnt during the training had been forgotten by the time they actually started using the system.

Singh et al. (2008) also expressed that “Ongoing training programmes need to be in place to: promote working with classification schemes; assign meaningful titles to information registered into the EDRMS; provide refresher training for user’s

information seeking skills” (p.31). This resonates with Brunskill who contended that the key elements required for EDRMS training are naming conventions, version control and management of email. If standard practices on these are not in place across an organisation, then shared drive spaces will rapidly become messy and non-transparent (2012, p.149).

From the interview data, due to the limited training, several users report that they had not been taught how to name the documents to save in the EDRMS which leads to the difficulty of searching for files and duplicated documents within the system. Moreover, users reported using metadata to do the search instead of using the classification scheme. This user behaviour resonates with Singh et al. (2007) who note that, due to the lack of training and promotion on using the classification scheme to search, users would still prefer to search using metadata elements (p.173).

Last but not least, Jones argues that “appropriate support from the IT team was evident and this had helped ensure that the technical implementation was successful” (2012, p.399). In this case organisation, due to the limited input from ICT several users raised the issue of system instability as well as slowness.

6.1.5 Well-planned change strategy and communication

Introducing EDRMS will mean changing or re-engineering established business practices in those affected business units and its success will ultimately depend on users using the system to create or capture records of their businesses (State Records Authority of New South Wales, 2012). Moreover, Sim also contended that EDRMS will only work in the long term if the reasons for implementation are understood across the organisation and the system does not impede staff in their daily work (2010, p.7).

Furthermore, “The change management and communication/marketing plan is developed as a means to identify all the factors associated with communicating the

impending change to the organisation in the most open, honest and effective manner” (Sim,2010,p.7).

Thus, a well-planned change strategy is one of the CSFs for EDRMS implementation which highlights the importance of communication with end users through customised ways.

A specific question was asked to the EDRMS administrators with Participant 5 commenting that *“there were forms of both formal and informal communications happened between implementers (including vendors) and users during the implementation which include emails, floor-walking, workshops, training manuals, etc.”*

The other administrator also confirmed that email, floor-walking and workshops are three of the main communication channels during the early stage of introducing the new system.

According to the Queensland State Archives (2010), “an effective and thorough communication plan should be developed and made available to all stakeholders” (p.19).

However, from the preceding data analysis section, issues like lack of early user buy-in have been identified in relation to the poor communications with the users.

For instance, one user mentioned earlier said that *“No prior consultation with the users about some of the restriction with the new system.”*

And another user said that *“no one is telling us how to name the files, the trainer just leaves this to us and we decide how to name our files to store into the EDRMS.”*

Those issues obviously violate this CSF in regards to open and effective communication with the end users about the system functionalities and how they will

enhance their areas of work. This ends up impeding staff in their daily work such as: document searching in EDRMS.

7 Limitations

Due to the time and resource constraints, there were a limited number of interviews conducted with one user from the ministerial services team dropping out since she was on sick leave on the interview day. Moreover, one staff member from the vendor side also decided not to participate due to business confidentiality matters. A higher number of interviews from internal user groups and vendors would help to capture a more holistic and objective view on this EDRMS implementation within the case organisation. Then, the potential of generalising the findings of this study would be relatively high.

8 Conclusion and Recommendations

In this study, EDRMS implementation has been reviewed in three affected business units in this case organisation by interviewing both EDRMS users and administrators.

Several benefits achieved in this implementation have been identified with most users agreeing that the new system helps to improve the overall information quality and efficiency in terms of making it much easier to pick up their colleagues' work while they are away. They also believe the new system provides a more centralised repository with improved version-control which is reflected in the introduction of audit facility to the managers as well as the ability to grant permissions to users based on different needs to access documents. When it comes to the knowledge base retention, most users believe the new system did enhance the process as it provides a single and safe repository for information storing.

In terms of facilitating information sharing within the business units, apart from the ministerial and resolution teams who have business privacy issues within their units, users also believe the new system helps simply because it makes document sharing an easier process by sharing unique links generated by EDRMS instead of sending the entire document across the network.

However, reducing data duplication seems not to be achieved as expected with users pointing out there is a naming-convention issue in relation to the documents and folders. This issue also leads to the absence of business rules in terms of properly naming documents within the new system.

On the other hand, several issues have also been identified during this study which violate with the pre-defined CSFs for EDRMS implementation and include:

1. Lack of user training and support
2. Lack of senior management support
3. Lack of early user buy-in
4. Lack of a good records sharing culture pre-implementation (apart from business units with privacy concerns)

For the future organisation-wide EDRMS implementation, these issues need to be mitigated in order to improve overall user experience and achieve successful implementation. Corresponding recommendations are provided based on CSFs for each identified issue and potential gaps found during implementation.

Firstly, the case organisation should liaise with the vendors to arrange the training schedule to be close to the actual rollout date so that it helps to lower the risk of users forgetting knowledge gained during the training. Moreover, refresher training also needs to be provided to consolidate users' knowledge gained during initial training as well as providing necessary support to solve the real problems arising during the actual rollout. Follow-up training sessions and constant support can also promote EDRMS good practice to the users such as doing a search first within the system before creating a file or properly naming a file or folder within the system.

Secondly, scarce project resources and conflicting work priorities are always vexing questions for any system implementation. EDRMS deployment is no exception. Shepherd, Stevenson and Flinn (2010) also argue that, for records management practice, lack of senior management support can hamper the endorsement of policies (p.342). For future implementation, it will be helpful to have a champion within the senior management team who understands the needs of the affected business units and how EDRMS will impact on the organisation as a whole. Thus, necessary resources will be allocated according to the project needs and other teams like ICT can adjust their work priority to provide more technical support to this project. Moreover, by having a champion within the senior management level, it will be much easier to set up business rules to solve naming convention issues mentioned earlier in the study.

Thirdly, EDRMS will not be successful if no user wants to use the system. Thus, it is important to create user buy-in in the beginning of the project. One way to achieve this is by designing a user-friendly interface. Just as Dwyer and Linton (2012) mentioned a nice and user-friendly interface will make the system easy for people to use at the end of the day (p.37). Moreover, it is equally important to carry out an early consultation by the project team to seek advice from key users within affected departments to understand business requirements so that system restrictions will be mitigated at the design stage.

Fourthly, according to the literature review, a pre-existing good record sharing culture will help the users to more easily adapt to the new EDRMS system. This point has also been verified during the preceding data analysis and discussion sections. Thus, during the training, trainers should deliberately foster a sharing culture within the business units (apart from those with privacy issues) such as setting the system default to 'open to all' which will encourage users to share their documents during the workshop sessions.

By doing that, users will have a chance to get familiar with the sharing culture brought by the new system and will be more comfortable to use the system later on during the rollout

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