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Implementing a Paperless System for Small and Medium-Sized Businesses (SMBs)

CAPSTONE REPORT

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Abstract

Paperless system offers organizations many benefits including increased employee efficiency, productivity, and information security. However, there are numerous organizations, particularly small and medium-sized businesses (SMBs), which are still operating under a paper-centric environment. For these SMBs, paperless system could mean streamlining daily workflow while reducing overall costs. This annotated bibliography is comprised of literature published from 2007–2015 to help executives, managers, and users identify the benefits of and best practices in implementing a paperless system.

Keywords: paperless, paper-based, document management system (DMS), electronic document, small and medium-sized businesses (SMBs)

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Introduction

Problem

Paper-based processes involve the handling of physical document(s), photocopying, archiving, and retrieving physical document(s) from a file cabinet (Kissell, 2013, p. 76). Paper-based processes are inefficient, cost valuable office space, and pose security risks (Selvi, Khan, Rani, Prasad, Paul, & Biswal, 2011, p. 39). Kissell (2013) notes that filing systems require a large amount of physical space and spawn inefficiencies in searching for previously filed papers. The average cost of rent for physical filing space is about "6 percent of revenue for small and medium firms, and 5 percent at large firms" (Welsh, 2007, p.11).

Organizations that use paper-based processes also face security risks due to paper documents that have (a) been lost, (b) been damaged, (c) been misfiled, or (d) fallen into the wrong hands (Mills-Senn, 2014, p.28). Brusco (2011) finds that "more and more companies and organizations are making the shift toward electronic filing, saving space and increasing security. Large computer servers have the ability to store mass quantities of information in a secure state and location" (p. 17). Digital documents stored on these servers can be easily retrieved within minutes, which increases employee productivity due to the elimination of the chore of searching for misfiled physical documents (Paperless Office, 2009, p. 16).

Collaboration efforts using paper documents prove challenging at times. Employees cannot easily distribute or share paper documents compared to their digital counterparts (Welsh, 2007, p. 11). Organizations that have replaced paper-based processes with paperless processes performed on a computer or other device enjoy greater flexibility with digital documents. "Digital documents are easier to search, share, and backup than paper documents, and they take up essentially no space" (Kissell, 2013, p. 77). Stratton (2013) notes "electronic files allow better

access and information sharing, cost less in terms of physical space and personnel, and can increase productivity—all of which add to the bottom line" (p. 44).

The term *paperless office* evokes images of an office without paper documents; however in reality, a paperless environment closely resembles an office utilizing integrated information systems with multiple software tools to reduce paper consumption and improve efficiency in retrieving electronic documents (Dykman & Davis, 2012, p. 115). Paperless environments increase office productivity and collaboration due to the ease of sharing and retrieving digital documents (Welsh, 2007, p. 11). Additionally, mobile devices used in conjunction with digital documents allow users to conduct paperless meetings. Meetings conducted with mobile devices allow meeting attendees to view agendas and handouts without the need to print or copy paper documents (Brusco, 2011, p. 15).

The paperless trend has also extended to services offered by companies to their customers. For example, major institutions are offering their clients the convenience of mobile applications and the option to receive electronic invoices. Kissell (2013) states, "it's increasingly rare to find banks, utilities, and other services that do not offer paperless billing and payment" (p. 76). Some institutions such as banks have gone further by offering their mobile application to their clients. The institutions that offer a variety of options such as a mobile application, electronic billing, and electronic payment benefit by not having to send out paper invoices, while their customers enjoy the convenience of performing tasks such as transferring funds, paying bills, and checking account balances from anywhere regardless of time and place (Ebben, 2013, p. 12). Furthermore, electronic payments have mitigated security risks that were associated with traditional methods of payments such as cash and checks. The problems with paper payments were that cash could be counterfeited and signatures could be forged on checks (Aigbe &

Akpajaro, 2014, p. 10). Therefore, organizations that utilize electronic payments eliminate these issues.

While technology supports the move to paperless business practices, not all organizations can afford the IT infrastructure necessary to make the transition. A small and medium-sized business (SMB) often lacks the resources and IT infrastructure to quickly increase server performance and/or expand storage capacity (Wang, 2013, p. 1241), both of which are required for the in-house computing infrastructure needed for effective digital storage and retrieval of documents (Arinze & Anadarajan, 2010, p. 59). Therefore, an SMB must find other means to stay competitive. Cloud computing is one of the mediums that an SMB can take to instantly increase its IT infrastructure. Wang (2013) defines cloud computing as "Internet-based computing, whereby shared resources, software and information are provided to computers and other devices" (p. 1241). Additionally, cloud computing, specifically cloud storage, allows end-users to store and retrieve files from any place and time on any device that has Internet access (Li, Jin, Xu, Wilson, Liu, Cheng, Liu, Dai, & Zhang, 2014, p. 115). For SMBs that are interested in moving to electronic storage and retrieval of documents, cloud computing offers a cost effective means of making the change (Arinze et al., 2010, p. 61).

Purpose

The purpose of this annotated bibliography is to identify literature that explores the topic of the paperless environment by focusing on best practices in implementing a paperless system as described by Stratton (2013). A key goal of this study is to inform decision makers such as organizational executives, managers and IT leaders on best practices in transitioning to paperless environments and the benefits of going paperless.

Literature is presented that identifies issues and risks associated with paper-based environments. Literature that describes the benefits that result from the implementation of paperless systems are also included. The review provides sources that highlight best practices in making the transition to a paperless environment, including alternatives for tools and technologies. Various sources highlight common challenges in making the move to paperless, including challenges focused on changing the organizational culture as well as technical difficulties. Case studies are highlighted from both successful and unsuccessful efforts to transition from paper-based to paperless environments.

Research Question

Main question. What are the best practices in implementing a paperless system for small and medium-sized businesses (SMBs)?

Sub-questions. What are the problems that are pushing the need for organizations to go paperless? What are viable solutions for transitioning to a paperless system? What obstacles may arise during the paperless implementation?

Audience

Organizational executives, managers and IT leaders who are responsible for approving and implementing paperless projects will benefit from the in-depth understanding of the impact a paperless environment can have for an organization. The organizational leaders who are championing the move to paperless and providing support for paperless projects need to understand the benefits of the move to paperless, the implications for staffing and new responsibilities after the paperless initiatives are completed, and the resources required to make the transition. In addition, these leaders need to understand and be prepared for challenges

inherent in the move to paperless, both in terms of organizational resistance and process and technology challenges.

Other stakeholders are the employees who handle the documents on a daily basis. For example, personnel in the accounting department can be expected to appreciate the efficiency offered by a paperless system. A paperless office also eliminates the amount of time a credit specialist spends on activities such as searching for invoices, statements, and proof of delivery (Frear, 2014, p. 88). This information is important to the employees who will transition from handling paper documents to electronic documents in order to help ease the transition to a paperless environment.

Search Report

Search strategy. The search strategy involves the use of Google to help narrow the list of keywords. This is accomplished by entering the phrases paper office, paper management, and paperless office into the Google search engine. Similar words or phrases show up in the results, which are identified as the keywords for this study. The keywords are used to perform searches with the University of Oregon Libraries' databases. The majority of searches are performed within the University of Oregon Libraries' site. The assumption is that using the University of Oregon Libraries' databases provides a better chance of retrieving articles/journals that are peer-reviewed and current.

There is very limited peer-reviewed content regarding the topic *Paperless Environment.* This could be due to the use of a narrow date range and a lack of current articles written on this subject matter. The date is filtered only to show items for the years 2007 to 2015. In addition to the date filter, the results are also filtered only to show peer-reviewed journals and full-text literature. Unfortunately, using these parameters results in a substantially short list of items.

Furthermore, most of the articles that appear in the results are focused specifically towards the medical industry.

The lack of current articles for *Paper-Based Systems* rivals the limited number of articles for *Paperless*. The relevant articles were published in the year 2000. The articles that are deemed relevant are either (a) too old, (b) focused on the medical industry, or (c) did not include any references. Overall, the search activities that focused on the background/problems of the annotated bibliography have been challenging.

Key terms. The research focus is on various keywords in order to retrieve specific and relevant articles. The keywords used are as follows:

- Paperless Environment
- Paperless AND Office
- Going Paperless
- Digital Documents
- Paper-Based Processes
- Paper-Based System
- Enterprise Content Management
- Digitization
- Document Management
- Electronic Document Management
- Electronic Payment
- E-payment
- Cloud Computing AND Storage
- Cloud Storage

- Cloud Environment
- Resistance AND Organizational Change

Search engines and databases. The search for literature mainly involves the use of the University of Oregon Libraries' databases. Google Scholar is also used to search for literature. However, most of the results from Google Scholar are either not applicable for this study or are duplicate articles from the University of Oregon Libraries' site. Additionally, the Google search engine is used, but only as a tool to generate keywords. The University of Oregon Libraries' databases include the following:

- Academic Search Premier
- Academic OneFile
- ACM Digital Library
- Academic Search Premier
- Business Source Complete
- Computer Source
- JSTOR
- Small Business Resource Center
- Science Direct
- ProQuest
- Factiva
- Google Scholar

Documentation Method

Documentation approach. References are documented and tracked using two methods. The first method uses Zotero to save articles into a specified folder. Zotero provides the ability to

search and sort the saved articles by title, creator, and date. Zotero also provides the ability to create references in an APA format. However, Zotero does not always accurately populate the references in APA format. In addition, Zotero does not properly function unless it is connected to the University of Oregon Libraries' databases via a VPN connection.

The second method uses Microsoft Word and Excel. Keyword searches are recorded into an Excel spreadsheet according to the database and search terms used. Each of the articles found is documented into a Microsoft Word document. Each notation includes the citation information, the abstract, the search term and the database used in locating the source. This information provides the ability to retrieve the document should the electronic file get deleted. In addition, each reference is categorized based on the relevancy to the three categories: (a) problem associated with paper-based environments, (b) solutions for transitioning to a paperless system, and (c) obstacles during the paperless implementation. The Word and Excel files are saved locally and on a USB drive.

Reference Evaluation

Reference evaluation criteria. References are evaluated using the list of criteria retrieved from the Center for Public Issues in Education website *Evaluation Information Sources* (Center For Public, 2014). The criteria listed in the document are defined as authority, timeliness, quality, relevancy and bias (Center For Public, 2014). A reference is determined as authoritative if it is peer-reviewed and if the author has professional credentials. Due to the dynamic nature of technology associated with paperless environments, an article is determined to be current if it was published within the last ten years. Therefore, the author excluded publication dates older than 2005. The quality of each reference is reviewed and checked for proper grammar, spelling, and punctuation, as well as the flow of the information provided to ensure it is clear and well

structured. Relevancy is determined by whether the source is appropriate to the research topic, which is the identification of best practice in implementing a paperless system for small and medium-sized businesses. Additionally, scholarly sources have priority over popular sources. The source is analyzed for bias by looking for cited sources that supports the author's argument and conclusion. In addition, the literature is checked for an inclusion of multiple perspectives. Furthermore, literature is rejected if the author or article is in the position of selling products or services.

Annotated Bibliography

The following annotated bibliography presents 15 references that explore the paperless environment and identify the best practices in implementing a paperless system for small and medium-sized businesses. These references are selected to inform organizational executives, managers and IT leaders who are responsible for approving and implementing paperless projects. In addition, these references are also used to educate end-users who handle paper documents on a regular basis. References are presented in three categories: (a) problems associated with paper-based environments and benefits associated with paperless environments, (b) solutions for transition to a paperless system, and (c) obstacles during the paperless implementation.

Each annotation consists of three sections: (a) the full bibliographic citation in APA format, (b) a published abstract, and (c) a summary. The summaries provide an overview of the problems associated with paper-based processes as well as identifying best practices and obstacles in converting to a paperless system.

Category A – Problems Associated with Paper-Based Environments and Benefits Associated with Paperless Environments

Brusco, J. (2011). Trending toward paperless. *AORN Journal*, *94*(1), 13-18. http://dx.doi.org/10.1016/j.aorn.2011.04.020

Abstract. As the nation becomes more environmentally and economically conscious, many businesses and organizations, including health care facilities, are investigating paperless processes. “The terms ‘paperless,' electronic,' and ‘digital’ are often used interchangeably to describe work which previously was done with paper, but which now has been adapted to information and communication technology devices and software.”[1] Although the adoption of electronic or paperless processes can be slow, it can already be

seen in a variety of settings such as business meetings, voting or polling places, and health care facilities. Abstract retrieved from EBSCOhost.

Summary. The author examines the trend of organizations replacing paper-based processes with "electronic or paperless processes" (Brusco, 2011, p. 13). Brusco used one of AORN's annual meetings that the organizers shifted to a paperless process as an example. All processes associated with the meeting were done electronically, ranging from online registration to the production and dissemination of educational handouts. Key findings from this example are that attendees were able to successfully search online using key words, topic or company name to look for education sessions, products, and events. Attendees that have mobile devices can scan QR codes to retrieve event documents, thus eliminating the need to carry paper documents.

The article also noted that in an effort to improve health care and reduce costs, hospitals are encouraging doctors and nurses to move away from paper-based patient records and forms to electronic patient records. One major drawback of paper-based patient records was that they were only accessible to clinicians if the records were in the same building, whereas digital patient records can be accessed from any hospital or clinic with proper authority.

Finally, the author mentions that users can take advantage of mobile devices to access documents from anywhere at any time. The article used an example of meeting documents to show how effective mobile devices are in transitioning to a paperless environment. The author asserts that meeting attendees can access agendas and handouts from mobile devices instead of making copies and distributing the paper copies to attendees. The author concluded the article by providing tips for going paperless.

This article is useful for this specific research study because it reveals examples of the benefits of a paperless environment through case studies. Executives in paper-based organizations can learn from the article how paperless systems can help them to address efficiency and paper consumption concerns associated with paper-based approaches.

Greenwood, P. (2012, March). Securing information in a paper-efficient environment. *Computer Fraud & Security, 2012*(3), 18-20. http://dx.doi.org/10.1016/S1361-3723(12)70055-6

Abstract. A secure, IT-based paperless office has been 'just around the corner' for the past four decades. For many businesses, however, the prospect of replacing paper documents with digital files can be a daunting one. Paper is part of our cultural DNA: since our ancestors started trading, we have relied on physical records. Many business processes and information management systems have been designed around paper, and even the most technologically minded may well print out the occasional email or word document to read on the train home. Removing paper is therefore a huge operational and emotional challenge for many organisations – and may explain why the supposed utopia of the paper-free office has yet to materialise.

Summary. This article examines the cost of a paper-centric system and presents the benefits of digitization as the solution to help reduce the reliance on paper. Greenwood starts out by stating that paper can be easily lost and hard to track and can leave a business vulnerable to loss of valuable or sensitive data (Greenwood, 2012, p. 18). The author also asserts that employees in paper-based organizations cannot easily access the knowledge that is written on paper. The article recommends digitizing paper documents by scanning and converting them into electronic documents. The author warns organizations not to rush in and try to scan every paper document because the effort

requires many resources such as time and money. However, Greenwood (2012) notes that "digitization should aim to extract, index and validate relevant customer information, employee knowledge, business intelligence and innovation locked up in the paper documents" (p. 19).

The article also covers the security benefits of digital documents compared to paper documents. For example, the author states that digital documents can be protected by controlling access and distribution. Furthermore, digital documents can also track access of and modifications made to the digital documents. In contrast, paper-based systems do not have these type of security measures.

This article is useful for this specific research study because it identifies specific issues and costs that are associated with a paper-based environment. It also reveals numerous benefits a paperless system can bring to an organization. This information is beneficial to executives and managers who are planning to convert to a paperless system.

Kissell, J. (2013, October). Embracing the nearly paperless future. *Macworld*, *30*(10), 76-77. http://connection.ebscohost.com/c/articles/90183419/embracing-nearly-paperless-future

Abstract. The author reflects on the use of papers despite the progress of the business world towards paperless office work through the use of computers. He discusses the decline in the use of office paper between 2000 and 2011, the barriers to a paperless office, goals in maintaining a paperless office, and the convenience found in a paperless office. Abstract retrieved from EBSCOhost.

Summary. This article identifies the drawbacks of paper-based processes and offers suggestions on how to progress towards a paperless future. Before computers were common, offices relied on paper-based processes for distributing and filing paper

documents. Today, paper-based processes are still utilized by some organizations. The author points out that an issue with receiving printed documents is that it takes time and effort to extract information from the documents, as well as to find a place to file them. Another paper-based problem the article identifies is the storage of paper documents. Filing cabinets take up a lot of space and finding old filed documents is very time consuming.

The article suggests using a method named scan-OCR-shred to help users start the path to a paperless environment. The scan-OCR-shred routine begins with scanning the document. The scanning of the document is followed by the use of software to capture the words that are on the document; this process is called optical character recognition (OCR). The last step involves shredding the paper document after the digital file is created. In addition, the author also recommends changing personal habits. An example Kissell (2013) provides of a personal habit is that most people keep business cards that are given to them. The author suggests using an iPhone to take a photo of the business card and then returning the business card to the owner. Minor personal changes such as this can lead to a paperless system. Kissell (2013) states "going paperless doesn't have to be all or nothing to be effective" (p. 76).

This article is useful for this specific research study because it illustrates specific examples of the inefficiencies of a paper-based system. Managers can use this information to help them convince their organizations to go paperless. The article is also useful because it provides insight for managers and users into alternatives for the *all-or-nothing* approach to going paperless. Once an organization understands this notion, they can successfully implement and maintain a paperless system.

Category B - Solutions for Transitioning to a Paperless System

Haug, A. (2012). The implementation of enterprise content management systems in SMEs. *Journal of Enterprise Information Management*, *25*(4), 349-372. http://dx.doi.org/10.1108/17410391211245838

Abstract. Purpose – A literature review revealed that none of the few longitudinal studies of enterprise content management (ECM**)** implementations focus on small and medium-sized enterprises **(**SMEs). To contribute to this area, the purpose of this paper is to generate insights in relation to how SMEs can successfully promote implementation of ECM solutions. Design/methodology/approach – The paper presents and analyses a longitudinal study of an ECM project. Findings – The findings of the paper include a definition of a process model for ECM implementation in SMEs, identification of ten success factors related to ECM system implementation, and a definition of a new pattern for ECM technology development, compared to existing case studies. Research limitations/implications – Since it appears to be the first detailed study of ECM system implementation in SMEs, this paper provides a point of departure for future research in the use of ECM technology in SMEs. Practical implications – Practitioners in SMEs preparing to engage in ECM projects may utilize the findings of the paper in relation to managing the implementation process and understanding various benefits that ECM systems can produce. Originality/value – The paper represents a contribution to the sparse literature on ECM implementation. In fact, the case seems to be the first longitudinal study of ECM implementation in SMEs**.**

Summary. This article offers insight and information on the implementation of a technology called enterprise content management (ECM) that small and medium-sized

enterprises (SMEs) can utilize to help manage a paperless environment. Haug (2012) defines ECM as a system that represents "a technology that addresses information management tasks, including the need for integration of unstructured information with structured information" (p. 349). The article was a review of literature on ECM implementations and also a study on a SME during its ECM implementation. In the literature review, ECM implementation success factors were identified and grouped into seven topics. The topics are as follows: (a) selling the ECM project to executives, (b) overcoming political obstacles, (c) selecting a vendor, (d) implementation and installation, (e) administration, (f) training, and (g) getting those involved to use the system.

The article notes that most SMEs have limited in-house IT resources and do not possess the abilities to create custom ECM solutions. Therefore, they rely more on external partners such as third-party ECM vendors for ECM solutions. The case study provided examples of the benefits an ECM system provided for a former paper-based organization. Haug (2012) states "compared to previous processes when all project material was placed in ring binders, the use of an ECM system to manage documents digitally produces some major benefits" (p. 362). The author mentions that another benefit the ECM system provides is that everyone in the organization has access to the information and searching for relevant information does not require as much effort as searching for information in the paper-based system.

The author presented three aspects to a successful ECM implementation. First, introduce projects that are focused on problems that frequently arise with the current system. Second, have a clear vision and identify requirements for an ECM before employing a

vendor search. Third, invite future users to be part of the discussion, especially on the changes that will affect their departments.

This article is useful for this specific research study because it identifies a solution that organizations can utilize to manage the new paperless system and processes. It also supplies information to SMEs on how to approach the selection process of an ECM. This knowledge is valuable to managers who are looking to transition to a paperless system.

Jones, S. (2012). eGovernment document management system: A case analysis of risk and reward. *International Journal of Information Management*, *32*(4), 396-400. http://dx.doi.org/10.1016/j.ijinfomgt.2012.04.002

Abstract. United Kingdom Local Authorities (UKLA) have the responsibility for delivering a wide range of services to the general public which include a number of significant problems in many delivery areas. The information technology (IT) field is arguably one of the most challenging. Consequently, a senior executive issue within UKLA is transforming organisations through the deployment of IT. This is due to the call from the UK National Government for the public sector to be more innovative. This paper investigates via a case analysis, the rationale for the implementation of an organizational-wide, corporate electronic document management system (EDMS). There is a paucity in the literature, which this research aims to help address. This paper analyses how the EDMS was deployed and how the case organisation was transformed and the findings are mapped against the normative literature. The paper also identifies a set of lessons, enabling and risk factors together with a good practice framework for future EDMS deployment. This is based upon the literature and case research to help improve deployment outcomes, information management and organisational transformation.

These lessons include a feasibility study, senior executive commitment, aligned business strategy, project management, improvements to user ownership, training, system utilization, information management processes, printing strategy and post implementation review. The contribution of the research will be of benefit to both academics and practitioners engaged in EDMS research and implementation.

Summary. The article presents a solution that will help organizations streamline workflow by implementing electronic document management systems (EDMSs). The author states that a near-paperless office offers numerous savings and flexibility to an organization and its employees, however this cannot be achieved without the implementation of an EDMS (Jones, 2012, p. 397). The article lists seven primary benefits of EDMSs. The benefits are (a) customer service representatives have access to the information needed to provide a complete service; (b) staff can access information needed to perform their duties from anywhere; (c) the creation of electronic documents means that paper originals can be destroyed, reducing filing space; (e) reduction in printing and printers due to electronic documents; (f) reduction in staff due to improved efficiency; (g) the provision of an audit trail of electronic information updates; and (h) the improvement of information management.

The author performed a case study analysis on the United Kingdom local authority's organization-wide EDMS implementation. The results indicate that the EDMS provided the seven benefits mentioned previously. However, there were also some shortcomings due to implementing EDMS and how the system was implemented. Some of the shortcoming of the EDMS included additional IT support for users, increased network traffic, and additional disk storage space. These factors stretched the capacity of the

limited resources of the staff and equipment. In addition, users felt that they were not adequately consulted or informed on the EDMS implementation. The article states that the "users had cited anecdotal examples of systems and procedures being virtually paper-based one day and EDMS-based the next" (Jones, 2012, p. 398). The author asserts that the shortcomings can be rectified by improving (a) user ownership, (b) training, and (c) system utilization.

This article is useful for this specific research study because it provides information on the use of EDMSs as solutions to help organizations with their paperless transitions. This article provides managers with insight on what to expect in implementing an EDMS, including potential challenges the organization will face. This information also helps managers or project implementers develop strategies that can mitigate the shortcoming of an EDMS in advance. Users will also find this information to be useful because the article gives a snapshot of the capabilities of the new system.

Lutteroth, C. & Weber, G. (2011). Going paperless - on the evaluation of electronic form technologies." In *2012 23rd International Workshop on Database and Expert Systems Applications*. *IEEE Computer Society*, 14–18. http://doi.ieeecomputersociety.org/10.1109/DEXA.2011.38

Abstract. Most organizations rely on the use of forms for their daily business. These forms are more and more replaced by electronic equivalents. This change is usually a significant investment, therefore it is important to understand the requirements and features of available systems. In this paper, we explain some of the common important requirements, and discuss how form technologies can be evaluated by an organization. To illustrate the approach, we describe an exemplary evaluation, based on a project

undertaken at the University of Auckland with the aim of making all forms electronic. Our results show that current technologies differ greatly in the requirements that are addressed, and that no single form technology satisfies all the common requirements.

Summary. The authors in this article explore a solution for going paperless by evaluating electronic forms. Lutteroth and Weber (2011) identify issues regarding paper forms, such as the need to repeatedly fill in the same information, the fact that some forms were turned in incomplete, and the difficulty in managing various versions of the forms. The authors state "by contrast, electronic forms have many advantages, such as the possibility to transfer, store, complete, search and manage them more efficiently" (Lutteroth & Weber, 2011, p. 14). As a result of the inherent benefits, many organizations are trying to transition from paper-based forms to electronic forms.

The article reviews the requirements that must be fulfilled in order to convert to electronic forms. The authors identified the following requirements that must be met for electronic forms to be successful: (a) authentication and authorization, (b) pre-population of forms based on identity, (c) basic validation, (d) usability and accessibility, (e) digital signature and auditability, (f) ease of creation, and (g) mobile versions. The authors experimented with several form technologies. Their conclusion is that there is not a one-size-fits-all form technology. Organizations will need to assess their requirements and then decide which technologies fit their processes.

This article is useful for this specific research study because it identifies the use of electronic forms as a solution that helps an organization to reduce paper consumption and transition to a paperless system. This information is useful to managers during the

selection process because the article includes a lists of elements that are essential in electronic form software.

Mills-Senn, P. (2014). How safe are your digital documents? *University Business*, *17*(5), 27-30. http://www.universitybusiness.com/article/how-safe-are-your-digital-documents

Abstract. The article offers the author's insights on aspects of electronic document management system at Central New Mexico Community College (CNMCC). Topics discussed include several advantages of electronic documents or records management and imaging solutions and the requirements to manage and ensure the safety of digitized documents on the campus including the accurate image capture, determine a person who has the rights to access the documents, and setting a time for the storage of the documents. Abstract retrieved from EBSCOhost.

Summary. The author discusses how electronic records management (ERM) solutions help organizations to achieve a paperless environment and overcome their paper storage problems caused by paper-based systems. The article also provides policies and procedures that enable organizations to successfully implement and utilize an ERM system. The author states that electronic documents/records management and imaging solutions allow organizations to significantly reduce paper flow, freeing up filing and storage space (Mills-Senn, 2014, p. 27). The article points out that a proposal for a records management system should include guidelines for the following processes: (a) organizations' handling of document imaging, (b) document preparation and organization prior to scanning, and (c) file retention and security. These guidelines help organizations to successfully implement the new system.

The author identifies three processes that help mitigate the risk of the human element to ensure that the digitized documents are safe, secure and in compliance with regulations. The processes are as follows: (a) verification of scanned documents built into the process, (b) managing user rights and access to the documents, and (c) setting policies to help ensure that the minimum file retention period is in compliance with state regulations. This article is useful for this specific research study because it offers ERM as a solution to managers who are converting to a paperless system. The information is important to organization leaders because it provides policies and procedures that can be used as reference in planning an ERM implementation. In particular, the article provides guidelines for ensuring that digitized documents address the organization's security needs and adhere to regulations.

Selvi, S., Khan, S., Rani, U., Prasad, B. N., Paul, A. K., & Biswal, A. K. (2011). Document management system-go green 'a paperless office' for steel plants. *Steel Times International*, *35*(8), 39-41. http://trove.nla.gov.au/work/161246654?versionId=175779343

Abstract. A good document management system designed to turn personnel records into a paperless system requires users to be able to quickly scan and digitize all paper documents thus saving on paper costs, storage requirements, eliminates misplaced documents, reduces bottlenecks and speeds up the retrieval processes and improves security of access to sensitive information.

Summary. The authors in this article discuss the benefits of a document management system (DMS) solution and how DMS enables paper-based organizations to successfully convert to a paperless system. The article notes that an "efficient document management

system ensures the systematic filing, storing, securing and retrieval of important data" (Selvi et al., 2011, p. 39).

The article also identified problems linked to paper-based systems. The problems are identified as misplaced documents, requirements for a considerable amount of storage space, and paper documents that are lost that cannot be replaced. The authors describe the technical tasks that must be completed for a successful paperless transition: (a) database design, (b) application design, and (c) software development for storage and retrieval of electronic documents. The successful implementation of a DMS enables organizations to manage the new changes, which include workflow, security, and access to the new system, therefore increasing the chances of a successful paperless implementation.

This article is useful for this specific research study because it identifies DMS as a solution to help organizations to successfully transition to a paperless office. The article provides a description of the technical tasks that accompany a transition to a DMS, as well as the processes that must be implemented and support that must be provided for the new system. Security requirements that accompany a DMS are highlighted and solutions are offered to ensure the secure storage and retrieval of data housed in the DMS.

Shifter, A., & Gerber, D. (2007, March). Getting real about the paperless office: Improving service and efficiency by reducing paper use. *Benefits & Compensation Digest, 44*(3), 38-43.

http://connection.ebscohost.com/c/editorials/24489193/getting-real-about-paperless-office-improving-service-efficiency-by-reducing-paper-use

Abstract. The article explores the idea of eliminating paper use in business. The authors cite some major advances toward the reduction of paper use in business. They explain

why business enterprises are still so reliant on paper. They discuss three methods business enterprises can use to reduce paper use. They believe paper is going to be around for a long time. Abstract retrieved from EBSCOhost.

Summary. The article points out that many organizations are still using paper-based processes and the reason is due to the "all-or-nothing attitude that has pervaded the move to eliminate it…Business has been hung up on eliminating paper, rather than cutting down on its use" (Shifter & Gerber, 2007, p. 39). The authors state that there are numerous solutions organizations can use to aid in the reduction of paper usage. However, this article only focuses on two solutions that can help organizations to reduce their dependencies on paper. The first solution is document imaging; this technology is used to convert existing paper documents into digital format. The article notes that document imaging reduces paper storage costs and decreases the amount of information retrieval time compared to a paper-based filing system.

The other solution is web portals. Web portals can help reduce or eliminate paper-based processes such as paper forms that are filled out daily by employees. The article indicates that web portals can include various electronic forms that employees can use to replace their paper-based forms. Once the information is submitted, it is shared throughout the entire system, which means that with proper credentials, employees can access the information immediately from any terminal. This also means that electronic reports can be generated and viewed by mangers throughout the organization. Since all of the tasks are performed online, web portals reduce or eliminate the use of paper documents.

This information is helpful to organizations that are considering converting to a paperless system because it provides two solutions, document imaging and web portals, that will

help ease the transition to a paperless environment. This article also provides information on the benefits of both alternatives and raises concerns that managers should review before choosing the technology. For example, managers need to see if the technology complies with industry regulations before making their selection.

Velte, T., Velte, A., & Elsenpeter, R. C. (2008). Going paperless. In B. Reed (Ed.), *Green it: Reduce your information system's environmental impact while adding to the bottom line* (pp. 103-127). New York, NY: McGraw-Hill, Inc.

Abstract. Chapter 6 explores the concept of an organization going paperless. The chapter covers the cost of paper in regards to the environment, storage, and labor. The chapter also provides suggestions on what an organization can do to achieve a paperless environment. Lastly, the authors offer solutions such as software (MS SharePoint and EDI) and hardware (scanners and tablets) to help an organization to become a paperless office.

Summary. In this chapter, the authors explore many solutions to help an organization convert from a paper-based system to a paperless system. The chapter starts by identifying the costs associated with paper. The chapter states that paper-based processes "can account for 30 percent of an organization's overhead" (Velte, Velte, & Elsenpeter, 2008, p. 104). Therefore, the solution is to reduce or eliminate paper from the organization.

The authors admit that a paperless transition is not an easy task. Therefore, the authors provide three reality checks an organization must embrace in order for a successful paperless implementation to take place. First, the transition will not happen overnight; it will take time for employees to get acclimated to the new processes. Second, paperless is

not an absolute state. A paperless system does not require eliminating all paper documents, but instead calls for using less paper and reducing the reliance on paper-based processes. The last reality check is the need to sell the idea to the entire company. Not everyone will immediately accept the paperless concept unless it is explained to everyone in a context that can be understood, with clear descriptions of the value paperless can bring to all employees.

The authors provide several solutions to help an organization to successfully transition to a paperless system. The authors furnish a list of several high capacity scanners from various companies that an organization can purchase to digitize existing paper documents. Tablets are another technology that can be used to view digital files. Tablets allow users to view and share documents without having to print them.

The chapter recommends a filing system that is easy to navigate and a digital naming convention that is descriptive. Therefore, a document management system is recommended to help organizations manage all the digital information. Chapter 6 also suggests paperless billing to help reduce the need to print documents. In addition, the authors went a step further by exploring electronic data interchange (EDI). "EDI allows the electronic exchange of business documents, such as purchase orders, invoices, ship notices, and over 250 others in a standardized format" (Velte et al., 2008, p. 123). EDI can significantly reduce an organization's reliance on paper and all the processes involved in a paper-based environment.

This article is useful for this particular research study because it presents issues that are associated with paper-based systems that managers can use to encourage users to buy into the notion of a paperless system. The authors provide managers with several solutions

that will help them achieve a paperless environment and set expectations about the challenges inherent in moving from a paper-based to a paperless environment. The authors include the benefits that accompany various approaches to replacing paper with digital processes.

Category C - Obstacles During the Paperless Implementation

Burchell, J. (2011). Anticipating and managing resistance in organizational information technology (IT) change initiatives. *International Journal of The Academic Business World*, *5*(1), 19-28. http://connection.ebscohost.com/c/articles/82855789/anticipating-managing-resistance-organizational-information-technology-it-change-initiatives

Abstract. Employee resistance can be a complex issue in organizational change. While many change leaders recognize resistance when it happens, many do not know how to anticipate or diagnose potential resistance accurately prior to the start of a change initiative. One type of change common within organizations involves Information Technology (IT) changes, which can manifest as either an IT specific project or as a change initiative that must involve IT in order to be successful. Regardless, IT changes can impact employees' work and work life in numerous and sometimes unanticipated ways. The purpose of this paper is to discuss concepts around the role of IT in change, provide an understanding of issues of employee resistance specific to IT change initiatives, and present an application of these concepts in order to help change leaders develop a plan to effectively diagnose and manage employee resistance.

Summary. This article explores the obstacles that may arise and hinder the success of a paperless implementation. The author focuses specifically on the issue of employees'

resistance to IT changes. Burchell (2011) indicates that employees' resistance to change is not resistance to the actual technological change itself but rather the change in the status quo such as their daily duties, which may require them to take on more responsibilities or learn new skills (p. 20). Therefore, managers need to clearly communicate to users the benefits of the new system in order to reduce employees' resistance to the system.

The author lists several reasons that may cause employees to resist the new changes: (a) employees' fear of losing something of value to them, (b) employees' lack of understanding and trust, (c) employees' low tolerance for change, and (d) employees having different perceptions of the costs and benefits resulting from the change. The author advocates for open communication and educating stakeholders to help them understand the reasons behind the changes and the expected benefits. Inviting employees to planning sessions that specifically affect their departments can reduce resistance as well as help increase employee buy-in for the project.

This article is useful for this specific research study because it gives decision makers insight into what to expect when making the move to paperless, potential resistance from employees, and specific reasons why employees may resist the change to paperless. In addition, organizational leaders can utilize the strategies offered by the author to reduce employees' resistance to adopting the new system and processes.

Davis, J. T., Hadley, J., & Davis, H. (2015). Paperless processes: Survey of CPA firms in a smaller market regarding obstacles, challenges and benefits of implementation. *International Journal of The Academic Business World*, *9*(1), 49-59. http://jwpress.com/IJABW/Issues/IJABW-Spring-2015.pdf

Abstract. Many professional CPA firms are taking advantage of technology and software to implement paperless office processes in their client services and firm operations. With current technology, a paperless office is not just for large firms, in large markets. The survey was sent to partners of firms in a smaller business market and the firms were generally smaller firms. The survey results regarding obstacles, challenges, and benefits of "going paperless," found that partners of firms who had implemented paperless processes, generally indicated a higher level of challenges than the partners of firms who had not yet implemented paperless processes. This suggests that implementation of paperless office practices was more difficult than anticipated before implementation. However, the partners of smaller firms that had implemented paperless processes agreed fairly strongly with the benefits of "going paperless**.**" The results of the benefits questions in the survey showed that the partners seem to believe that the benefits of paperless processes generally are worth the obstacles and challenges.

Summary. This article analyzes the obstacles and challenges of implementing paperless processes by conducting a survey on small CPA firms. The survey analyzes two groups of small CPA firms. The first group includes organizations that have already gone through the paperless implementation process. The second group includes organizations that are planning to implement paperless systems. The authors created 14 survey questions that touched on obstacles and challenges during a paperless implementation. The respondents answered the questions with multiple choice options that ranged from *strongly agree* to *strongly disagree*. The survey questions cover topics such as concerns about technical challenges, the need to change work processes, security, and decreases in productivity.

The results of the survey indicated that the majority of the firms were concerned with the cost of implementation, personnel resistance, and personnel having difficulty changing their work processes. In addition, the group that already went through the transition indicated that "the implementation process was more difficult overall than anticipated before implementation" (Davis, Hadley, & Davis, 2015, p.54). Reasons given for the level of difficulty of the implementation process include difficulty in changing current processes and unanticipated obstacles.

This article is useful for this specific research study because the results from the survey can be used by organizational leaders as a guide in the planning process for a paperless project. The article provides specific insight into employee resistance to the transition to paperless and specific strategies for addressing their concerns. Furthermore, the results of the surveys also imply that decision makers should be aware that most of the implementation costs exceeded the initial budget. Therefore, decision makers should include a contingency fund in case the project goes over the initial budget.

Dykman, C. A., & Davis, C. K. (2012). Addressing resistance to workflow automation. *Journal of Leadership, Accountability & Ethics*, *9*(3), 115-123. http://connection.ebscohost.com/c/articles/85149079/addressing-resistance-workflow-automation

Abstract. This paper discusses experiences of a prominent mid-size CPA firm in a large southern U.S. city as the Principals of the firm worked to implement a widely adopted accounting practice information system. The goal to achieve a "paperless office" to realize the highly touted benefits of such an office. However, this implementation quickly met obstacles. The results, over time, were acceptable, but were quite resistance to

change and managing this implementation to a successful outcome. Recommendations to increase chances of a successful automation effort are included.

Summary. The authors in this article examine a mid-size CPA firm during their transition to a paperless office. The authors identified employee resistance to change as the main obstacle that the organization had encountered during the transition. The authors note that "the most difficult part of the implementation plan was overcoming the resistance to change" (Dykman et al. 2012, p. 117). The authors found that due to the implementation of the new system during the firm's busy season, employees were not adequately trained on the new system, which caused employees to develop their own independent processes as they saw fit. This created compatibility issues in the system that took the organization a year-and-a-half to fix.

The authors indicated that the organization used a couple of methods to resolve their year one obstacles and issues. The first method was to mitigate the resistance to the new system and new processes by providing continued training on the new system and processes. The authors advocate for setting a mandate that all employees must use the new system. The second method used to overcome the obstacles was to establish a best practices plan that included standardized policies and procedures for using the new system. The standardized practices prevented individuals from creating their own processes.

This article is useful for this specific research study because it provides examples of obstacles that an organization may encounter during a paperless transition. This information also provides project implementers with valid reasons to pay special attention to employees' needs and to include strategies to mitigate employees' resistance

to change and the new system. Furthermore, the authors emphasize that each department should have a go-to-person. This person could be a subject matter expert or a staff member that is fully trained on the new processes and system. This approach allows questions and concerns to be filtered through one point of contact for each department, which increases the efficiency of the system implementation.

Frear, H. (2014). Fear of filing? EDM can help with paper overload and building customer relationships. *Credit Control*, *35*(3/4), 87-89. http://connection.ebscohost.com/c/articles/98709811/fear-filing-edm-can-help-paper-overload-building-customer-relationships

Abstract. Why doesn't every business use Electronic Document Management (EDM)? It is a question that has been asked many times before. If it is really that good and everyone agrees that it makes information so much easier to track down, cuts down on the number of filing cabinets and makes sharing information effortless, then why isn't it more widespread? Surely it should be as commonplace as Microsoft Office in the offices of the twenty-first century? In this article, the author discusses recent research that shows businesses recognize the benefits, but 'resistance to change' by users and managers is still an issue. Lack of technical skills, fear of making a mistake or even just nervousness around new technology may all be holding back progress.

Summary. The author examines the obstacles that are preventing organizations from transitioning to a paperless system. This article focuses specifically on the utilization of electronic document management (EDM) systems to achieve a paperless environment. The author notes that one of the main obstacles that organizations need to overcome is users' resistance to change, and in some cases the management team's opposition to the

changes. Other barriers the author identifies are budgetary issues and IT challenges. The author provides reasons why users resist adapting to an EDM system: (a) lack of technical skills, (b) fear of making mistakes, and (c) nervousness around new technology. In order to mitigate these barriers, the author proposes educating the users on the new system and the new processes. In addition, the author suggests showing involved users the benefits of the new system. This may also help users to sever from their old habits associated with the old system.

The article lists numerous benefits that an EDM system can bring to organizations. For example, the electronically stored document can never disappear; there will always be a trace of these documents in the system. In addition, an electronic document management system allows multiple users to view a document at the same time, and it will not allow anyone without proper access to destroy or alter a document.

This article is useful for this specific research study because it presents one potential obstacle that decision makers should understand and respond to in order to successfully transition to a paperless system. Managers can use this article as a guide to help them identify the motives behind employee resistance to the move to paperless. The concerns that most employees have for EDM systems are due to the lack of knowledge and understanding of the technology. Therefore, implementers should focus on educating employees on the technology and provide ample training to users. Finally, the article also provides information on the numerous benefits an EDM system can provide to an organization.

Stratton, A. (2013). Pursuing the possibility of a paperless office. *Information Management Journal*, *47*(5), 44-46.

http://connection.ebscohost.com/c/articles/92616551/pursuing-possibility-paperless-office

Abstract. The article focuses on the things which must be considered by organizations which are pursuing a paperless or digital environment. It says that the most underestimated elements in the implementation of change is the need to understand and address the responses of employees. It adds that technology must be considered by organizations as a tool and not a solution. Abstract retrieved from EBSCOhost.

Summary. This article presents the challenges companies are encountering during paperless implementations. The author focuses on employees becoming the obstacle when new processes or technology are introduced to the organization. The author notes that in many organizations, employees are given access to new technology with minimal training, instruction, and examples to follow. This leaves employees feeling lost and frustrated. Therefore, employees respond negatively to the notion of a paperless office, which produces resistance to the new system. If these issues are not addressed, they will cause problems for the project implementation. Stratton (2013) states, "the need to understand, acknowledge, and address these responses is one of the most underestimated elements in implementing the change" (p. 44).

The author suggests several ways for organizations to respond to their employees' resistance to paperless transitions. First, companies should include employees during the planning phases, which also help employees to buy into the new system. Second, managers should allow sufficient time for employees to adapt to the new process. Third, managers should provide adequate education and training on the new processes and

procedures. This will give employees the confidence that they can be productive during and after the transition to the new system.

This article is useful for this specific research study because it presents issues for which executives and managers need to prepare in order to overcome obstacles stemming from employees' resistance to the new processes and procedures and the adoption of the new system. The article is also useful for managers because it provides a phased approach to converting from a paper-centric environment to a paperless process so that the benefits of paperless processes can be realized in a more timely fashion.

Conclusion

Paperless systems provide numerous benefits to organizations over paper-based processes; these advantages include (a) better file accessibility and information sharing, (b) the use of less physical storage space, and (c) increased productivity due employees not having to look for documents (Stratton, 2013, p. 44). This annotated bibliography features sources that include insights, strategies, and solutions to assist executives, managers, and users to successfully implement a paperless system. These technological solutions can be used independently or combined with other technology, which can vary depending on the needs of the organizations. The literature presented in this annotated bibliography is arranged into three themes. These themes include (a) problems associated with paper-based environments and benefits associated with paperless environments**,** (b) solutions for transitioning to a paperless system, and (c) obstacles during the paperless implementation.

Problems Associated with Paper-Based Environments and Benefits Associated with Paperless Environments

There are numerous problems associated with a paper-based environment. Paper documents can be easily misplaced and tough to track, which can cause organizations to become very vulnerable, should the firm lose valuable or sensitive information (Greenwood, 2012, p. 18). In addition, storing printed documents requires a vast amount physical space, which translates to a great deal of time wasted looking for previously filed documents (Kissell, 2013, p. 76). The misused hours looking for old documents turn into an unnecessary cost for the company. Furthermore, Velte et al. (2008) state that paper-centric tasks including creating, filing, retrieving, distributing, and destroying documents can contribute up to 30% to an organization’s overhead costs (p. 104).

Business leaders and managers that are able to identify and recognize issues connected to a paper-centric system turn to the concept of a paperless environment to help their companies become more efficient and effective. Some of the benefits that are offered by going paperless are reductions in paper-related expenses such as physical storage space and increased employee productivity through easy access to information (Dykman et al., 2012, p. 115). Additionally, paperless environments allow companies to distribute information electronically via kiosks and corresponding quick response (QR) codes (Brusco, 2011, p. 13). Organizations such as banks and airports that provide these self-service kiosks to their customers not only reduce overhead expenses by eliminating paper records and forms, they also increase customer satisfaction by reducing wait time (Brusco, 2011, p. 15).

Another benefit of a paperless system is increased information security. Greenwood (2012) mentions that "digitized information can be protected by controlling access or distribution, and by ensuring that any activity or amendment is tracked to form a comprehensive chain of custody" (p. 19). This type and level of security is not possible with printed documents. Mills-Senn (2014) echoes similar conclusions: "digitized documents and records are far more secure than paper that can be lost, damaged or misfiled—or fall into the wrong hands. Electronic systems enable users to grant or restrict access" (p. 28).

In summary, the references included in this study support the conclusion that paper-based systems are too inefficient, insecure, and costly for organizations to continue using them. There are numerous benefits that a paperless system provides that a paper-based system cannot offer, such as better security, easier file access, and more efficient and cost effective processes. These are sound reasons for managers in paper-centric firms to consider converting to paperless systems.

Solutions for Transitioning to a Paperless System

The term paperless is described as the process of reducing reliance on paper and the inefficient processes that are associated with paper (Velte et al., 2008, p. 108). Once this paperless concept is understood by the organization, they can move to the next step of choosing a solution or solutions to help them achieve a paperless environment. There are a multitude of solutions that organizations can utilize to help them convert to paperless systems. However, this study is limited to document digitization, electronic forms, web portals, and electronic document management systems as solutions to transitioning to paperless.

The most common paper reduction technology is document imaging (digitization); this technology is used to convert existng paper documents to an electronic format (Shifter et al., 2007, p. 39). Digital documents allow users to easily retrieve and share information with other users. (Haug, 2012, p. 349). The capture of information through document scanning may appear to be a simple procedure, but this activity can result in an enormous cost if managers do not stipulate what documents should or should not be digitized (Greenwood, 2012, p. 19). Therefore, department leaders need to proceed with caution by creating guidelines and procedures to which users can refer during the document conversion period.

Organizations can utilize electronic forms as another solution to assist with their efforts in transitioning to paperless systems. Electronic forms offer many advantages compared to paper forms; these advantages include the ease of storing, retrieving, sharing, and managing the forms (Lutteroth et al., 2011, p. 14). In addition, Lutteroth et al. (2011) indicate that electronic forms can be created with features that can mitigate human errors such as pre-populated fields and basic validation, which audits the fields to make sure that users are correctly inputting their information into the appropriate fields (p.15).

Web portals are tools that companies can use to further eliminate paper-based processes from their workflows. Shifter et al. (2007) state that web portals are cloud services that an organization can use to collect data from employees and customers (p. 40). For example, an insurance company can have their clients log into the company's website to fill out electronic enrollment forms (Shifter et al., 2007, p. 40). This method eliminates any physical paper exchanges between the client and the company's staff, which saves time and money by not having to print enrollment packets and store them in a filing cabinet. Furthermore, "not only do web portals eliminate the need to create and store paper files, they also make it much quicker and easier to access particular information" (Shifter et al., 2007, p. 41).

One important technology that enables a paperless office to efficiently capture, store, secure, and retrieve information is an electronic document management system (EDMS) (Selvi et al., 2011, p. 39). Jones (2012) states that a near-paperless office environment cannot be accomplished without the implementation of an EDMS (p. 397). An EDMS controls users' access to information. Selvi et al. (2011) note that the security incorporated into an EDMS can be set to the document level, which means that an alert can be sent to the administrator if a document has been tampered with by an unauthorized user (p. 41). This level of monitoring provides firms with strict controls of their data.

In summary, organizations can utilize various solutions to help them attain paperless environments. The first step and the most commonly used method of reducing paper is the digitization of current documents. Electronic forms and web portals can help companies maintain their paperless environments. Organizations seeking to become more efficient and effective in managing their information will need to implement electronic document management systems.

Obstacles During a Paperless Implementation

There are many obstacles during the implementation of a paperless system. These obstacles include financial hindrances, technological problems, state regulations, and personnel resistance (Davis et al., 2015, p. 52). However, there were two common themes related to the obstacles that occur during a paperless implementation that kept reoccurring in the various literature reviewed as part of this study. One common obstacle to paperless implementations is employees' resistance to change. Frear (2014) mentions that resistance to change is a major challenge that organizations need to overcome, in order to successfully implement an electronic document management system (p. 88). Dykman et al. (2012) offer the example of a small accounting firm that implemented a paperless system and found that the most difficult part of the implementation plan was overcoming employee resistance to change (p. 117). In a survey conducted by Davis et al. (2015), respondents reported that employee resistance was one of the top three concerns for managers in implementing a paperless system (p. 51). Burchell (2011) indicated that some employees resisted the change due to employees' old habits (desire to keep the status quo), fear of losing their current positions, and not seeing the benefits produced by the change (pp. 20-21). Stratton (2013) also indicates that some employees objected to change due to past experiences. These employees were previously introduced to new technology with minimal training, which caused a great deal of frustration (p. 44).

In order for an organization to overcome employees' resistance to change, Burchell (2011) recommends open communication, education, and involving the stakeholders early in the project by soliciting input from them. These activities will help foster buy-in and also help stakeholders to understand the reasons for the changes (p.21). Frear (2014) offered similar advice on overcoming resistance to changes, specifically changes that are created by the introduction of

new technology. Stakeholders need to be educated on the benefits generated by the new system and all affected personnel need to be trained on the new technology and accompanying processes (p.88).

The second theme related to the obstacles that occur during a paperless implementation was the difficulties posed by the organizational mindset of the *all-or-nothing* approach to paperless. Kissel (2013) states that a major hurdle to implementing a paperless office is due to the word *paperless* itself. Most people's mentality towards paperless is that any use of paper means that they fail to meet the definition of paperless (p. 76). In addition, Shifter (2007) suspects that one of the reasons why businesses are so reliant on paper is due to the *all-or-nothing* attitude towards paperless (p. 39). In order for an organization to overcome this barrier, the concept of paperless needs to be reevaluated. The term paperless should be defined as the process of reducing the reliance on paper and reducing the inefficient processes that are associated with paper (Velte et al., 2008, p. 108).

In summary, the major obstacles identified by the various literature are employees' resistance to change and the perception of a paperless environment. These obstacles can be overcome by educating, training, and involving stakeholders early in the transition. In addition, organizations should view the concept of paperless as a progression to reduce the dependency on paper. Organizations should not approach paperless with the *all-or-nothing* stance. Organizations that can overcome these obstacles will have a better chance of achieving a paperless environment.

Summary

Paper-based environments are inefficient, costly, and pose security concerns. Conversely, paperless environments provide numerous benefits to organizations, including

increased data security, ease of information sharing, and more efficient and cost effective processes. Organizations who are considering the move to a paperless environment have multiple options, including document digitization, web portals, electronic forms, and electronic document management systems. Those who are responsible for the transition from paper-based to paperless environments can ensure a smoother transition by addressing potential obstacles in the transition, including employees' resistance to change and the organizational mindset of *all-or-nothing* regarding the paperless concept. Those organizations that carefully select the right technology and processes for their paperless environments and who plan the transitions carefully will enjoy better outcomes.

References

Aigbe, P., & Akpojaro, J. (2014, December). Analysis of security issues in electronic payment system. *International Journal of Computer Applications, 108*(10), 10-14. http://dx.doi.org/10.5120/18946-9993

Arinze, B., & Anandarajan, M. (2010). Factors that determine the adoption of cloud computing: A global perspective. *International Journal of Enterprise Information Systems, 6*(4), 55-68. http://dx.doi.org/10.4018/jeis.2010100104

Brusco, J. (2011). Trending toward paperless. *AORN Journal*, *94*(1), 13-18. http://dx.doi.org/10.1016/j.aorn.2011.04.020

Burchell, J. (2011). Anticipating and managing resistance in organizational information technology (IT) change initiatives. *International Journal of The Academic Business World*, *5*(1), 19-28. http://connection.ebscohost.com/c/articles/82855789/anticipating-managing-resistance-organizational-information-technology-it-change-initiatives

Davis, J. T., Hadley, J., & Davis, H. (2015). Paperless processes: Survey of CPA firms in a smaller market regarding obstacles, challenges and benefits of implementation. *International Journal of The Academic Business World*, *9*(1), 49-59. http://jwpress.com/IJABW/Issues/IJABW-Spring-2015.pdf

Dykman, C. A., & Davis, C. K. (2012). Addressing resistance to workflow automation. *Journal of Leadership, Accountability & Ethics*, *9*(3), 115-123. http://connection.ebscohost.com/c/articles/85149079/addressing-resistance-workflow-automation

Ebben, W. (2013). Will smartphones contribute to making payments easier and more efficient?. *Journal of Payments Strategy & Systems*, *7*(1), 11-17. http://connection.ebscohost.com/c/articles/87021823/will-smartphones-contribute-making-payments-easier-more-efficient

Center for Public Issues Education (2014). *Evaluating Information Sources*. Retrieved from http://www.piecenter.com/wp-content/uploads/2014/08/evaluateinfo.pdf.

Frear, H. (2014). Fear of filing? EDM can help with paper overload and building customer relationships. *Credit Control*, *35*(3/4), 87-89. http://connection.ebscohost.com/c/articles/98709811/fear-filing-edm-can-help-paper-overload-building-customer-relationships

Greenwood, P. (2012, March). Securing information in a paper-efficient environment. *Computer Fraud & Security*, *2012*(3), 18-20. http://dx.doi.org/10.1016/S1361-3723(12)70055-6

Haug, A. (2012). The implementation of enterprise content management systems in SMEs. *Journal of Enterprise Information Management*, *25*(4), 349-372. http://dx.doi.org/10.1108/17410391211245838

Jones, S. (2012). eGovernment document management system: A case analysis of risk and reward. *International Journal of Information Management*, *32*(4), 396-400. http://dx.doi.org/10.1016/j.ijinfomgt.2012.04.002

Kissell, J. (2013, October). Embracing the nearly paperless future. *Macworld*, *30*(10), 76-77. http://connection.ebscohost.com/c/articles/90183419/embracing-nearly-paperless-future

Li, Z., Jin, C., Xu, T., Wilson, C., Liu, Y., Cheng, L., Liu, Y., Dai, Y., & Zhang, Z. (2014). Toward network-level efficiency for cloud storage services. In *Proceedings of the 2014*

Conference on Internet Measurement Conference, 115–28. http://dx.doi.org/10.1145/2663716.2663747

Lutteroth, C. & Weber, G. (2011). Going paperless - on the evaluation of electronic form technologies." In *2012 23rd International Workshop on Database and Expert Systems Applications*. *IEEE Computer Society*, 14–18. http://doi.ieeecomputersociety.org/10.1109/DEXA.2011.38

Mills-Senn, P. (2014). How safe are your digital documents? *University Business*, *17*(5), 27-30. http://www.universitybusiness.com/article/how-safe-are-your-digital-documents

The Paperless Office. (2009). *International Journal of Micrographics & Optical Technology*, *27*(1/2), 15-17. http://connection.ebscohost.com/c/articles/41128035/paperless-office

Selvi, S., Khan, S., Rani, U., Prasad, B. N., Paul, A. K., & Biswal, A. K. (2011). Document management system-go green 'a paperless office' for steel plants. *Steel Times International*, *35*(8), 39-41. http://trove.nla.gov.au/work/161246654?versionId=175779343

Shifter, A., & Gerber, D. (2007, March). Getting real about the paperless office: Improving service and efficiency by reducing paper use. *Benefits & Compensation Digest*, *44*(3), 38-43. http://connection.ebscohost.com/c/editorials/24489193/getting-real-about-paperless-office-improving-service-efficiency-by-reducing-paper-use

Stratton, A. (2013). Pursuing the possibility of a paperless office. *Information Management Journal*, *47*(5), 44-46.

http://connection.ebscohost.com/c/articles/92616551/pursuing-possibility-paperless-office

Velte, T., Velte, A., & Elsenpeter, R. C. (2008). Going paperless. In B. Reed (Ed.), *Green it: Reduce your information system's environmental impact while adding to the bottom line* (pp. 103-127). New York, NY: McGraw-Hill, Inc.

Wang, H. (2013, May). Information services paradigm for small and medium enterprises based on cloud computing. *Journal of Computers*, *8*(5), 1240-1246. http://dx.doi.org/10.4304/jcp.8.5.1240-1246

Welsh, T. (2007, December). Growing profits with technology. *Journal of Financial Planning*, *20*, 11. http://connection.ebscohost.com/c/articles/27518324/growing-profits-technology