

# Handling Paper in a Digital Age

The Impact of Document Management

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Nathaniel Rowe

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## Handling Paper in a Digital Age: The Impact of Document Management

The modern world is full of amazing technology, capable of sending information instantly around the globe at the push of a button. In this environment, one might think that data bound to physical pieces of paper is a relic of the past - instead, the opposite is true. Aberdeen's January 2012 survey of 176 organizations worldwide reveals that the volume of documents and unstructured data is growing by over 30% per year, and organizations in industries like healthcare, banking, insurance, and the public sector are struggling to reconcile the worlds of digital and physical data. Document management solutions are aimed at combating these problems. Aberdeen's research shows that these solutions offer essential support for fast, low-cost document processing, and overall data visibility.

### Business Context: Pressures of Document Processing

Mortgage applications, insurance claims, tax returns, patient records, grant submissions, contracts - paper documents such as these surround and impact our lives. For many businesses, these documents form the backbone of daily operations, from accepting their submission, to faxing them between different divisions or business partners, to the various methods of their handling and processing. Aberdeen's research has observed a continuing evolution away from paper-based business practices and toward digital files stored as unstructured data - information in text or image formats that don't fit neatly in a traditional database. As organizations try to reduce costs, improve process efficiency and establish compliance with various government legislation and industry regulations (e.g. SOX, HIPAA, PIPEDA), digitizing these documents becomes an important first step. The growing amount of documents and unstructured data presents an additional challenge for companies trying to use and analyze this underlying information. Nearly half (49%) of the 176 organizations surveyed reported their basic business processes rely on some manner of paper documents and / or digital unstructured data, and over half (51%) of their business data is stored in these formats.

Effective management of documents and unstructured data is a critical task for every organization. When asked to identify their top data management pain points, Aberdeen's survey respondents said that using and processing documents **takes too long** (reported by 39% of organizations) and **costs too much** (29%), and that the document volume **is growing too quickly** (29%).

Organizations can either invest in technology to capture and manage this unstructured information, or they can continue to rely on traditional,

### Research Brief

Aberdeen's Research Briefs provide a detailed exploration of a key finding from a primary research study, including key performance indicators, Best-in-Class insight, and vendor insight.

"You must have senior management support for a document management initiative. Take plenty of time to evaluate how each department uses and processes its documents - then how the rest of the company will use and access them. Trying to do too much at once may get you in trouble."

~ IT Staff Member  
Mid-sized (\$50M - \$1B)  
North American  
Utilities company

manual operations. As one might expect, companies that adopt these two strategies report dramatically different performance.

## Performance Benefits of Document Management

To examine these solutions' impact on business performance, Aberdeen divided the pool of responding organizations into two groups: the 119 that had invested in document management, and the 57 that had not. Companies in the former category reported superior performance in almost every area, but especially in metrics concerning time, data visibility and cost.

### Improved Speed

One of the main difficulties when handling physical documents is that none of the computerized tricks and tools for digital information apply. To take advantage of modern data systems, documents must be converted into electronic data. This is generally a quick procedure, with the difference between top performance and poor performance measured by only a few minutes per page. However, when that gap is multiplied by thousands and thousands of documents, small differences are greatly magnified.

Once the documents are digitized, they must be managed; unfortunately, digitized documents are often stored in an unstructured format that can be difficult to search. As Table 1 shows, organizations with document management solutions performed the initial capturing phase more quickly, and through improved classification and categorization of this data could also search their library of electronic documents faster, to find exactly what they needed.

**Table 1: Better Productivity through Document Management**

Performance Metrics	Doc. Mgmt	No Doc. Mgmt	Performance Benefit
Time to scan / capture one document	2.2 minutes	3.6 minutes	<b>1.4 minutes faster</b>
Employee time spent looking for information (hours per week)	3 hours	5 hours	<b>2 hours less</b>
Ability to get information within the timeframe desired	78% of the time	65% of the time	<b>13% more often</b>
Time-to-information, y-o-y change	17% reduction	7% reduction	<b>10% more improvement</b>
Time-to-decision, y-o-y change	13% reduction	4% reduction	<b>9% more improvement</b>
Time spent on document processing, y-o-y change	11% reduction	1% reduction	<b>10% more improvement</b>

Source: Aberdeen Group, January 2012

### Increased Visibility

The value of any piece of data extends beyond the task or purpose to which it is first assigned. Once a mortgage is processed, for example, it becomes part of the organization's entire mortgage business. The individual data point contributes to current and historical trends and patterns for the enterprise. Decision-makers can only identify these trends, however, if the data was captured accurately and completely, can be easily discovered, and is compatible with the enterprises' business intelligence (BI) or analytical tools. These tools can provide drill-down reporting on performance by division or employee, predictive tools to forecast future business or customer demand, and dashboards to present these data points in an easily visualized graphical format.

As Table 2 shows, organizations with document management systems can leverage a greater percentage of their business data, and reported the largest performance gains in data visibility. For more information on how accuracy and quality of data can impact an organization, see Aberdeen's February 2011 report, [Turning Pain into Productivity with Master Data Management](#).

**Table 2: Better Data Visibility through Document Management**

Performance Metrics	Doc. Mgmt	No Doc. Mgmt	Performance Benefit
Amount of data that is accurate / reliable	81%	73%	<b>8% more accurate</b>
Amount of data complete and up-to-date	77%	72%	<b>5% more complete</b>
Amount of business data discoverable / searchable, y-o-y change	19% increase	10% increase	<b>9% more improvement</b>
Overall visibility into business data	14% increase	6% increase	<b>8% more improvement</b>

Source: Aberdeen Group, January 2012

### Lower Cost

Since over half of all core business processes involves documents or unstructured data, it stands to reason that this data is intrinsically linked to a large portion of an organization's operational expense. Document-specific costs can be identified in two major areas: in the initial capture phase, and in remediating errors from document processing.

Document capture includes the employee's time to prepare the paper, the price of purchasing and maintaining machines to scan the file, and the software that digitizes, formats, corrects and classifies the resulting image. A document management solution is a large initial investment, but the true test of value is how different methods scale over time. Because these low-maintenance solutions simplify and streamline the document capture

"The cost of NOT doing document management is horrendous"

~ Manufacturing Director  
Small (<\$50 M)  
North American  
Lumber manufacturer

process, they allow a higher volume of documents to be processed for the same cost. Organizations with document management tools spent half as much per document as those that had not made this investment (Table 3).

**Table 3: Lower Cost through Document Management**

Performance Metrics	Doc. Mgmt	No Doc. Mgmt	Performance Benefit
Cost to capture one document	19 cents	37 cents	<b>Spent 49% less</b>
Errors per 1,000 documents processed	14	20	<b>30% fewer errors</b>
Document processing cost, year-over-year change	13% reduction	3% reduction	<b>10% more improvement</b>
Document processing errors, y-o-y change	12% reduction	4% reduction	<b>8% more improvement</b>
Overall operational expense for document processing, y-o-y change	10% reduction	2% reduction	<b>8% more improvement</b>

Source: Aberdeen Group, January 2012

Error rates and remediation form the second part of the cost equation. Human error is inevitable, and organizations that rely on manual processes usually see more errors. The accumulation of little problems can have a great financial impact on an organization. In a best case scenario, the error is caught and the offending document is corrected and reprocessed, often doubling the cost of processing the entire case. In a worst case scenario, an error could ruin a deal with a client or customer, lose a sale, result in a bad business decision, or cause an organization to be penalized with fines or non-compliance fees. Due to the range of possible fiscal penalties, it can be difficult to assign hard numbers to error remediation, but the direct link remains: more errors produce more cost.

Organizations with document management systems reported 30% fewer errors than their competitors, and also showed a 12% reduction in errors over the past twelve months. This contributed to their 10% reduction in overall operational expense for document processing in the past year. A further evaluation of the potential savings of these solutions will be presented later in this document.

### Roadmap to Success: Collaborate and Automate

Improving document processing across an entire organization is no easy task, and no single solution will solve every problem. As repeatedly confirmed by Aberdeen's research, a proper document management initiative must be supported by additional hardware, technologies and policies to ensure the best performance.

"Document management success comes when you can see the big picture, and visualize the end result. Keep the final goal in mind even when you tackle simple, immediate needs. Also, finding a good way to identify and deal with revisions of documents that have a many to one relationship is key to a successful implementation."

~ Customer Service Staff  
Small (<\$50 M)  
North American  
IT services company

These contributing steps fall into two main groups, which spring from the top strategic actions organizations are taking to address their problems with documents and unstructured data:

- Collaborate. Forty percent (40%) of all organizations reported their top action was to broaden collaborative access to documents across all departments and functions.
- Automate. Thirty percent (30%) of all organizations reported their top action was to implement or improve the automation of their document processing.

### **Collaborate**

The division of data into distinct silos, owned by a different departments or groups, is a major obstacle to data management. In global organizations, silos often use incompatible systems and store data in different languages or formats. Getting information from a different part of the company can be a time-consuming, frustrating, thankless task. Even in smaller organizations, when data is kept apart, visibility into basic operations is reduced, and employee productivity suffers.

Aberdeen's research over the past several years has shown a growing trend toward a more open, collaborative approach to data. Data sharing comes in a variety of shapes and sizes, and a truly comprehensive collaboration plan often includes everything from instant messaging, presence information, live meetings, streaming video, voice and telephony capabilities, fax and document sharing portals. The December 2011 report on [\*Business Optimization through Integrated Communications: In the SoMoClo™ \(Social Mobile Cloud\) Era\*](#) examines this in more detail, but the basic premise remains the same: when data is shared easily, the business benefits.

This philosophy extends outside the firewall to an organization's clients, customers and partners. Allowing others to submit data in a format that can be easily identified and processed improves productivity, and customer / client satisfaction. Business partnerships also benefit from easy and secure data exchange, as discussed in [\*Data Quality and the Supply Chain: The Benefits of MDM and Portals\*](#) (October 2011).

### **Automate**

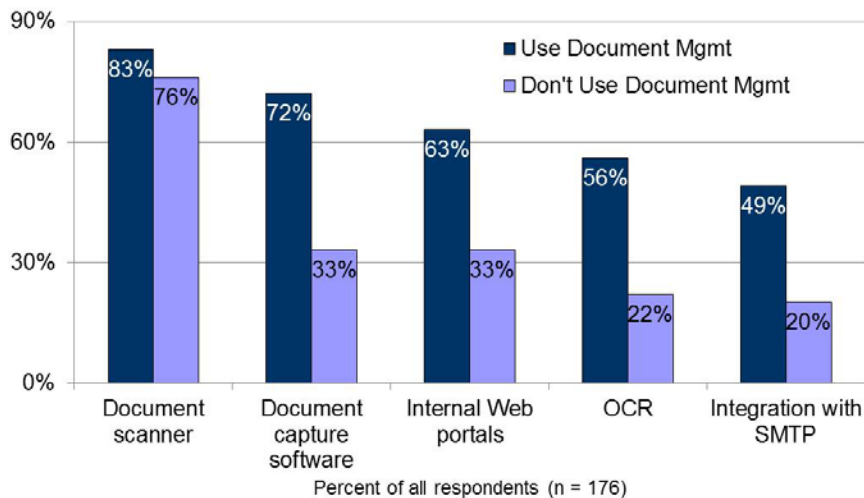
Organizations with document management solutions were much more likely to have automated at least part of their document processing cycle. The performance benefits cited above are directly related to the fact that 60% of these organizations automated at least half of their document processing. Eighty percent (80%) of organizations without document management, on the other hand, indicated that their document processing was almost entirely manual. Technologies that automatically capture, share, transmit, or format documents, or eliminate manual elements of the processing cycle, are powerful enablers for organizations.

"Our current state of manual processing is extremely cumbersome. It requires a significant amount of redundant data capture, and there is no ability to manage data in real time"

~ IT Manager  
Mid-sized (\$50M - \$1B)  
North American  
Gov't / Public Sector  
organization

It is important to prioritize document solutions based on the company's overall maturity. The following solutions are separated into baseline technologies that provide a solid foundation for document handling, and high-impact enablers that organizations with document management use to set themselves apart from the pack.

**Figure 1: Baseline Technologies for Document Processing**



Source: Aberdeen Group, January 2012

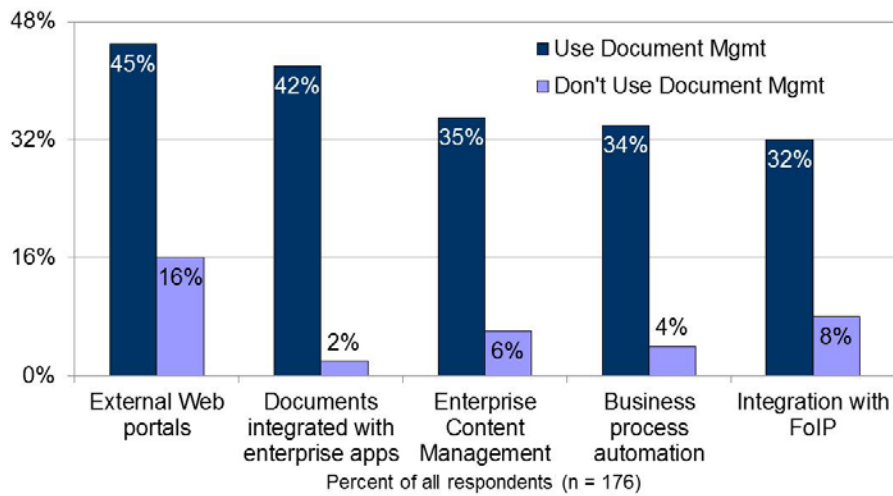
As Figure 1 shows, the above technologies have high adoption rates by organizations with mature document management initiatives, but also have also been picked up by some companies without document management. The top priorities for organizations investing in improving their document processing should include **document scanners** and **document capture software**, to enable fast, scalable data capture. **Optical Character Recognition (OCR)** allows a computer to identify text within an image file (like a scanned document), and transform the picture to a digital text file. Since text files are easier to search, analyze, and tag with metadata and descriptions, this can greatly aid in managing unstructured data. Integrating a document processing system with Simple Mail Transfer Protocol (SMTP) allows the system to send and receive email, linking it to the most common form of digital communication. Finally, **internal web portals** and other collaboration tools enable document sharing across departments, while supporting better security, audit trails, and version control.

For organizations that have already adopted these tools and are looking for competitive differentiation, Figure 2 shows the technologies more likely to be used by companies with document management systems - the same companies that reported the better performance seen above.

"Despite being a very large company, our current document and content management systems are limited to different functional groups. I believe that a unified corporate approach is better and would yield improved cross-functional sharing and decision-making.

~ Quality Management Staff  
Member  
Large (>\$1B)  
North American  
Aerospace / Defense  
organization

**Figure 2: High Impact Technologies for Document Processing**



Source: Aberdeen Group, January 2012

Organizations with document management have invested in each of these tools at much higher rates than other organizations - up to 21 times the adoption rate in one case. **External web portals** extend collaboration to customers and business partners. Integrating documents with enterprise applications and **Enterprise Content Management (ECM)** systems requires a high level, enterprise-wide approach to managing unstructured data. Popular applications like Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) and supply chain tools can increase in reach, accuracy and utility by incorporating new data sources. ECM systems often contain all of the features of document management systems, as well as support for other types of unstructured data, often with a single interface for access and management. **Business process automation** tools, integrated with collaborative systems and document management, can also improve speed and reliability. Finally, **Fax-over-Internet-Protocol (FoIP)** improves upon this traditional method of remote document transmission by reducing transmission costs and adding features like fax routing and information rights management.

"Content management has a very broad and far-reaching impact across our organization, which made the initial identification of a solution difficult. Additionally, for such a simple and high-value tool, communicating the value of the technology proved to be challenging and required significant vendor support"

### The ROI for Document Management

Return on Investment (ROI) provides the most concrete example of the importance of document management solutions. Although ROI varies greatly based on each organization's needs, budget and priorities, Aberdeen's research allows us to examine the fiscal impact on an average company. For this exercise, Aberdeen will examine particularly document-centric industry segments, and establish a baseline from 36 organizations in banking and financial services, healthcare, and government / public sector.

According to the data, an average company in these document-heavy industries company fits the following profile:

~ IT Staff  
Large (>\$1B) European  
Medical Device Manufacturer



- They have nearly one petabyte of business data (925 terabytes), 45% of which is comprised of documents or other unstructured data (416 terabytes).
- This data is growing at a rate of over 31% every year. If the growth rate holds steady, this organization will be dealing with 1.6 petabytes of unstructured data in less than five years.
- Almost half (46%) their core business processes rely on unstructured data, but only 77% of this information can be classified as accurate, complete or reliable. This example organization struggles with data quality and unstructured data.
- They might have invested in document capture software (only 63% of this group have done so), but if they haven't, they certainly plan to. Nine-three percent of the remaining organizations want to invest within the next two years.
- They don't know how much their business could improve. A scant 8% of all organizations have developed an ROI for these tools.
- Employees at this company process 35 mortgages, loans, or claims per month.
- Those dedicated to closing cases handle an average of 70 per month.
- The company as a whole handles 1.5 million cases a year.
- The scanning or capture of a single document costs 19 cents and takes over 4 minutes.
- For every 1,000 documents they process, they experience 22 errors.

This provides a baseline cost for document capture and processing, and the potential cost savings of investing in improved performance. As Table 4 shows below, given the cost per document and the amount of total cases processed per year, our average organization spends over \$285,000 just on the initial form capturing. By comparison, over two-thirds (67%) of organizations with document management reported a cost-per-document-captured rate of under 8 cents. Reaching this level of performance would save this sample company over **\$135,000 dollars per year**.

Reducing the error rate has a similar impact on a bottom line. According to Aberdeen's research, completely capturing all the documents in a new submission cost \$3.37. Since not every document needs rescanning, we can round down to an estimated \$3.00 to find and correct an error and re-process the affected documents (ignoring additional fees, penalties and lost business). Using this assumption, the average organization loses almost one million dollars a year due to errors. Again, comparing this average company with the rest of the field reveals that 60% of all organizations with document management systems reported error rates of less than 10 per thousand. Improving to this level of performance leads to potential savings of over **half a million dollars per year**.

"Document management will require continuous improvement to automate work flow and expedite document processing. The end result should be based on clear and unambiguous requirements. Additionally, a phased approach is the best method, not a big-bang approach expecting to capture all requirements in the first implementation"

~ Manager of Quality Mgmt  
Large (>\$1B) European  
Pharmaceutical manufacturer

**Table 4: The Potential ROI of Improving Document Management**

Annual Costs	Average Company (n = 36)	Top Performance (n = 140)	Potential Savings
Cost of document capture	19 cents per document	8 cents per document	<b>\$135,000 per year</b>
	1.5 million documents	1.5 million documents	
	<b>\$285,000 total</b>	<b>\$120,000 total</b>	
Error remediation for document processing	22 errors per 1,000	10 errors per 1,000	<b>\$540,000 per year</b>
	330,000 total errors	150,000 total errors	
	\$3.00 to fix an error	\$3.00 to fix an error	
	<b>\$990,000 total</b>	<b>\$450,000 total</b>	
Time spent on document capture	4.1 minutes per document	45 seconds per document	<b>\$2.5 million per year</b>
	102,500 man hours per year	18,750 man hours per year	
	51 full time employees	9.4 full time employees	
	<b>\$3 million in total salary / benefits</b>	<b>\$564,000 in total salary / benefits</b>	
<b>Total Potential Annual Savings:</b>			<b>\$3,175,000</b>

Source: Aberdeen Group, January 2012

Time is money, and no trivial amount of time is spent on document capture and processing. Document management can reduce the cost of maintaining full-time equivalent (FTE) employees that perform document capture tasks. Given the average time per document, and using current published salary information to form a rough estimate of \$60,000 per employee (including salary and benefits), our sample organization spends over \$3 million a year on its document processing workforce. However, 48% percent of all organizations with document management systems reported capture times of less than 45 seconds. If the average company improved their speed to this level and reduced the total number of employees accordingly, the savings could easily be more than **\$2.5 million dollars a year**. Alternatively, those 40 extra employees could be reassigned to other high-priority tasks, or all 51 original employees could be retained, now with more time to process a much higher volume of work.

This basic framework shows a potential total ROI of over \$3 million per year as a result of improving document management to the levels of top performers. It can serve as a shorthand projection for any company by substituting actual values for the assumptions and averages stated above. If these numbers aren't convincing enough, consider the following:

Organizations in these document-centric industries have been trying to improve their ability to manage larger workloads. In fact, they increased their capacity and overall volume of mortgages and grants processed by 6% over last year.

However, their overall data volume grew at over five times that rate.

## Summary and Key Takeaways

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Organizations struggle with unstructured data resulting from hardcopy forms. This problem will only worsen as data volumes continue to expand. To tackle these issues, organizations should consider the following:

- **Invest in a document management solution.** Organizations with these tools vastly outperformed their peers in the time spent on document processing, data visibility, and most importantly, overall cost.
- **Automate.** Build a foundation for sustained success by investing in baseline hardware and software to reduce manual efforts and streamline the capture and management of documents. As data scales up, automated tools like document capture software and OCR will be the only way to improve a company's performance at the same rate.
- **Collaborate.** Foster a mindset of sharing information among your employees. Invest in web portals and tools to provide a centralized, authoritative location to find the most up-to-date documents. Then take these tools and extend them to your clients, customers and business partners.

For more information on this or other research topics, please visit [www.aberdeen.com](http://www.aberdeen.com).

Related Research	
<a href="#"><u><i>Business Optimization through Unified Communications: In the SoMoClo™ (Social Mobile Cloud) Era</i></u></a> ; December 2011	<a href="#"><u><i>Invoicing and Workflow: Integrating Process Automation to Enhance Operational Performance</i></u></a> ; May 2011
<a href="#"><u><i>Data Quality and the Supply Chain: The Benefits of MDM and Portals</i></u></a> ; October 2011	<a href="#"><u><i>Turning Pain into Productivity with Master Data Management</i></u></a> ; February 2011
Author: Nathaniel Rowe, Senior Research Associate, Information Lifecycle Management, ( <a href="mailto:nathaniel.rowe@aberdeen.com">nathaniel.rowe@aberdeen.com</a> )	

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