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Information Capture: Cornerstone of Digital Transformation

IDC OPINION

The term “digital transformation” (DX) has become an almost ubiquitous buzzword, but the impact of digital transformation is real. As a new DX economy emerges, IDC predicts that in the immediate future, technology will completely transform businesses of all sizes and across all industries. We predict that by 2020, 50% of the Global 2000 will see the majority of their businesses depend on their ability to create digitally enhanced products, services, and experiences.

This means successful enterprises must become “digital natives” in the way their employees think and work. It also means that enterprises must employ new technologies to fundamentally change business processes, including the way they manage data and documents and the way they exchange information with stakeholders. In recent IDC research, respondents indicated that they had saved time, reduced errors, increased productivity, and reduced cost by deploying technology related to digitizing, automating, and optimizing document workflows.

Digitization, automation, and optimization of data- and document-centric workflows are at the very foundation of digital transformation. One of the core technologies driving the transformation of document-centric workflows is information capture. Information capture not only is critical to the transition from paper-based to digital processes, but also provides a host of additional services to enable new workflows and new means of exchanging information.

In recent studies, we explored how organizations are transforming information- and document-centric workflows. We looked at challenges they faced, the technology being deployed, and the benefits of these initiatives.



*Digitizing, automating, and optimizing document workflows offer compelling benefits to organizations, including, on average, a **35%** reduction in costs, **42%** reduction in paper documents, and **52%** reduction in errors.*

Key findings include:

- Cost is the primary challenge associated with inefficient, disconnected, manual document workflows. Beyond the costs associated with printing and copying paper documents are the costs related to storing documents and time wasted due to manual steps, recreating missing documents, and correcting errors. There are also costs associated with longer time to revenue and missing regulatory deadlines. Additional challenges are related to timeliness, difficulties in collaborating, and security concerns — all of which ultimately lead to increased cost for organizations.
- Digitizing, automating, and optimizing document workflows offer compelling benefits to organizations, including, on average, a 35% reduction in costs, 42% reduction in paper documents, and 52% reduction in errors.
- A number of technologies are enabling new approaches to deploying and managing document-centric workflows. One critical technology is information capture to digitize paper-based content for onboarding into a digital workflow. Capture also provides other core capabilities such as processing of digital documents and other business content, optical character recognition (OCR), automatic indexing and classification, and intelligent data extraction.
- Today, many organizations are in the early stages of document workflow transformation initiatives because of the siloed and fragmented nature of document-centric business processes and insufficient information about the potential for business improvements and competitive advantage.

Organizations that wish to launch an initiative to transform document-centric business workflows should begin by evaluating existing workflows and technologies. They should identify use cases with high levels of inefficiencies and stakeholder pain points — especially paper-intensive processes — and then develop a strategy to address those pain points and begin the digital transformation journey.

METHODOLOGY AND DEFINITIONS

This white paper reviews the role that document workflow automation and optimization — and information capture — play in the overall digital transformation initiatives of organizations. It begins with an overview of document workflow transformation and then looks at the value of embarking on that transformation journey and where we are today along that voyage. We provide specific recommendations for organizations that wish to embark on their own document workflow transformation journeys.

To assess these trends, IDC conducted two surveys. In May 2017, we surveyed 200 technology influencers and decision makers in U.S. organizations with 100+ employees across a broad range of industries. These organizations had deployed technology to digitize, automate, and optimize document workflows. We segmented respondents by their primary functional areas — back office or front office — and asked about the challenges and benefits of these initiatives. The following definitions were provided to respondents:

- **Front office.** Departments/functions that are customer facing and/or generate revenue for the firm (e.g., sales, marketing, customer service/field service)
- **Back office.** Departments/functions that aren't customer facing and don't directly generate revenue for the business but provide vital support and administration (e.g., IT, operations, HR, finance/accounting, procurement, legal/compliance, engineering/R&D)

Prior to that, we had surveyed 250 managers and senior executives from U.S. organizations with 100+ employees across a broad range of industries in order to benchmark the maturity of these organizations based on the IDC MaturityScape for digital transformation of document workflows.

IDC's MaturityScape methodology examines a technology area with detailed descriptions across multiple dimensions and subdimensions. The maturity levels describe areas of challenge in the technology area and provide guidance for progressing from one stage to the next.

SITUATION OVERVIEW

Digital Transformation: Taming Data Chaos

IDC defines digital transformation as enterprises' use of 3rd Platform technologies (cloud, mobility, data analytics, and social business) to create value and competitive advantage through new offerings, new business models, and new relationships. In addition to gaining critical operational efficiencies, a principal outcome of digital transformation is improved customer experience. We predict that worldwide spending on DX technologies will grow to nearly \$2 trillion in 2019 and that two-thirds of CIOs in the Global 2000 will put DX at the heart of their corporate strategies.

A cornerstone of DX is transforming data-centric and document-centric workflows, especially those related to interactions with customers as well as other external stakeholders (e.g., investors, partners, and suppliers). Innovative technologies from both established vendors and new entrants are enabling new approaches to deploying and managing these workflows, offering organizations opportunities to drive competitive differentiation as well as improve bottom-line results.

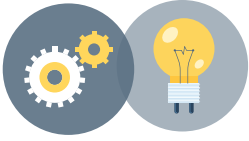
Today, organizations face a number of challenges associated with managing both structured and unstructured data. First and foremost is the sheer increase in both the volume and the types of information that companies and public institutions must process. IDC forecasts that by 2025, the global "datasphere" will grow to 163ZB (that is, a trillion gigabytes). That's 10 times the 16.1ZB of data generated in 2016. In addition to providing new challenges for organizations, all this data will unlock unique user experiences and a new world of business opportunities.

The technology to create, manage, and access this data has also created both pain points and opportunities for organizations. The proliferation of wireless broadband and fast networks encouraged data's movement into the cloud, decoupling data from specific physical devices and ushering in the era of accessing data — and documents — from any device, anytime, anywhere.

Despite the advancement of 3rd Platform technologies, many organizations still face challenges associated with inefficient, disconnected, manual document workflows. IDC's research shows that a significant portion of these business workflows are still paper based, exacerbating these challenges:



A cornerstone of DX is transforming data-centric and document-centric workflows, especially those related to interactions with customers as well as other external stakeholders.



Despite the advancement of 3rd Platform technologies, many organizations still face challenges associated with *inefficient, disconnected, manual document workflows.*



Almost **40%** of front-office respondents indicated that searching for and/or finding documents (or the right version of a document) was a *top challenge*, and almost **one-third** mentioned sharing and collaboration as a *concern*.

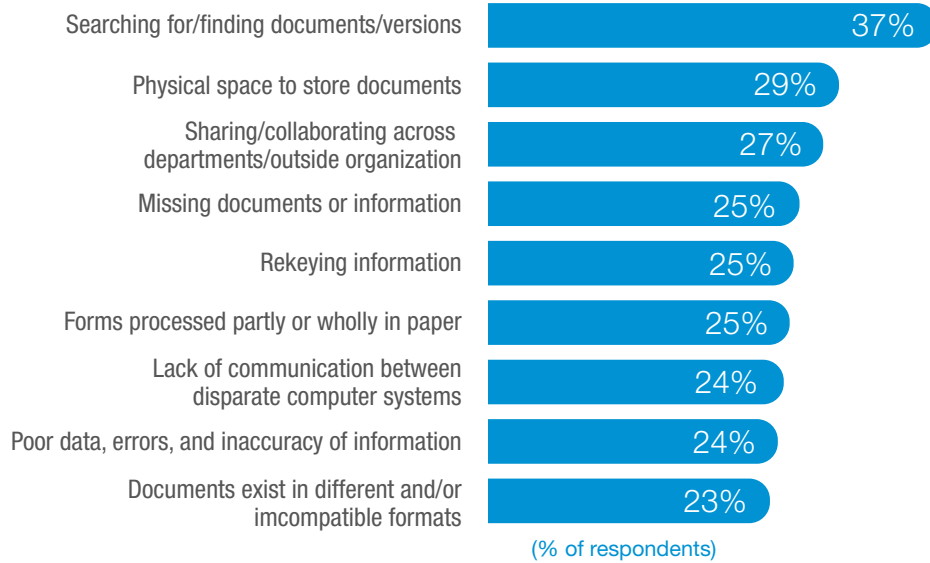
- **Cost.** Paper documents are costlier to produce and manage than digital documents. There are also cost of storing paper documents and the cost of a courier or delivery service. However, there are other costs of inefficient workflows, including the hard salary costs related to wasted time and the opportunity cost of employees whose time could be redirected to higher-value tasks. In addition, there are costs related to missing regulatory or payment deadlines and the cost of longer time to revenue.
- **Timeliness.** Inefficient workflows — especially paper-based workflows — add time. In addition to the process taking longer overall, examples include time wasted searching for the correct document or version of a document, recreating lost documents, reformatting documents, manually routing documents, manually extracting information from and/or rekeying information from documents, and error handling and exception handling.
- **Collaboration.** Related to both timeliness and cost, inefficient workflows make collaboration more challenging within a department or a functional area, across functional areas, or across organizations and entities. In addition to increased time and cost, collaboration challenges reduce employee satisfaction (and possibly reduce customer, partner, or supplier satisfaction).
- **Security and compliance.** Security continues to be a challenge for organizations across multiple domains. Inefficient workflows contribute to security challenges. They are less trackable and auditable. It is difficult to protect document ownership, access, modification, and chain of custody.

In a recent study, we asked respondents what factors made their document workflows less efficient, costlier, or less productive. The top responses were related to cost (including cost to store paper documents), timeliness (including time wasted due to manual steps, missing documents, correcting errors), and difficulty collaborating (see Figure 1).

Almost 40% of front-office respondents indicated that searching for and/or finding documents (or the right version of a document) was a top challenge, and almost one-third mentioned sharing and collaboration as a concern. One-third of back-office respondents cited manual data extraction as a factor that made their workflows less efficient (see Figure 2).

FIGURE 1 Top Document Workflow Challenges: Front Office

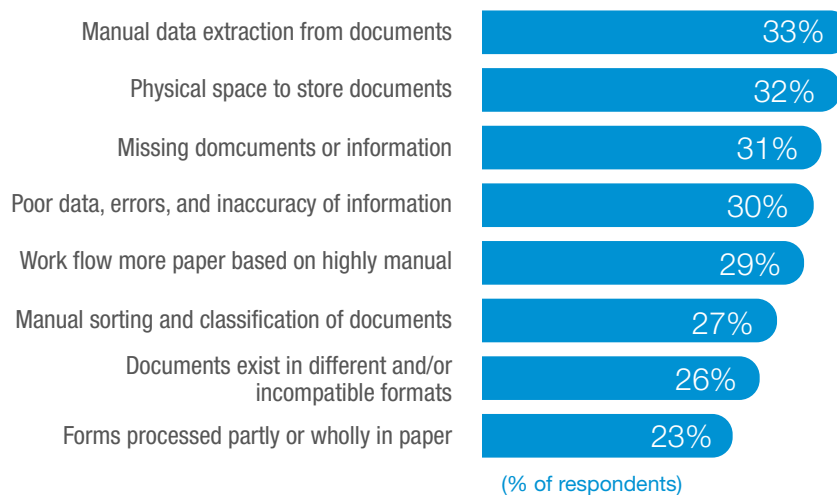
Q. Which of the following factors made your front-office document workflows less efficient, costlier, or less productive?



n=98 Source: IDC's Content Workflow Automation Survey, May 2017

FIGURE 2 Top Document Workflow Challenges: Back Office

Q. Which of the following factors made your back-office document workflows less efficient, costlier, or less productive?



n=98 Source: IDC's Content Workflow Automation Survey, May 2017

Information Capture: Anchor of the Document Workflow Automation Ecosystem

We noted previously that a number of technologies are enabling new approaches to deploying and managing document-centric workflows. As discussed in the sections that follow, these technologies offer organizations concrete business benefits that drive competitive differentiation and improve bottom-line results.

Various technologies contribute to the document workflow automation “ecosystem.” The heart of the ecosystem consists of “content in motion” and a business workflow engine that is orchestrating that motion. Other participating applications provide essential workflow services, such as electronic signatures and forms, that can be used to construct automated document workflows for specific business processes (see Figure 3).

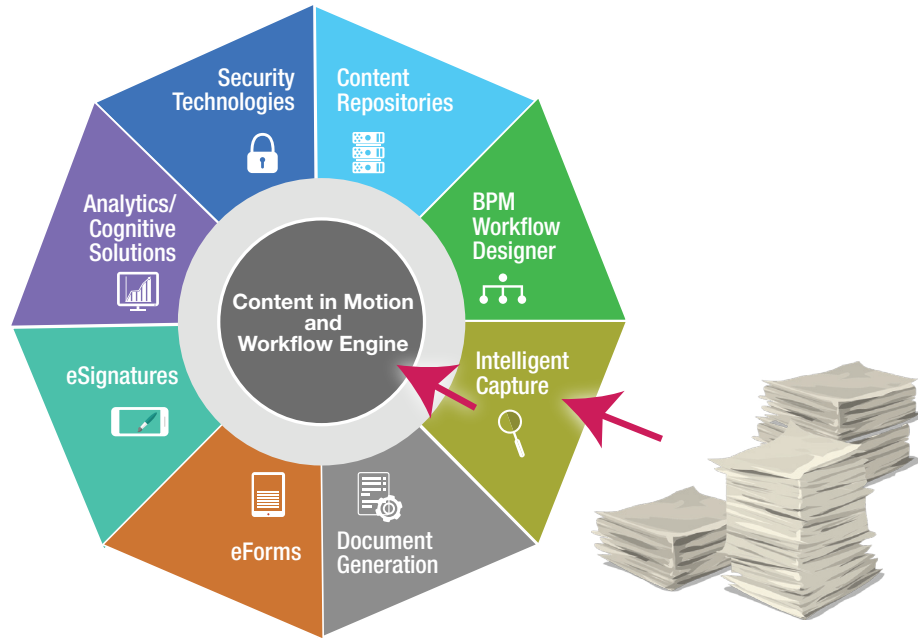
Information capture is critical for digitizing paper-based content for onboarding into a digital workflow. Capture software also helps automate content-centric workflows by providing some or all of the following capabilities:

- Cleanup and preprocessing of images of scanned documents to improve subsequent recognition rates
- Conversion of images to machine-readable text via one or more embedded OCR engines
- Classifiers, which automate the categorization of documents (both scanned and electronic) and enhance document metadata, enabling documents to be automatically routed for further processing
- Intelligent extraction facilities, which extract “fielded” information from the content of scanned and electronic documents so that the information can be mapped to enterprise applications and leveraged by business processes without (or with significantly reduced) manual keying

*Despite when we asked survey respondents what technology was deployed to digitize, automate, and/or optimize their organization's document workflows, **25–30%** of respondents cited some type of **capture technology**.*



FIGURE 3 Role of Information Capture in the Document Workflow Automation Ecosystem



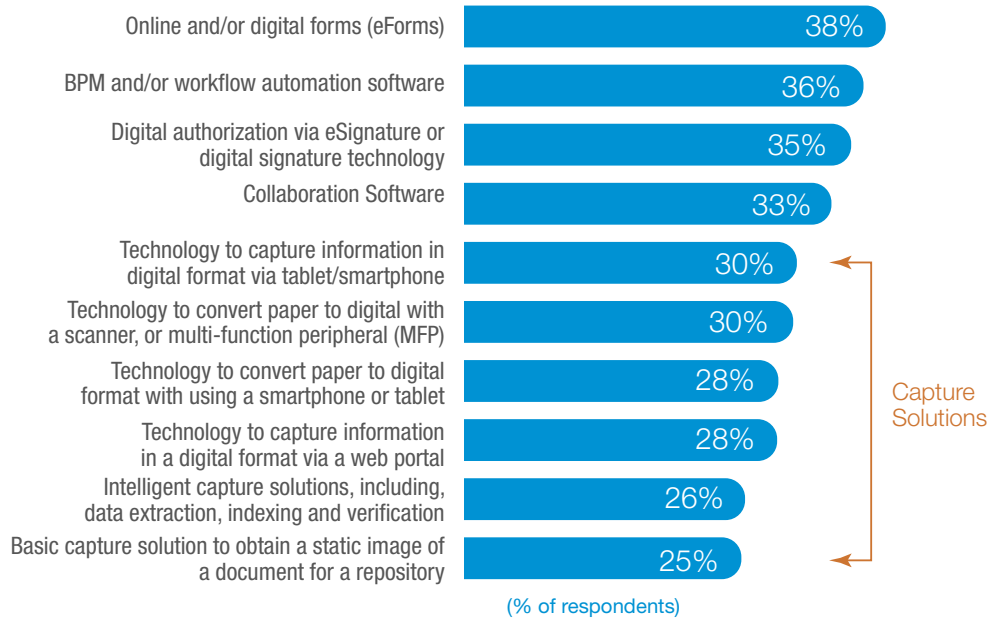
Source: IDC's Content-Centric Workflow Automation Framework (IDC #US41903917, March 2017)

Recent innovations in capture technology include enabling functionality from mobile devices (i.e., smartphones and tablets) and cloud capture (or capture as a service). Embedded analytics technology promises to make capture “smarter.”

When we asked survey respondents what technology was deployed to digitize, automate, and/or optimize their organization’s document workflows, 25–30% of respondents cited some type of capture technology (see Figure 4). Other technologies cited were online/digital forms, digital/electronic signatures, business process management (BPM) and/or workflow automation software, and collaboration software.

FIGURE 4 Technology Deployed to Digitize/Automate/Optimize Document Workflows

Q. What technology was deployed to digitize, automate, and/or optimize document workflows?



n=200 Source: IDC's Content Workflow Automation Survey, May 2017

Driving Better Business Outcomes with Transformed Document Workflow

We asked survey respondents about the benefits of deploying technology to automate and optimize their organization's document-centric workflows. The results were convincing (see Table 1). Overall, respondents reduced the time spent each week on document-related tasks by over 17% on average. This value increased to almost 23% for front-office workers, meaning that they got almost a quarter of their week back! Front-office workers also told us that they reduced the time spent looking for and/or recreating lost or misfiled documents by 21%. On average, productivity increased 41%, cost was reduced by 35%, and errors were reduced by over half.

TABLE 1 Benefits of Deploying Technology to Automate/Optimize Document Workflow

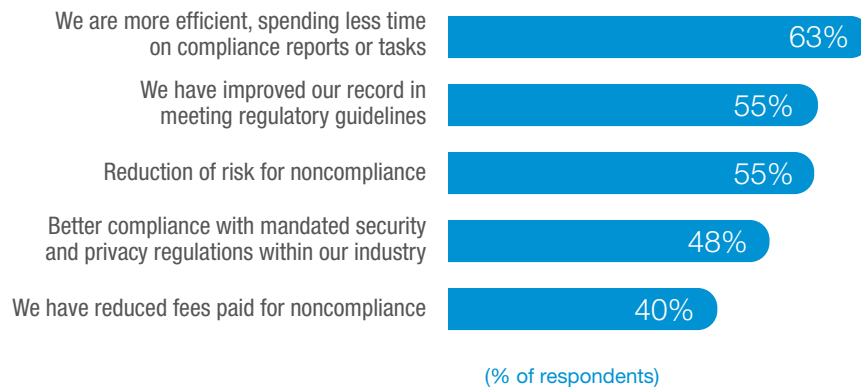
Description	Mean
% reduction in time spent each week on document-related tasks	17.2
Number of hours saved each week on document-related tasks	3.1
% reduction in paper documents	42.3
% reduction in time spent looking for and/or recreating lost or misfiled documents	12.5
% increase in productivity	40.9
% reduction in cost	35.4
% reduction in errors	51.6
% reduction in cost to store documents	41.2

Source: IDC's Content Workflow Automation Survey, May 2017

Respondents also saw improvements in regulatory compliance, including increased efficiency, a better record in meeting regulatory guidelines, and reduced risk (see Figure 5).

FIGURE 5 Regulatory Compliance and Document Workflow Transformation

Q. How has regulatory compliance improved since deploying technology related to digitizing, automating, and optimizing document workflows?



n=90 Source: IDC's Content Workflow Automation Survey, May 2017

Where Are We Today?

Exactly where are organizations in the journey to transform document-centric business workflows? The IDC MaturityScape for digital transformation of document workflows provides a model to evaluate the maturity of organizations in regard to digitizing, automating, and optimizing document workflows (see Figure 6):

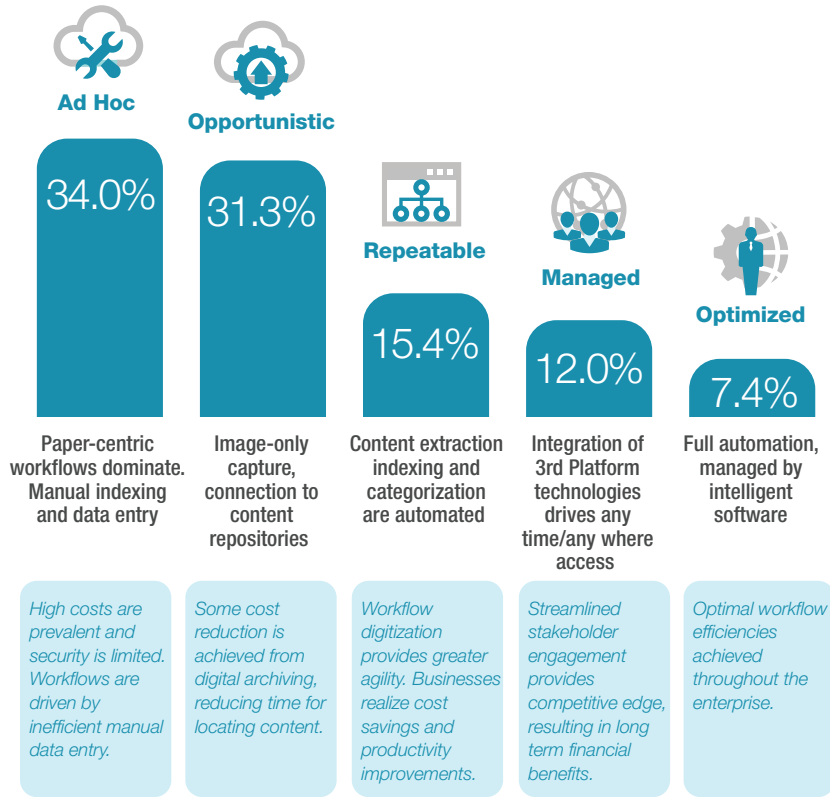
- **Ad hoc.** At the lowest stage, document workflows are primarily paper based and manual.
- **Opportunistic.** At this stage, capture has been deployed to convert paper-based workflows to digital, but images are static and there is minimal process reengineering. In other words, paper-based workflows are recreated digitally, still requiring significant manual intervention.
- **Repeatable.** Here, we see the deployment of intelligent capture solutions offering automated document classification and indexing as well as data extraction.
- **Managed.** More mature organizations have fully embraced 3rd Platform technologies (including cloud and mobility) offering anytime, anywhere access to content and the tools to manage content.
- **Optimized.** At this phase, organizations are leveraging cognitive solutions (machine learning, natural language processing, and artificial intelligence) to create “smart” document-centric workflows requiring less human interaction.

Over 65% of organizations are still at the early stages of the document workflow transformation journey, indicating significant opportunities for streamlining, automating, and optimizing these workflows — for better business outcomes (see Figure 6).



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FIGURE 6 Digital Transformation of Document Workflows Maturity Distribution Across Stages

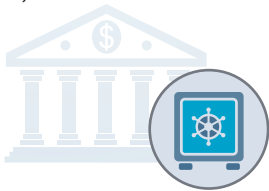


Source: IDC MaturityScape Benchmark: Digital Transformation of Document Workflows in the United States, 2016 (IDC #US40647716, September 2016)

So Why Isn't Everyone Doing It?

We know that organizations continue to face pressure to reduce costs, increase productivity, and improve compliance and security. So why are so many organizations just beginning initiatives to transform document processes? At least part of the reason is that document workflows, in general, and paper-based workflows, specifically, are often overlooked expenses because oversight is distributed across the organization. Because these workflows tend to be distributed, inefficient and outdated processes, though painful, may not be top of mind for decision makers. Senior managers lack a spending baseline, and they don't have the information they need regarding technology return on investment (ROI). They are also unaware of the opportunities for transformation of these processes and the business benefits that transformation can offer.

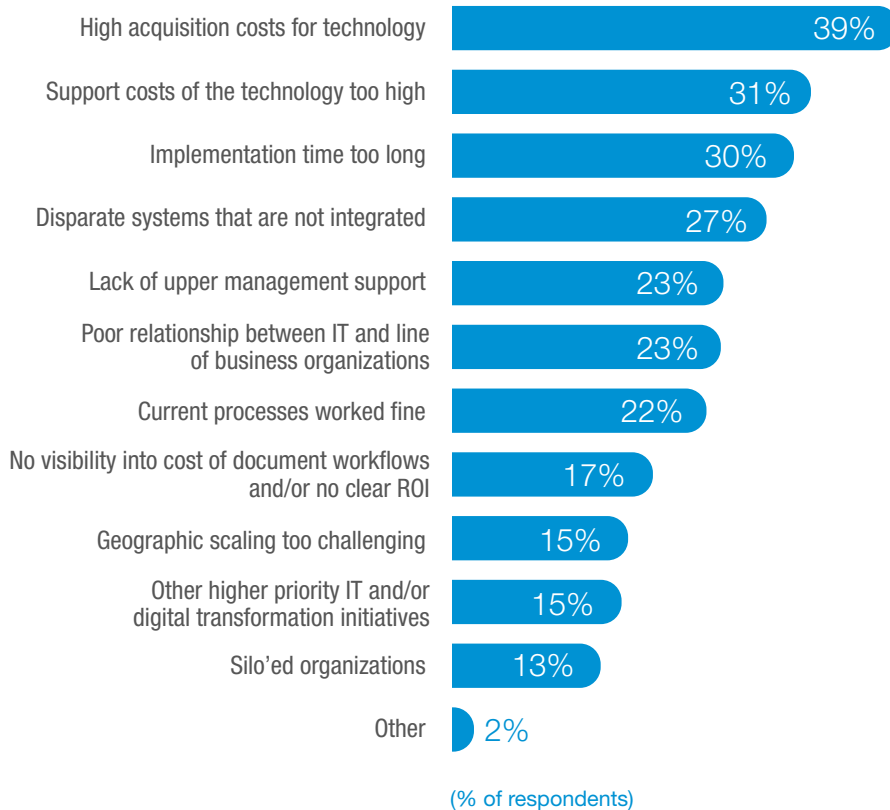
Senior managers *lack a spending baseline*, and they don't have the information they need regarding technology return on investment (ROI).



We asked survey respondents about the initial barriers to adopting technology related to digitizing, automating, and optimizing document workflows (see Figure 7). Cost was cited most often: 39% of respondents cited high acquisition costs and 31% cited high support costs. Perhaps even more telling is that 17% of respondents admitted that there was no visibility into the cost of document workflows and/or no clear ROI for technology investment. Almost one-quarter of respondents mentioned lack of upper management support as a barrier, and 22% said that current processes worked just fine.

FIGURE 7 Barriers to Adopting Document Workflow Automation/Optimization Technology

Q. What were initial barriers to adopting technology related to digitizing, automating, and optimizing document workflows?



n=200 Source: IDC's Content Workflow Automation Survey, May 2017

Almost one-third of front-office respondents cited nonintegrated, disparate systems as a barrier to automating and optimizing document workflows. These workers frequently need to consume and create data in multiple enterprise systems, including systems for sales and marketing operations, finance and accounting, call center, and services and fulfillment. Paper documents are often used to bridge these disparate systems, creating inefficiencies, introducing errors, and increasing time and cost.

Document Workflow Transformation Use Cases

There are countless examples of document-centric workflow automation and optimization use cases. Table 2 provides a few important examples.

TABLE 2 Examples of Content-Centric Workflow Automation Use Cases

Use Case	Pre-automation Situation	Goals and Objectives	Technology Deployed	Pre-automation Benefits
Mailroom automation	<ul style="list-style-type: none"> Mail is delivered by hand to various departments and employees. Process is labor intensive, time consuming, and error prone. 	<ul style="list-style-type: none"> Speed up communications to/from customers and other stakeholders Make processes more efficient and reduce costs 	<ul style="list-style-type: none"> Capture Workflow engine Document repository 	<ul style="list-style-type: none"> It eliminated wait time for documents, increasing customer satisfaction. Labor and copying costs are reduced. Possibility of lost or misplaced paper is reduced. Employees have real-time access to data and documents.
Records management	<ul style="list-style-type: none"> Many regulated industries are required to retain documents for a period of time. Paper documents take up space and are easy to misplace. The correct version is difficult to find when needed. 	<ul style="list-style-type: none"> Eliminate inefficiency, wasted time, and added costs of a paper-based system Increase the security of the information Improve compliance with mandated regulations 	<ul style="list-style-type: none"> Capture Workflow engine Document repository 	<ul style="list-style-type: none"> Space is freed up. Costs associated with printing are reduced. Employees have real-time access to data and documents. Documents are backed up and more secure. It is easier to manage retention and disposition schedules.
Forms processing	<ul style="list-style-type: none"> Processing paper-based forms is slow and error prone. Hand-keying data into digital systems is time consuming and carries high labor costs 	<ul style="list-style-type: none"> Reduce labor costs Improve data entry accuracy Reduce processing time 	<ul style="list-style-type: none"> Capture Electronic forms (eforms) eSignature Workflow engine Document repository 	<ul style="list-style-type: none"> The data entry process is streamlined. The error rate is reduced. Workers are freed up to focus on higher-value tasks

TABLE 2 Examples of Content-Centric Workflow Automation Use Cases

Use Case	Pre-automation Situation	Goals and Objectives	Technology Deployed	Pre-automation Benefits
Customer onboarding	<ul style="list-style-type: none"> Manual processes extend sign-up time, decreasing customer satisfaction. Communication is via a mix of email, paper forms, and other paper documents. Data is manually entered into enterprise systems, causing errors. 	<ul style="list-style-type: none"> Streamline and automate communication, speeding up processes and reducing errors Improve customer satisfaction 	<ul style="list-style-type: none"> Capture Electronic forms (eforms) eSignature Workflow engine Document repository 	<ul style="list-style-type: none"> Time to process is reduced, increasing customer satisfaction. Less time is spent on lower-value administrative tasks, increasing employee satisfaction. Errors are reduced
Accounts payable	<ul style="list-style-type: none"> Documents to be processed are a mix of different sizes, thickness, condition, and quality. Matching invoices with purchase orders is time consuming and error prone. Manually routing forms and chasing approvals is labor intensive. 	<ul style="list-style-type: none"> Improve processing speed Reduce errors Free up staff for higher-value tasks 	<ul style="list-style-type: none"> Workflow engine Capture eForms Document repository 	<ul style="list-style-type: none"> Time to process is reduced. Errors are reduced. Less time is spent on lower-value administrative tasks. Physical document storage space has decreased, and documents are more easily accessible.

Source: IDC, 2017

CONCLUSION

The research is compelling — digitization, automation, and optimization of document-centric workflows offer a favorable return on investment to organizations. In addition, these initiatives provide operational efficiencies, improved customer (and other stakeholder) satisfaction, and competitive differentiation. Most importantly, the transformation of document-centric workflows is a cornerstone of an enterprise’s overall digital transformation initiative.

Organizations that wish to investigate the automation and transformation of enterprise document-centric workflows should:

- Begin by evaluating existing document-centric workflows.** The ability to accurately model the current state of content infrastructure and map specific business workflows is crucial to determining where and how workflow automation could achieve a measurable return on investment. In addition, it is possible that

the evaluation will uncover unnecessary, redundant, or otherwise “broken” steps in existing manual and/or inefficient workflows that must be addressed before automation can be considered.

- **Inventory existing technologies.** Many organizations have multiple redundancies in their software portfolios. It is important to understand which technologies are already onsite and map against the most appropriate/best use cases for those technologies. Organizations should consider ease of use, ease of integration, scalability, mobile and cloud enablement, vendor support, future life span, and overall architecture of the solutions.
- **Identify use cases with high levels of inefficiencies and stakeholder pain points and then develop a strategy to address those pain points.** Specifically, consider:
 - Paper-intensive processes, especially those in which paper is used to bridge the gap between incompatible document formats or systems
 - Workflows with obvious bottlenecks and/or time constraints, especially those for which deadlines are being missed
 - Workflows that present a security and/or compliance risk

Additional recommendations are:

- Consider establishing a cross-functional center of excellence for document-centric workflow, perhaps under the auspices of an existing digital transformation or innovation initiative.
- Consider a pilot initiative for one specific workflow and/or a functional area and measure the results to drive the business case.
- Obtain high-level management sponsorship and support because there may be a requirement for sharing content across departments and functional areas as well as a change to existing work processes.
- Involve all stakeholders, including relevant employees, partners, and/or customers, to obtain buy-in and compliance and ensure continuous improvement.

When evaluating vendors:

- Ensure that a vendor's knowledge of your business workflows and/or industry uniquely qualifies the provider to deliver solutions to your organization; ensure that the vendor comprehends the organization's specific business objectives and has the capacity to meet those objectives and execute on them.
- Ensure that the vendor can leverage 3rd Platform technologies — cloud, mobility, big data and analytics, and social media — to help you develop new content-intensive workflow solutions and business models.
- Seek vendors that are equipped with the necessary solutions and professional services expertise to address business-critical issues around content security, data privacy, and regulatory compliance; the always-on digital ecosystem has changed the way businesses work with information, placing increased emphasis on the need for solutions that speed access to content while mitigating risks associated with data exposure and security vulnerability.

REFERENCES

- *IDC's Content Workflow Automation Survey, May 2017*
- *Preparing for the Digital Transformation Economy: The Tools Needed to Build a Digitally Native Enterprise, IDC eBook, May 2017*
- *Data Age 2025: The Evolution of Data to Life-Critical (An IDC white paper sponsored by Seagate, April 2017)*
- *Content-Centric Workflow Automation Framework (IDC #US41903917, March 2017)*
- *IDC MaturityScope Benchmark: Digital Transformation of Document Workflows in the United States, 2016 (IDC #US40647716, September 2016)*
- *IDC MaturityScope: Digital Transformation of Document Workflows 1.0 (IDC #US40656515, December 2015)*
- *IDC PlanScope: Digital Transformation of Document Workflows — Leveraging Automation and Optimization for Competitive Advantage (IDC #US40645315, December 2015)*
- *IDC MaturityScope: Digital Transformation 1.0 (IDC #254721, March 2015)*

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