Solutions for Automating Invoice Processing
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td>3</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>TECHNOLOGY SOLUTIONS FOR AUTOMATING A/P PROCESSES</td>
<td>4</td>
</tr>
<tr>
<td>SIDEBAR: WHAT DOES IT ALL MEAN?</td>
<td>5</td>
</tr>
<tr>
<td>DATA INTERPRETATION AND VERIFICATION</td>
<td>5</td>
</tr>
<tr>
<td>A/P WORKFLOW</td>
<td>7</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>8</td>
</tr>
<tr>
<td>SEEBUGGER SOLUTIONS FOR AUTOMATING A/P PROCESSES</td>
<td>9</td>
</tr>
<tr>
<td>ABOUT SEEBUGGER</td>
<td>10</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>10</td>
</tr>
</tbody>
</table>
Executive Summary

While many business processes have become automated, accounts payable processes remain largely paper-based and cumbersome. At the same time, streamlining these processes offers great opportunities for companies to realize a wide range of benefits, from reduced payment cycles and better cash flow to enhanced auditability and reporting.

Implementing an automated invoice processing solution requires overcoming both cultural and technical challenges. This paper focuses on the latter, which involve accommodating a highly diverse universe of formats and languages that complicate data extraction and interpretation. In addition, enterprises face the challenge of integrating the automation technologies involved with already-existing ERP systems to ensure end-to-end effectiveness.

The latest generation automation solutions are up to the challenge, however. Technologies such as freeform recognition and pairing OCR with artificial intelligence result in impressive accuracy rates. What's more, the best solutions offer deep integration within ERP environments for efficiencies throughout the processing cycle.

Introduction

Invoice processing is at the heart of enterprise B2B processes, and few play a more crucial role in the overall health of the organization. At the same time, invoice processing also represents one of the most time-consuming processes in any finance department. This is due to the fact that the process remains largely paper based. In fact, analysts estimate that as many as 70-80 percent of all invoices continue to arrive by fax or mail. These delivery mechanisms are only exacerbated by internal processes, which often include cumbersome paper-based archival and retrieval systems and time-consuming manual workflow for approvals. Then, too, the necessity for manual data entry creates errors in addition to discrepancies that may already exist within an invoice. All of these factors serve to burden the A/P function with inefficiencies.

Simplifying and streamlining the process brings many benefits, including the following:

- **Reduced invoice processing costs**
  Research indicates that automated processing costs range between 33-37 percent lower than manual processing costs.¹ What's more, many companies are able to reduce the number of full-time employees devoted to A/P functions.

- **Reduced invoice receipt to payment cycle times**
  Automated processing speeds payment cycles; Aberdeen analysts found that automated processes reduced processing cycles from 34.4 days on average to just 4.4 days.² Ultimately, this leads to greater financial vitality for the enterprise.

- **Increased visibility throughout cycle**
  Automated processing enabled personnel company-wide to access invoice information, whether in finance, advance manufacturing, or customer service.

- **Simplified compliance with corporate and finance mandates**
  Standardized, automated processing and archiving simplifies compliance activities with external auditing requirements (e.g., Sarbanes-Oxley) as well as internal corporate governance standards.

- **Increased ability to capture payment discounts**
  Companies with automated A/P processes are better able to identify and capture early payment discounts and rebates that contribute to lower overall costs.
Solutions for Automating Invoice Processing

Bringing these efficiencies to the enterprise can be challenging, however. Typically, challenges lie on two fronts: cultural and technical. Cultural barriers usually spring from the classic triangle of fear, uncertainty, and doubt, shared by executive management as well as by the individual A/P employee. While the former focuses on upfront implementation costs, middle management may be paralyzed by the specter of losing the “paper trail” as well as the willingness of employees to adapt to new technologies and processes. Cubicle dwellers may experience anxiety at the possibility of being redeployed or losing their jobs altogether.

On the technical front, the focus of this paper, the challenges may seem equally daunting. At the outset, A/P professionals acknowledge the inherently non-standardized nature of invoices. Different suppliers use many different formats; for many companies, global sourcing means that these differences can extend even to the language used within invoices themselves. After this initial hurdle comes the challenge of integrating any invoice automation solution with existing ERP systems.

Then, there is the concern about time to deployment; executive management seek to minimize this so that the company can begin to recoup first costs as soon as possible, while implementation teams need adequate timeframes to ensure the solution works effectively. Finally, implementing an automated solution may also involve development of process improvements, such as centralizing A/P functions. This process change often enables a company to standardize, control and monitor its A/P processes more efficiently.

Technology Solutions for Automating A/P Processes

Most available invoice automation solutions share some common characteristics, since automating the process involves a number of steps. First, invoice data must be captured. Invoice formats can vary widely, including structured electronic data (e.g., EDI, XML, flat file) and unstructured data (paper-based formats such as faxed and mailed invoices). The first step in any automation solution involves obtaining an image

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<th>Benefit</th>
<th>Percentage</th>
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<tr>
<td>Remove paper at point of entry invoice</td>
<td>65%</td>
</tr>
<tr>
<td>Reduce time spent on inquiries</td>
<td>63%</td>
</tr>
<tr>
<td>Lower administrative costs of process and reduce headcount</td>
<td>56%</td>
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<tr>
<td>Automatically route tasks to individuals based on workflow rules</td>
<td>55%</td>
</tr>
<tr>
<td>Improve reporting and analysis capabilities</td>
<td>48%</td>
</tr>
<tr>
<td>Improve financial auditability and fraud prevention</td>
<td>43%</td>
</tr>
<tr>
<td>Eliminate duplicate and over payments</td>
<td>40%</td>
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Solutions for Automating Invoice Processing

of the data; with paper-based this typically involves imaging via scan. Once the data is captured, it must be interpreted and transformed into a standardized data stream compatible with the organization’s ERP system. In addition, data must be verified to ensure this transformation has been accurate. Subsequently, the solution focuses on ensuring invoice approval and, finally, archiving of the data. Just as the ability to fully automate the invoice process cycle is emerging, the way individuals describe functionality and process aspects continues to be fluid as well. See What Does It All Mean? A Sidebar on Terminology for some discussion of frequently used terms and concepts.

Currently, many enterprises have deployed archiving and imaging solutions for other purposes; many may even be using these solutions to digitize invoice information. However, this still leaves significant room for improvement. For instance, A/P personnel may still be entering invoice data manually from the electronic image via split screens to bring the data into the ERP system. Likewise, at the end of the process, invoice data may be automatically routed to an archiving system along with other financial data for auditing and reporting purposes.

Automating the heart of the process represents untapped opportunities for some organizations. Companies can utilize existing imaging and archiving systems and enhance these systems to encompass data interpretation and verification, A/P workflow for invoice approval, and tighter ERP integration.

Data Interpretation and Verification
Accurate data interpretation is critical for effective automated invoice processing. Latest generation technologies that provide this go beyond simple OCR (Optical Character Recognition) to add artificial intelligence to the mix. Some solutions utilize template-based artificial intelligence (AI), where

What Does It All Mean? A Sidebar on Terminology

Some of the most frequently-used concepts in invoice processing can often have overlapping meanings for different individuals. In this paper, these terms are used according to the following descriptions.

**Imaging:** At its most basic, imaging is the digital capture of a physical document (e.g., invoice) in electronic form. It does not encompass the extraction of data from the document. Rather, it simply involves taking a “photograph” of the document for filing or archival purposes.

**OCR (Optical Character Recognition):** OCR technology translates printed text in an image into editable text by “recognizing” individual letters, numbers, and marks as discrete characters.

**“Smart” OCR:** Also referred to as OCR with artificial intelligence, smart OCR translates text within images by going beyond individual character recognition and applying intelligence in the form of rules of grammar, dictionary definitions, and more devices to translate content rather than individual characters alone.

**Advanced Automated Workflow:** This concept refers to the automated process by which invoices and other A/P information is automatically routed to appropriate individuals for processing, approval, and posting.

**Archiving:** Typically, archiving involves the storage and retrieval of past business records, including closed invoices and related documentation, for possible use in audits, financial reporting activities and tax purposes.
the software uses individual supplier templates to recognize data fields. More advanced solutions utilize freeform recognition, which eliminates the need to create supplier-specific forms. This technology applies keywords and relations combined with relevant background information, such as master data related to suppliers and order data provided by the ERP system. The result is a highly accurate interpretation without the investment in implementation costs required when using template-based recognition. For instance, Vattenfall, a major producer of electricity and heat in Europe, does business with 88,000 different suppliers and receives an average of 3,500 invoices every day. Template-based automation solutions posed too great a burden, both in terms of cost and in implementation time. Instead, by implementing an innovative solution employing freeform recognition technology, the company was able to automate its invoice processing seamlessly within its SAP work environment.³

Furthermore, the most effective solutions facilitate the capture of invoice data that may cross national boundaries. As more and more companies conduct business globally, invoices arrive from around the globe, too, often containing language- or culture-based data format differences. For instance, European date formats are day/month/year while U.S. formats are month/day/year. The most effective automation solutions must be able to distinguish between these simple differences as well as more complex ones stemming from language differences or business regulations. For instance, typical key words that would appear within any invoice, whether from Germany, China, Argentina or India, can be accurately identified and mapped regardless of language. National tax regulations, such as VAT charges or Canadian provincial taxes, create a diversity of calculations and displays that can be accurately identified.

Data verification is vital, too, in streamlining the automation process, as Miba’s experience demonstrates. Headquartered in Austria, Miba Group produces materials and components for clutch and brake systems. The company has production sites and sales offices in 10 countries across Europe, North America, South America, and Asia, and its products are in use

![Diagram of Freeform Recognition and Vattenfall](image-url)
in over 70 countries. When it implemented an end-to-end invoice automation solution that operated within its SAP environment, the company discovered significant improvements in data quality as a result of the automatic data verification. This enabled increased efficiency, including the ability to more frequently release invoices for payment within discount deadlines. Notes Christoph Sandner, Head of Corporate Finance, “we realized a significant gain in cash discounts by accelerating the invoice release process in our company. We are especially pleased by the continuous transaction view of . . . documents including the ability to display the original invoice image.”

A/P Workflow
Once invoice data is interpreted and verified, ensuring this enters the company’s existing A/P workflow becomes vital. The deeper the integration between any invoice automation solution and the existing workflow the more effective automating the process will be. Solutions that are well-grounded in workflow capabilities will be ideal for providing a seamless transition between the invoice processing solution and the broader ERP system. For instance, some solutions feature invoice consoles that operate within an ERP environment such as SAP. This enables users to monitor and manage documents through every step of the process – from image retrieval through interpretation, validation, approval, and final posting. Invoice approval and workflow are also handled directly within the specific ERP environment.

When Nordmilch, a leading European food services provider, decided to implement automated invoice processing, the company emphasized the importance of comprehensive integration with its existing SAP R/3 system. With as many as 600 invoices daily arriving from up to 8,000 different suppliers, and multiple locations, Nordmilch wanted the consistency of operating within its ERP environment for all A/P personnel. The innovative solution they implemented provided a console interface within SAP so A/P personnel could continue to work efficiently within an already familiar environment.

**FIGURE 3:** Miba’s invoice processing solution operates within its SAP workflow environment so master data quality continually improves as a result of automated learning technology.
Conclusion

The realm of A/P processing offers tantalizing potential for enterprises seeking to capture benefits from greater operational efficiency. Not only can companies shorten payment cycles and improve cash flow, but they can reduce personnel costs and eliminate paper-based processing. Many companies that have already invested in basic imaging and archiving solutions can leverage these investments as part of a more comprehensive invoice automation initiative and extend the benefits throughout the A/P process.

The most effective automated invoice processing solutions include the following:

- **Freeform recognition**
  Replacing the need for individual supplier templates with freeform recognition technology speeds implementation and provides greater ability to electronically collaborate with more of a company’s suppliers.

- **Automatic learning capabilities**
  Solutions with automatic learning technology will, over time, continue to increase accuracy rates, reduce process-cycle times, reduce the number of documents requiring manual intervention, and provide robust tools for automating globally-oriented A/P processes.

- **Deep integration with ERP environments**
  The more effectively an invoice processing solution can work within an ERP environment (e.g., Oracle, NAVISION, Baan, JD Edwards, SAP, PeopleSoft), the more accurately it will interpret and validate data, as well as manage approval workflow.

- **Integrated image recognition with EDI, XML and other electronic business documents**
  Companies seeking to consolidate multiple systems required for communication with their business partners will look for a solution robust enough to manage different document formats, and inbound/outbound communications on a single platform. Only a few systems are capable of supporting both paper-based and traditional electronic protocols like EDI and XML.
SEEBURGER Solutions for Automating A/P Processes

SEEBURGER’s 4invoice provides a next-generation solution to automate invoice processing, with the most innovative data recognition and verification solution on the market. 4invoice automatically interprets, validates, and formats data from unstructured (e.g., paper, fax, PDF) invoices and manages them through a company’s invoice approval and posting process into their ERP system.

4invoice leverages a powerful combination of optical character recognition and artificial intelligence software to accurately capture incoming invoices. Throughout the process, 4invoice demonstrates advanced capabilities. By using freeform recognition technology at the first stage, 4invoice ensures accurate data recognition and document matching without the need for manually created supplier templates. Throughout subsequent stages, the product provides detailed tracking of the approval process, enabling companies to capture payment discounts more fully. Users enjoy enhanced support of ad-hoc communication related to discrepancies. 4invoice also enables users to more efficiently perform time-sensitive monthly, quarterly, and year-end closings. Beyond A/P, 4invoice supports adherence to corporate accounting processes necessary for compliance with governance mandates such as Sarbanes-Oxley.

4invoice can be integrated into virtually any ERP environment, (e.g., Oracle, NAVISION, Baan, JD Edwards, and PeopleSoft). SAP users may choose SEEBURGER’s highly specialized SAP modules for interfacing the required systems (e.g., electronic archive). Specially developed SAP Workflow templates also allow customers to “configure” workflow processes rather than requiring development resources to model new workflow scenarios. A range of SEEBURGER standard workflow templates for invoice validation, approval, and release for payment are available for SAP Business Workflow, Lotus, and WEBflow.

4invoice leverages SEEBURGER’s proven, reliable Business Integration Server (BIS) technology to manage a wide variety of business documents across multiple systems and trading partners. Business Integration Server is used to process 4invoice documents, and it is also capable of processing EDI.
XML, and other electronic protocols. BIS enables an organization to manage invoice images, as well as structured electronic transactions, on a single technology platform.

About SEEBURGER

SEEBURGER is a leading provider of global business integration solutions designed to optimize transactions throughout the extended enterprise by automating trading relationships with all partners regardless of their size and technical resources. Launched in 1986 to provide integration solutions to the automotive industry in Germany, the company today is ranked among the top business-to-business gateway providers by industry analysts, and serves more than 7,500 customers in 50 countries and more than 15 industries through its flagship BIS and related products and services. SEEBURGER has global offices in Europe, Asia Pacific and North America.

References

2 Id., p. 13.
4 Internal SEEBURGER document.