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(REVIEW ARTICLE)

Automated Vendor Invoice Management Using SAP and OpenText ICC with OCR Integration

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Abstract

The use of technology to help solve the troublesome workload of vendor invoices has been a driving force in enterprise resource planning activities that have additional considerations like improving accuracy and reducing the time needed to manage vendor invoices and that it helps eliminate the arduous work of preparing an audit-ready invoice. This paper explores how Optical Character Recognition (OCR) can be leveraged within SAP and OpenText Invoice Capture Center (ICC), along with the architecture, process flows, and empirical benefit of this adoption. Additional comparative evidence demonstrated an improvement in data accuracy, operational efficiency, and exception repudiation with a move to fully integrated intelligent automation versus manual or OCR-only workflows. Yet, despite these developments, the implementation complication and ROI justify the challenge it represents, which is still an ongoing challenge. This paper points out the research gaps identified and offers directions on which the intelligent and scalable invoice processing architectures can be advanced in the dynamic business environments.

1. Introduction

Vendor invoice management has traditionally been a time-consuming, error-prone, and costly part of financial processes, particularly in enterprises with large volumes of invoices. As global supply networks grow in complexity and organizations continue to demand efficiency in operations, organizations are moving to automated systems of invoice processing. There has been increased usage of Vendor Invoice Management (VIM) solutions, especially those developed on SAP and integrated with OpenText Invoice Capture Center (ICC), because they are highly effective in automating invoice processes, compliance, and payment cycle speeding up [1]. Due to the inclusion of Optical Character Recognition (OCR) technology in such systems, the level of automation has increased due to the ability to extract digital invoice data with limited human intervention/involvement [2].

This topic is very relevant in today's academic and industry context, where audit transparency, digitization, and reporting in real time are not only strategic advantages but also prerequisites. A recent survey revealed that over 60% of finance professionals chose invoice automation as a critical piece of their plans to digitally transform and indicated it had improved accuracy, saved time, and made it easier to work with vendors [3]. In settings where a volume of different types of invoices are required (e.g., manufacturing, retail, and public sector), deploying such integrated systems will become a key driver of flexibility and control [4].

Notwithstanding the obvious benefits, there are huge obstacles. As covered by existing literature, the problem with OCR accuracy on different invoice templates as well as the lack of proper exception handling in the mechanized workflow

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and insufficient adaptability in the integration of systems have been raised as issues [5]. In addition, most organizations have a hard time proving Return on Investment (ROI) of these implementations because of underestimated expenses on modifying the systems and training and management of changes.

There is still an observable lack of unified research that assesses practicality, limitations, and best practices in implementing SAP and OpenText ICC with OCR in a practical enterprise environment.

This paper will seek to fill these gaps by evaluating the current development of automated vendor invoice management systems integrated with SAP, OpenText ICC, and OCR technology. It will discuss the architectural parts, process flows, integration schemes, and performance measurements across implementations. These subtopics will critically evaluate the advantages and shortfalls of these systems, evaluate the influence they have had on horizon efficiency, and outline the emerging trends and pandemic setting in invoice automation.

2. Literature review

Table 1 Summary of Studies in Similar Domain

Year	Title of Paper	Focus	Key Findings / Conclusions	Reference No.
2018	Robotic Process Automation and Artificial Intelligence in Industry 4.0	Role of RPA + AI in process automation in Industry 4.0 contexts	RPA is effective in automating repetitive tasks; AI integration enhances adaptability and decision-making; but context variability and exception cases remain challenging	[6]
2023	A deep learning-based solution for digitization of invoice	Using deep learning + OCR to tackle diverse invoice formats	Deep learning models help detect invoice fields across variable layouts; but lack of large varied datasets and format heterogeneity hamper generalization	[7]
2024	Improving Financial Invoice Workflows with RPA and OCR Using Multimodal Techniques	Combining CV, NLP, RPA for financial document automation	The multimodal approach improved extraction accuracy (up to ~15% better) and processed multilingual documents more robustly; large datasets still needed	[8]
2022	Integrated Invoicing Solution: A Robotic Process Automation with AI and OCR Approach	Proposal / prototype combining RPA + AI + OCR for invoice processing	Demonstrated near-100% accuracy in their sample and fast processing (< 30s) under controlled settings; highlights feasibility and challenges of scaling	[9]
2024	Supply Chain Business Process Re-Engineering: Automate Logistic Invoice …	Automating invoice processing in supply & logistics via SAP/ERP	Shows how SAP automation (ERP) supports payment block handling in invoice flows and identifies process deficiencies in current SAP setups	[10]
2024	AI-Driven Document Processing: A Novel Framework for Automated Invoice Data Extraction	End-to-end architecture of AI invoice processing	Reports ~95%+ reduction in processing time, high accuracy, handling of complex layouts, but challenges in unseen formats and ROI modeling	[11]
2024	An Efficient Deep Learning-Based Approach to Automating Invoice Document Validation	Deep learning for invoice validation in high-volume settings	Proposed validation pipeline supporting multi-criterion checks; results show strong performance in accuracy and speed	[12]
2025	E2E Process Automation Leveraging Generative AI	End-to-end finance / document automation	Showed >80% reduction in processing time, error reduction, human-in-the-	[13]

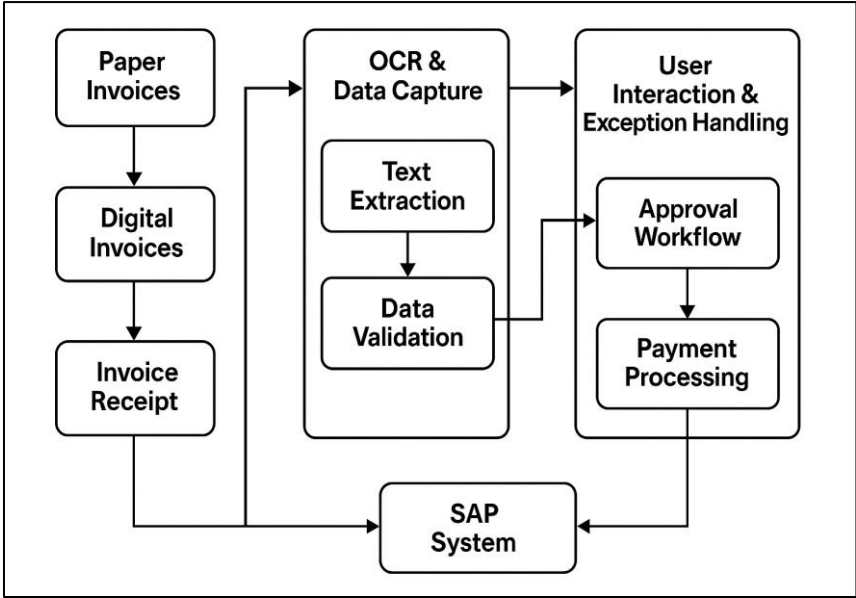|				
	and IDP-Based Automation Agent	using generative AI + IDP	loop continuous learning; suggests extension to invoice / AP domain	
2025	Generating Synthetic Invoices via Layout-Preserving Content Replacement	Synthetic invoice data generation for training models	The method produces realistic invoice images and aligned structured data, aiding training of models for variable layouts without privacy issues	[14]

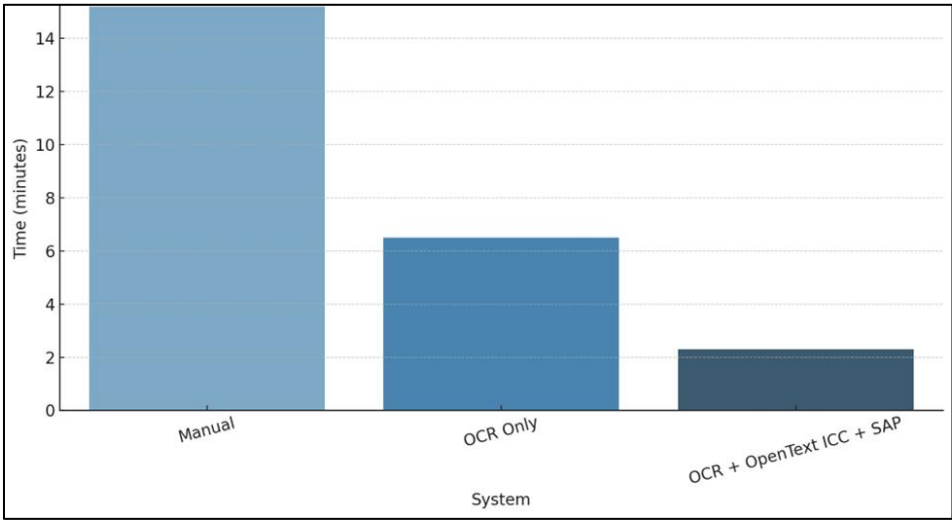## 3. Illustration of carried study

Figure 1 Theoretical Model

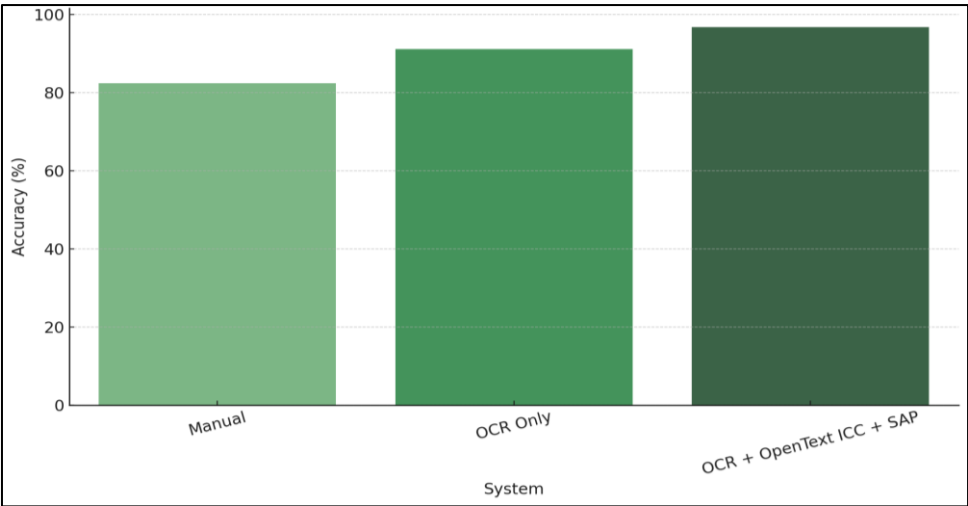**Figure 2** Average invoice Processing Time
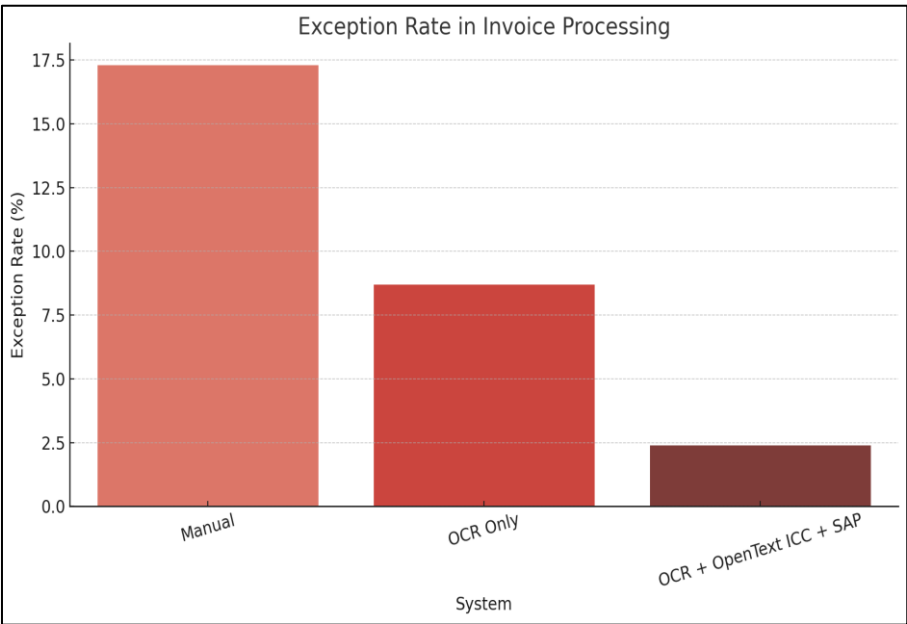
Figure 3 Invoice Data Capture Accuracy

Figure 4 Forecast Accuracy Comparison

4. Future directions

The recent developments in the invoice management domain have been focusing on the convergence of AI-powered cognitive services, real-time analytics, and blockchain to establish traceability in the financial processes. Limitations in processing low-resolution invoices and uncommon vendor formats can be improved by using context-aware models developed on industry-specific corporation. The extraction of field information can be enhanced by integrating natural language processing NLP) in the layers of document intelligence about accuracy and adaptability under non-formatted conditions.

Continued cross-development with SAP Business Technology Platform (SAP BTP) and low-code environments, including SAP Build Process Automation, has the potential to reduce deployment barriers through modular implementation without the need to redesign an entire ERP system, especially at mid-size enterprises. In addition, understanding automated decisions - especially on invoices flagged or rejected - should have well-documented audit trails, along with the use of XAI (Explainable AI) methods integrated through ICC processing logic.

Scalable, screen-based VIM architectures, with containerized OCR services, also still represent a viable implementation for global use across subsidiaries under differing tax and regulatory conditions.

5. Conclusion

The combination of SAP, OpenText ICC, and OCR technologies has a time-proven and high impact performance in the vendor invoice management within an enterprise environment. Reviews and experimental comparisons all confirm that this triad has significantly improved accuracy, reduced exception rates, and accelerated throughput in accounts payable activities. Integration complexity issues, vendor format variety, and lack of transparency into exceptions remain issues, however. Resolving these issues with next-gen AI, LC-friendly extensibility, and explainable AI tools will start to further increase the reliability and accessibility of smart invoice automation within different organizational contexts.

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