AI-Agent AP Invoice Processing with OCR Business Case Document:

Project Topic:

AI-Agent AP Invoice Processing with OCR

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Business Case Document

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Accounts Payable Invoices Processing (OCR AI-Agent)

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AI-Agent AP Invoice Processing

OCR Business Case Document:

1. Overall Topics:

- Executive Summary.

- Business Problem Statement.

- Business Objectives.

- Proposed AI-Agent Solution.

- Invoice Processing Workflow.

- Database Update Strategy (Update Rows in Table).

- Operational Benefits.

- Financial & Business Benefits.

- ROI & Cost Efficiency Justification.

- Scalability & Future Expansion.

- Implementation Approach.

- Conclusion & Recommendation.

2. Executive Summary:

Accounts Payable (AP) departments process a large volume of vendor invoices using manual or semi-automated methods. These processes are time-consuming, error-prone, and difficult to scale. This business case proposes an **AI-Agent–driven AP Invoice Processing solution** that leverages **OCR, Artificial Intelligence, and workflow automation (n8n)** to automatically extract, validate, and store invoice data in a centralized

database. The solution aims to reduce manual effort, improve accuracy, accelerate invoice processing, and ensure audit-ready compliance.

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3. Business Problem:

Traditional AP invoice processing relies heavily on manual intervention, leading to:

- High processing time per invoice

- Frequent data-entry errors

- Duplicate invoice records

- Limited scalability with increasing invoice volumes

- Compliance and audit risks

These inefficiencies increase operational costs, delay vendor payments, and negatively impact supplier relationships.

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4. Business Objectives:

- Automate invoice processing end-to-end

- Reduce manual workload on AP teams

- Improve data accuracy and consistency

- Enable real-time validation and exception handling

- Establish a scalable, audit-ready AP process

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5. Proposed AI-Agent Solution:

The proposed solution introduces an **AI-Agent–powered automated workflow** that:

- Accepts digital invoice submissions via a user-friendly form

- Extracts invoice data using OCR and AI models

- Identifies and validates mandatory invoice fields

- Converts AI output into structured, normalized JSON

- Stores invoice data securely in a centralized PostgreSQL database

The workflow is orchestrated using **n8n**, integrated with cloud storage and enterprise-grade databases.

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6. Invoice Processing Workflow:

- **Invoice Submission** – Vendors or users upload invoice documents through a digital form.

- **OCR & AI Extraction –** The system extracts text from invoice files using OCR and AI models and identifies key invoice fields.

- **Data Normalization –** Extracted AI data is converted into clean, structured JSON for consistent processing.

- **Merge Invoice Data with Binary –** Structured invoice data is merged with the original invoice file (binary) to maintain a complete record.

- **Upload Invoice to Drive –** The original invoice document is securely uploaded to cloud storage for archiving and future reference.

- **Database Update (PostgreSQL) –** Invoice details are updated in an existing database record using the invoice number as a unique identifier.

- **Raw Invoice Data Storage –** Original submission metadata and processing details are stored for audit and traceability purposes.

- **Confirmation** – Successful invoice processing confirmation is generated for the user or system.

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7. Database Strategy – Update Rows in Table:

What it does:

Updates invoice data in an **existing database row** instead of inserting a new one.

Why it is used

- Prevents duplicate invoice entries

- Ensures accurate and updated invoice data

- Supports ERP / accounting system integration

- Maintains audit-safe and compliance-ready records

What it stores

- Invoice Number (unique key)

- Vendor Name

- Invoice Date

- Subtotal

- Tax Amount

- Total Amount

- Currency

This strategy ensures **one invoice = one record** in the system.

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8. Business Benefits:

Operational Benefits

- 70–80% reduction in invoice processing time

- Elimination of repetitive manual data entry

- Improved accuracy through AI-driven validation

- Scalable processing without proportional cost increase

Financial & Compliance Benefits

- Faster AP cycles and improved cash-flow management

- Reduced audit risks and regulatory penalties

- Centralized, structured, and traceable invoice records

- Improved vendor relationships through timely payments.

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9. ROI & Scalability:

Compared to manual AP processing, the AI-Agent solution:

- Reduces labor and rework costs

- Minimizes human error

- Supports high invoice volumes with ease

- Produces audit-ready data automatically

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10. Implementation Approach:

The solution will be deployed using a **phased approach**:

- **Phase 1:** Requirement confirmation and system setup

- **Phase 2:** OCR and AI-Agent workflow development

- **Phase 3:** Database and storage integration

- **Phase 4:** Testing, validation, and user acceptance

- **Phase 5:** Go-live and continuous optimization

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11. Conclusion & Recommendation:

The **AI-Agent AP Invoice Processing with OCR** solution delivers a robust, scalable, and enterprise-ready approach to automating AP operations. By combining AI intelligence with structured database updates, it ensures accuracy, compliance, and long-term efficiency.

Recommendation: Proceed with implementation as a strategic finance automation initiative to drive operational excellence, compliance, and scalable growth.