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Hyperautomation in Manual Processes Using AutomationEdge: A Case Study on Employee Onboarding and Student Placement Eligibility

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Abstract:
Repetitive, rule-based administrative processes are often resource-intensive and susceptible to human error. Robotic Process Automation (RPA) provides a scalable and efficient solution to streamline such operations. This paper presents two real-world case studies leveraging the AutomationEdge platform to automate employee onboarding and student placement eli- gibility processes within academic and corporate environments. The implementation includes data integration from Excel and SQL sources, email automation, logic-based workflows, and real- time communication. Results demonstrate an 85% reduction in manual effort, significant improvements in accuracy, and substantial time savings. This study contributes to the growing field of hyperautomation by showcasing its practical applications in institutional workflows.

Index Terms: Robotic Process Automation (RPA), Automa- tionEdge, Hyperautomation, Workflow Automation, Employee Onboarding, Student Placement, SQL Integration, Email Au- tomation, Process Optimization

INTRODUCTION

Many institutions still perform important tasks manually, which often takes a lot of time and can lead to mistakes. Robotic Process Automation (RPA) is a technology that uses software bots to automate repetitive and rule-based tasks. This helps reduce human effort and errors.

AutomationEdge is a smart RPA platform that makes au- tomation easier by providing tools to work with Excel files, databases (using SQL queries), scripts, and email systems. It allows organizations to create complete automated workflows from start to finish.

This paper presents two practical examples (case studies) where AutomationEdge is used: (1) automating the process of employee onboarding, and (2) automating the verification of student eligibility for placement. These examples show how RPA can minimize manual work, increase accuracy, and allow processes to be handled quickly and efficiently with little supervision.

PROBLEM STATEMENT

HR and academic departments often struggle with repetitive manual tasks that take a lot of time and can cause mistakes. For example, sending emails to selected job candidates by hand or creating lists of students eligible for placements involves a lot of manual work. These tasks require gathering

information from different sources, applying correct filters, and sharing the results accurately.
Such manual processes are slow and prone to errors, which can delay decisions and affect the overall efficiency of the institution. Therefore, there is a strong need for automation tools like RPA that can combine data from multiple systems, apply logical rules, and communicate results automatically, reducing human effort and improving accuracy.

Related Work

Many researchers have studied the use of Robotic Process Automation (RPA) in education and human resource man- agement. These studies show that RPA helps reduce manual work and makes processes more consistent. For example, a recent article in the International Journal for Multidisciplinary Research (IJFMR) [1] discussed how AutomationEdge was used to automate repetitive tasks successfully, resulting in better efficiency and accuracy.
Our paper builds on this earlier work by providing more detailed examples of real-world automation, focusing on em- ployee onboarding and student placement eligibility. We also include a deeper analysis of the outcomes achieved through these RPA implementations.

Methodology

We utilized AutomationEdge's low-code workflow designer with the following steps for both case studies:

- Excel File Reader Plugin for ingesting data
- SQL Query Plugin for accessing student and fee data
- Logic and Condition Plugins for filtering and branching
- Email Plugin for notification with dynamic content
- Logging Plugin for traceability

Each case was built with modular workflows to support real- time triggers, error handling, and audit trails.

Case Study I: Automated Employee Onboarding

A. Objective

To automate the employee onboarding process by classi- fying candidates based on their selection status and sending customized email notifications, thus minimizing manual work- load and errors.

B. Input

The input is an Excel file uploaded by the HR department containing candidate details, including:

- Candidate Name
- Email Address
- Selection Status (e.g., Selected, On Hold, Rejected)
- Joining Date (to be calculated)

D. Output

- Automated emails sent to candidates with relevant infor- mation.
- Categorized candidate lists saved for HR reference.
- Log files documenting the automation process and email delivery status.

Fig. 2: Sample Output for Rejected Candidates

E. Tools Used

- Excel Reader Plugin - for extracting candidate data.
- Logic Operator Plugin - for decision making & filtering.
- Email Plugin - for sending dynamic, personalized emails.

CASE STUDY II: AUTOMATED STUDENT PLACEMENT ELIGIBILITY

Fig. 1: Automated Employee Onboarding Workflow

C. Workflow Steps

1. HR uploads the Excel file with candidate information.
2. The automation reads the Excel file using the Excel Reader Plugin.
3. The Logic Operator Plugin filters candidates into three categories:

a. **Selected** — candidates who have passed and are ready to join.
b. **On Hold** — candidates pending further review.
c. **Rejected** — candidates not selected.

4. For selected candidates, the joining dates are calculated dynamically based on company policy.
5. The Email Plugin sends personalized emails to each candidate according to their status:

a. Selected candidates receive joining instructions.
b. On Hold candidates receive status update emails.
c. Rejected candidates receive regret emails.

6. All actions and results are logged for auditing and tracking purposes.

A. Objective

The main goal is to automate the evaluation of student eli- gibility for placement drives. This automation reduces manual effort, avoids errors, and speeds up the process of shortlisting candidates for interviews.

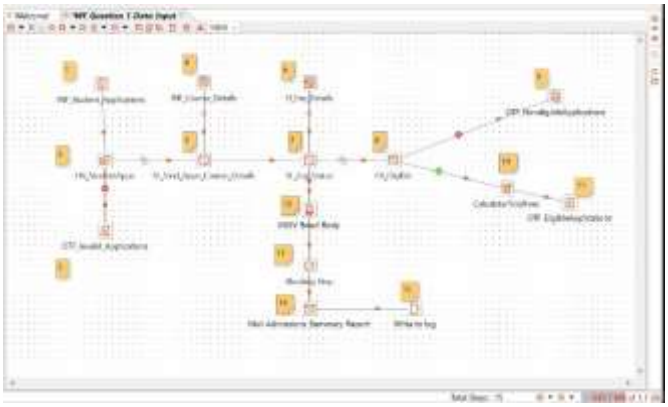

Fig. 3: Automated Student Placement Eligibility Process

B. Input Data

The automation process relies on data collected from dif- ferent sources, including:

Student Information: Details like name, roll number, and course are stored in Excel sheets.

Fee Payment Records: Stored in a SQL database to check if students have cleared their fees.
Academic Scores: Available in Excel files, representing marks or percentages.
Resumes: Student resumes saved in a local directory on the system.

C. Workflow Steps

The automation workflow involves the following steps:
Read Student Data: Extract student details and course eligibility from Excel sheets using the Excel Reader Plugin.
Check Fee Status: Connect to the SQL database and query fee payment status for each student.
Evaluate Academic Scores: Read score data from Excel files and check if the student meets the minimum score requirement for placement eligibility.
Apply Eligibility Filters: Filter students who satisfy all conditions:

- Fees paid completely.
- Eligible for the specific course placement.
- Academic scores meet the set threshold.
- Available for interview scheduling.

Generate Eligible Candidate Report: Compile the filtered student list into a new Excel file for HR review.
Collect Resumes: Fetch resumes of eligible students from the local folder.
Package Resumes: Compress all eligible candidates' resumes into a single ZIP file using scripting.
Send Notification Email: Automatically email the HR team with the Excel report and the zipped resumes attached.
Log Activities: Record the process execution details and any errors for auditing and troubleshooting.

D. Output

At the end of the workflow, the following outputs are generated:
Eligibility Report: An Excel file listing all students eligible for placements.
Resume Archive: A zipped file containing resumes of the shortlisted candidates.
Automated Email: Notification sent to HR containing the report and resume archive.
Execution Logs: Detailed logs capturing each step of the automation, ensuring transparency and traceability.

E. Tools and Technologies Used

The following AutomationEdge features are utilized:
Excel Reader Plugin — To extract data from Excel files.
SQL Query Plugin — To retrieve fee payment informa- tion from the database.
Scripting Plugin — To automate the zipping of resumes.

Fig. 4: Output is a Mail

Email Plugin — To send emails with attachments to the HR team.

RESULTS AND ANALYSIS

Table I summarizes the key performance metrics observed before and after the implementation of the AutomationEdge- based workflows.

TABLE I: Performance Metrics Before and After Automation

Metric	Manual	Automated
Effort per Cycle	10–12 hrs	1–2 hrs
Error Rate	15%	2%
Communication Delay	2 - 3 days	Real-time
Scalability	Low	High

A. Effort Reduction

The automation reduced the manual effort per cycle from approximately 10 to 12 hours down to 1 to 2 hours. This was mainly due to the elimination of repetitive data processing and manual communication tasks, which were efficiently handled by RPA bots.

B. Error Rate Improvement

Manual workflows suffered from a high error rate of nearly 15%, primarily due to human errors in data entry, filtering, and communication. The automated process lowered this rate to below 2%, demonstrating improved accuracy and reliability.

C. Communication Efficiency

Communication delays, which previously ranged between 2 to 3 days due to manual emailing and follow-ups, were re- duced to near real-time notifications. This immediate feedback improves overall operational responsiveness.

D. Scalability Enhancement

Manual processes are limited by human capacity and be- come increasingly inefficient as workload scales. The auto- mated system shows high scalability, capable of handling larger volumes of data and communication without propor- tional increases in resources or time.

Overall, these improvements indicate that the RPA imple- mentation significantly enhances operational efficiency, accu- racy, and scalability within institutional workflows.

CONCLUSION

This study demonstrates the effectiveness of Robotic Pro- cess Automation (RPA) tools, specifically AutomationEdge, in automating repetitive and rule-based institutional work- flows. The automation of employee onboarding and student placement eligibility processes significantly reduced manual effort, decreased error rates, and enabled timely, real-time communication. The use of modular and configurable work- flows ensures easy adaptability and scalability across various institutional functions beyond HR and placement, such as finance, admissions, and regulatory compliance. Consequently, RPA provides a robust foundation for achieving hyperautoma- tion and enhancing operational efficiency in educational and corporate settings. [4] Deloitte, ”Global RPA Survey 2023.” [Online]. Available: https://www2. deloitte.com

FUTURE WORK

The proposed automation framework presents a robust foun- dation for expanding intelligent process automation within institutional domains. Future developments may include the following:

Natural Language Processing (NLP): Incorporating NLP techniques for resume parsing and candidate pro- filing will enhance the efficiency and accuracy of re- cruitment and admissions processes. This would allow systems to extract and understand unstructured data from resumes, enabling faster and more intelligent filtering.

AI and Machine Learning (ML) Models: Predictive models leveraging AI/ML could be trained on historical placement and academic data to forecast student eligi- bility and placement success. Such data-driven insights will support informed decision-making and proactive interventions.

Real-Time Dashboards with Business Intelligence (BI): The integration of BI tools can offer live dashboards for HR and placement cells, providing interactive visu- alizations, status tracking, and performance metrics. This would enable real-time monitoring and data transparency across processes.

These enhancements aim to evolve the current RPA so- lutions into a more adaptive and intelligent system capable of supporting hyperautomation across various institutional functions.

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