



Loan Processing Application Automation Using UiPath RPA

¹K. Deyvanai, ²Mrs. R. Vijayalakshmi

¹B. Sc, (M.C.A), Department of Computer Applications, Krishnasamy College of Engineering and Technology.

²M.C.A.,M.Phil.,(Ph.D.), Associate professor, Department of Computer Applications, Krishnasamy College of Engineering and Technology.

ABSTRACT

This project is entitled as "LOAN PROCESSING APPLICATION AUTOMATION USING RPA UiPath". This abstract provides an overview of a Loan Processing Application that leverages Robotic Process Automation (RPA) technology, specifically UiPath, to streamline and automate the loan application processing workflow. The application automates repetitive and rule-based tasks involved in loan processing, resulting in increased efficiency, reduced errors, and improved customer satisfaction. The Loan Processing Application utilizes UiPath's capabilities to interact with various systems, including data sources, document management systems, and loan origination platforms. The RPA bot performs a series of predefined actions to gather, validate, and process loan application information, minimizing manual intervention and accelerating the loan approval process.

Key Terms: UiPath, RPA, Automation, Robotic Process Automation.

I. Introduction

The "Loan Processing Application Automation using UiPath RPA" project aims to revolutionize the loan processing workflow by leveraging the power of Robotic Process Automation (RPA) through UiPath. The project focuses on automating and streamlining the loan processing activities, improving efficiency, accuracy, and overall productivity. Traditionally, loan processing involves numerous manual tasks, including data entry, document verification, validation, and decision-making. These manual processes are time-consuming, prone to errors, and often result in delays in loan approvals. The introduction of UiPath RPA in loan processing brings automation and intelligence to these processes, transforming the way loans are processed and reducing the burden on human resources. The primary objective of this project is to automate the end-to-end loan processing workflow, from the initial application intake to final approval or rejection.

II. Literature view

- Adewale O Adebayo, Aibangbee Zandra, Lufadeju Oluwatosin & Maradesa Adepeju [1] presents a Creation of Loan Automation Application. A business objective of providing efficient loan process using technology as an enabler in order to give the company a competitive advantage within the industry suggests automation. Although a number of lenders have a certain kind of technology infused into their loan processing system, there are noticeable insufficiencies.
- Mohammed Shijas Thekkethil, Vinod Kumar Shukla, Fatima Beena, Ashok Chopra [2] presents a Robotic Process Automation in Banking and Finance Sector for Loan Processing and Fraud Detection. The world is evolving into a digitally advanced environment. Transformation is a constantly evolving process where Robotic Process Automation or RPA came into the process of renovation. With automation bots, lenders can automate loan processing by collecting customer information, loan approval, loan monitoring, and automatic loan pricing. This can be achieved with the help of rule-based software bots.
- Vedansh Shrivastava [3] presents a Loan Approval Prediction Machine Learning. This is a classification problem in which need to classify whether the loan will be approved or not. classification refers to a predictive modeling problem where a class label is predicted for a given example of input data. A few examples of classification problems are Spam Email detection, Cancer detection, Sentiment Analysis, etc.

III. Proposed Methodology

The process of verifying applicant information, calculating loan amounts, and determining eligibility criteria and other related tasks are automated by RPA using UiPath drag and drop activities. RPA bots can download attached csv file in the email then validate the data and enter them into the UiBank loan application website. Then automate these process using RPA. By automating the loan application process, organizations can save time and resources, allowing employees to focus on other tasks.

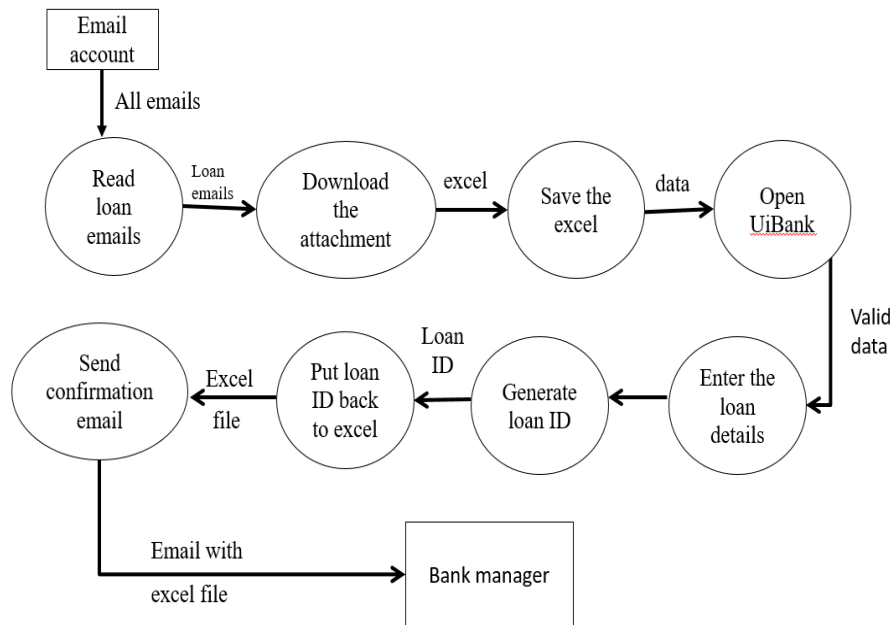


Fig 1: Data flow diagram

Advantages

1. Automation minimizes the chances of human errors that can occur during manual processes.
2. The proposed system ensures consistency and standardization in loan application process.
3. Automating the loan application process saves valuable time and resources for the organization.
4. The proposed system using RPA UiPath can easily scale to handle large volumes of loan application requirements.
5. Automation through RPA UiPath improves data security by reducing the need for manual handling of sensitive information.
6. This improves user satisfaction and reduces the dependency on specialized skills or knowledge to perform loan application process tasks.

IV. Functions

1. Initialization Module

Initialize Variables Use the Assign activity to initialize variables required for the automation process. These variables can include counters, flags, configuration values, or any other data that needs to be initialized before starting the automation.

Load Configuration Files Use activities like Read Range or Read CSV to load configuration files that store application settings and parameters. These files can contain data such as connection strings, file paths, email addresses, or any other configuration values needed for the automation.

Load Libraries and Dependencies If your automation process requires external libraries or dependencies, you can load them in the Initialization Module. This ensures that the necessary resources are available for the automation to run successfully.

2. Get Transaction Data Module

Get Transaction Item Use the Get Transaction Item activity to fetch a transaction from a queue or data source. The queue can be implemented using UiPath Orchestrator, Excel, or any other data storage mechanism.

Validate Transaction Availability Use a Decision activity to validate if a transaction item is available for processing. The decision condition can be based on whether the Get Transaction Item activity returns a valid transaction or if the transaction item is not null.

If a transaction is available, the automation proceeds to retrieve and process the loan application data.

Retrieve Loan Application Data Once a transaction is available, use UiPath activities such as Read Cell, Get Text, or Extract Structured Data to retrieve the necessary loan application data.

Store Transaction Data Store the retrieved loan application data in variables or data structures to be used in subsequent modules and activities. Assign the fetched data to relevant variables or data tables for easy access and processing.

The Get Transaction Data Module retrieves loan applications or tasks from a queue or data source, ensuring that the automation process has a valid transaction to work on. It validates the availability of transactions, retrieves loan application data, and stores it for further processing in subsequent modules. This module forms the foundation for processing loan applications in the Loan Processing Application Automation workflow.

3. Data Processing and Validation Module

Data Validation Checks Perform data validation checks on the retrieved loan application data to ensure its accuracy and integrity. Use activities like If conditions, String Manipulation, or Regex (Regular Expressions) to validate the data against predefined rules or patterns. For example, you can check if the loan amount is within a specific range, validate that the email address follows a valid format, or verify that the phone number consists of the correct number of digits.

Data Cleansing and Formatting Cleanse and format the data to ensure consistency and standardization. Utilize String Manipulation activities to remove unnecessary characters, leading or trailing spaces, or convert the data to a desired format. For instance, you might remove dollar signs from currency values, convert dates to a specific format, or remove extra white spaces from text fields.

Exception Handling Implement exception handling mechanisms to handle errors or discrepancies encountered during the data processing and validation phase. Use Try-Catch activities to catch and handle exceptions.

Data Transformation If required, transform the loan application data into a format suitable for further processing or integration with other systems. Use activities such as Assign, Write Cell, or Add to Collection to transform and store the data in appropriate variables or data structures.

Error Handling and Logging Log any errors, exceptions, or discrepancies encountered during the data processing and validation phase.

Utilize activities like Log Message or Write Line to log relevant information, such as error messages, transaction details, or timestamps.

4. Workflow Automation Module

State Machine or Flowchart Design Design the state machine or flowchart based on the loan processing workflow requirements. Identify the different states or stages involved in the loan processing, such as data acquisition, validation, credit assessment, documentation, or approval.

Define transitions between states based on the logic and conditions to be met for moving from one state to another.

Transaction Processing Loop Use a loop to iterate through the transactions and process each loan application sequentially. The loop continues until all transactions have been processed or a predefined condition is met. Typically, the loop iterates over the Get Transaction Data Module, retrieves a transaction, and proceeds with the subsequent workflow steps.

Implement States and Activities: Define different states in the state machine or flowchart to represent each step of the loan processing workflow. Within each state, include relevant activities to perform specific actions or tasks related to that particular step. Use a combination of UiPath activities, decision-making constructs, and custom logic to automate the actions within each state. For example, you can have states like "Acquire Data," "Validate Data," "Credit Assessment," "Document Processing," "Approval," and so on.

Invoke Modules and Activities Invoke the modules we discussed earlier, such as the Data Processing and Validation Module or the Document Processing and OCR Module, within the appropriate states. Utilize activities like Invoke Workflow File to execute the relevant modules or activities required for each state. This allows the automation to perform the necessary data processing, document extraction, validation, and other tasks in a structured manner.

Decision Making and Transition Conditions Include decision-making activities within each state to determine the next state or step based on predefined conditions or business rules. Use If conditions, Switch activities, or decision tables to evaluate conditions and make decisions. For instance, based on the loan amount, credit score, or employment history, the automation can decide to either approve the loan application or require additional documentation.

5. Exception Handling and Error Logging Module

Try-Catch Activities Use Try-Catch activities to catch and handle exceptions that may occur during the loan processing automation. Place the activities that may cause exceptions within the Try block. If an exception occurs within the Try block, the Catch block captures the exception and executes the specified actions.

Exception Types Identify and handle different types of exceptions that may occur during the loan processing. Common exception types can include system errors, application errors, communication errors, or data-related errors. For example, a system error can be an application crash, a communication error can occur when accessing a web service, or a data-related error can happen when invalid data is encountered.

Logging Error Details Use activities like Log Message, Write Line, or Log File to log relevant error details. Log the error message, exception type, stack trace, timestamp, and any other relevant information. This logging helps in troubleshooting, auditing, and monitoring the loan processing automation.

Error Notifications Send notifications or alerts when critical errors occur during the loan processing. Use activities like Send Email, Generate Report, or invoke a custom notification mechanism. Notifications can be sent to stakeholders or system administrators, informing them about the errors encountered in the automation process.

6. Reporting and Analytics Module

Report Generation Utilize UiPath activities or other reporting tools to generate reports at different stages of the loan processing workflow. Reports can provide summaries, statistics, or detailed information about the processed loan applications. Use Excel, CSV, PDF, or other suitable file formats to create reports that are easily accessible and shareable.

Customized Reports based on the specific requirements of stakeholders and decision-makers. Tailor the reports to display information that is relevant and valuable to different stakeholders, such as management, operations teams, or compliance officers. Include filtering, sorting, or drill-down capabilities in the reports to allow users to explore the data and gain deeper insights.

The Reporting and Analytics Module enables stakeholders to monitor the loan processing workflow's performance, and gain insights from data analysis.

It generates reports, visualizes data, and provides decision support through customized reports and actionable recommendations. This module facilitates data-driven decision-making, enhances process visibility, and supports continuous improvement in the loan processing automation.

V. Conclusion

In conclusion, Loan process application automation using RPA UiPath offers numerous benefits, such as increased efficiency, accuracy, and scalability. By leveraging the power of RPA and utilizing UiPath's automation capabilities, organizations can streamline the Loan process application automation process and improve overall productivity. The use of the RE Framework provides a structured approach, ensuring robustness, error handling, and traceability.

VI. Future work

- Implementing advanced OCR capabilities can enhance the system's ability to extract data accurately from various document formats, including scanned document or handwritten forms. Intelligent OCR can improve the recognition accuracy and handle complex layouts, increasing the automation's efficiency and reducing manual intervention.
- Implement to send each individual will receive the loan process report to their respective email ID with success or fail. If the loan application is successful, then send email with loan ID. If the loan application is fail then send email with reason.

VII. References

1. Creation of Loan Automation Application, Adewale O Adebayo, Aibangbee Zandra, Lufadeju Oluwatosin & Maradesa Adepeju School of Computing and Engineering Sciences, Babcock University, P.M.B.21244 Ikeja, Lagos, Nigeria
2. Robotic Process Automation in Banking and Finance Sector for Loan Processing and Fraud Detection, Mohammed Shijas Thekkethil Bachelor of Information Technology, Amity University Dubai, United Arab Emirates mohammedT2@amitydubai.ae
3. Loan Approval Prediction Machine Learning ,Vedansh Shrivastava ,Published On February 4, 2022
4. Use case for Loan Processing Application in Automation <https://mukeshkala.com/>