**Process Definition Document (AS-IS)**

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| Project Name | Invoice Generation Process Document |
| Department | Revenue Assurance – CSD |
| Date | 09th Jan 2024 |
| Prepared By | Harpinder Singh |
| Stakeholders | Harpinder Singh, Mr. Harikishan, Mr. Mohit Sengar, Mr. Sujoy Roy, Ms. Vandana Seth |

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Description/Change |
| 1.0 | 09-Jan-2024 | Harpinder Singh | Initial Draft |
| 1.1 | 10-Jan-2024 | Harpinder Singh | Incorporated automation specifics |

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# **1. Executive S****ummary**

This document details the **Invoice Generation Process** within the Revenue Assurance (RA) division of CSD Department. Currently, the Mr. Harikishan gets the ASCs IW Defective data and then prepares the Invoice for different SCs according to different logics, which is **time-consuming and prone to errors**. The aim of this project is to automate the invoice generation according to the data available in the Raw Data file. This automation will **reduce manual effort, minimize errors, and increase overall productivity**.

# **2. Objectives**

* **Eliminate manual generation of invoices** to improve efficiency.
* **Ensure data accuracy** by minimizing human errors.
* **Speed up** the Invoice Generation and reporting time.

# **3. Scope**

* **In Scope**:
  + Loading raw data and templates dynamically via user interface.
  + Automated processing and invoice generation using predefined logic.
  + Tax calculation and address validation (CGST/IGST).
  + Logging and error handling mechanisms.
* **Out of Scope**:
  + Any advanced data validation or integration with third-party systems.
  + Handling of scanned PDFs with poor text recognition (if not specified otherwise).

# **4. Process Information**

**Division:** Revenue Assurance  
**Department:** CSD  
**Department Head:** Mr. Sujoy Roy  
**Process:** Invoice Generation Process  
**Description:**  
The manual process involves extracting data, applying filters, and preparing invoices based on complex rules. This is a weekly or alternate-day task performed by Mr. Harikishan.

**Process Discussed on:** 08th Jan 2024

# **5. Current Process**

1. Raw data is extracted from the portal and saved in a folder.
2. Users manually filter and organize data.
3. Invoice fields (e.g., SC Name, Address, GST, CGST, Refund Amount) are manually populated.
4. Generated invoices are saved in a predefined folder.

**Challenges:**

* High likelihood of human error.
* Resource-intensive and time-consuming.
* No centralized logging or monitoring system.

# **6. Process Cost Calculation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Project Name | Resource Name | Resource Role | Resource Monthly Salary | Monthly Effort (hrs) | Total Cost | Remarks |
| PO Extraction Process Automation | Harikishan | - | [XX, XXX] | [XX] | [XX, XXX] |  |
|  |  |  |  |  |  |  |

# **7. Basic Setups for Automation**

* **Tool Requirements**: Python (with libraries: pandas, openpyxl, num2words, PySide6).
* **Folder Structure**:
  + **Input File:** Raw data Excel file.
  + **Template File:** Preformatted invoice template.
  + **Output Folder:** Stores generated invoices.
  + **Log File:** Tracks errors and process logs.
* **Invoice Tracker Sheet**: A properly formatted Excel workbook with info for generated invoices.

***Environment Changes:*** *Not required.*

# **8.** **Proposed Process (TO-BE RPA Automation)**

1. **Configuration Setup**:
   1. Users select raw data and template files via a dialog box.
   2. Validate file paths before proceeding.
2. **Invoice Generation**:
   1. Load raw data into a panda Data Frame.
   2. Group data by SC Name and process each group:
      1. Populate SC details (e.g., Name, Address, GST).
      2. Calculate CGST/IGST based on location.
      3. Compute and populate the grand total.
      4. Convert total amount to words using num2words.
   3. Save the completed invoice in the output folder.
3. **Log Generation:**
   1. Log actions and errors during invoice generation.
   2. Display logs in a dedicated viewer for user monitoring.
4. **Tax and Address Processing:**
   1. Automate CGST/IGST identification based on SC Address:
      1. If "UP" or "Uttar Pradesh" is in the address, calculate CGST.
      2. Otherwise, calculate IGST.
   2. Populate calculated values in the appropriate cells.
5. **File Management:**
   1. Save invoices with consistent naming conventions (e.g., Invoice\_SCName.xlsx).
   2. Automatically create and maintain the output folder.

# **9. Deployment Plan**

1. **Development**: Build and test the Python script with a sample dataset.
2. **UAT (User Acceptance Testing)**: Provide the RA team with a test version for feedback and validation.
3. **Production Rollout**: Deploy the final version to the live environment.
4. **Training & Documentation**: Conduct brief training sessions for RA team on running and troubleshooting the app. Provide a user manual/release note for reference.
5. **Maintenance**: Assign a resource responsible for ongoing monitoring, error handling, and updates to the bot as needed.

# **10. Risk & Mitigation**

|  |  |  |  |
| --- | --- | --- | --- |
| Risk | Impact | Probability | Mitigation/Plan |
| App crashes during processing | Process interruption | Low | Implement robust error handling and daily monitoring |
| Incorrect folder path or missing files | Process Delays | High | Validate folder paths |

# **11. Conclusion & Recommendations**

The proposed Python-based RPA solution for invoice generation addresses the inefficiencies of the current manual process. With streamlined data handling and real-time monitoring, the RA team can achieve significant productivity gains and error reduction. Future enhancements could include advanced data validation, API integrations, and real-time dashboards.

**Document Sign-Off**

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| Role | Name | Signature | Date |
| Prepared By | Harpinder Singh |  | 09th Jan 2024 |
| Reviewed By | Mr. Harikishan |  | 09th Jan 2024 |
| Approved By | Ms. Vandana Seth (CEO) |  | - |