

DEVELOPMENT OF AUTOMATED SYSTEM FOR PIL FINANCIAL PROCESSES

Chen Pinzhang | Hoong An Sheng, Samuel | Loo Zi Wei | Pan Zechang

Department Supervisors: Professor Chen Nan

Industrial Supervisors: Ms Chua Lay Hoon | Ms Lily Saw



PROBLEM OVERVIEW

Introduction

Due to the intense competition in the shipping industry, PIL seeks to minimise waste and bring up productivity level. One way to do so is via automation of processes.



Problem Description



Record Keeping

Manual classification of bank transactions
→ Can go up to thousands of bank transactions daily



Bank Reconciliation

Manual inspection and matching to reconcile bank statements with ledger



Time Consuming



Human Error



ROU Assets

Master Excel file to store data
→ Created **more than 150 columns** for more than 20 excel sheets in **less than 1 year**



Loan Repayment

Manual calculation for loan repayment and checking of payment dues



Unscalable



Prone to data loss

Key Objectives

Operational objective

To provide a comprehensive solution that addresses the issues of **inefficiencies** and **inaccuracies** within the financial processes.

Functional Requirements

1. Faster Processing time
2. Improved Accuracy Rate
3. Scalable Processes
4. Interoperability of Process

SOLUTIONS DEVELOPMENT

Problem Identification

Requirements Definition

Concept Exploration

Solution Development

Testing and Review

Record Keeping

Automation of:

- Pre-processing
- Uploading
- Classifying

Bank Reconciliation

Automation of:

- Cash Flow Report
- Daily Cheque Reconciliation
- Monthly Bank Reconciliation

Right-of-Use

Automation of:

- Lease Liability Calculations
- CODA Entries Generation

Loan Repayment

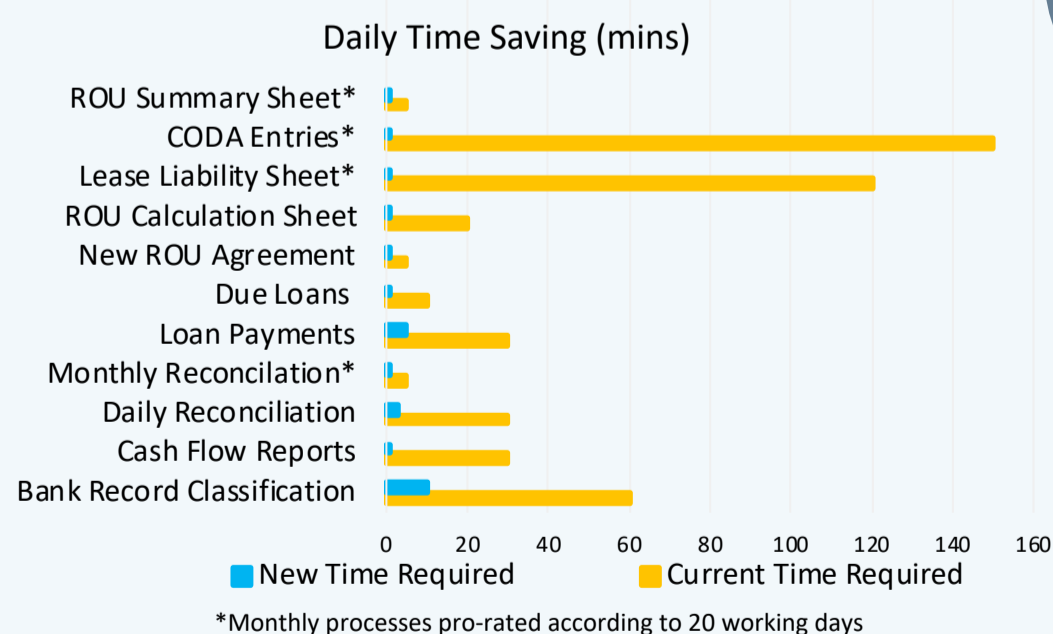
Automation of:

- Payment Calculation
- Reminders for Due Loans

*Tables are showing test values

SYSTEM ACHIEVEMENT

Benefits



100 Hours

saved monthly across 4 processes

- More Efficient
- Improved Accuracy
- Scalable
- Interoperable

Limitations

- System Error Debugging
IT Department required to manage errors and database
- Transitioning to New System
Finance Department requires time to get used to the new system

FUTURE IMPROVEMENTS

Future Direction

Advanced Automation
Web scraping within our system to automate searching of online data

Further Expansion
Include and automate other financial processes for other departments of PIL

Integration with existing ledger system
Access existing database directly and minimize upload of data

Data Visualization
Apply data analytics using visualization tools on system dashboard

UI/UX Design Improvement
Applying enhanced design aesthetics features

Potential Improvements

Key Skillsets

- Needs Analysis
To identify the root cause of the problems
- Systems Design
To develop a system that addresses every problem
- Human Factor Engineering
To create intuitive and user friendly interface for the system
- Software Engineering
Python (Flask) application development
- Database Design
Using MySQL to store data efficiently
- Frontend Developer
Use of HTML CSS scripts to build UI/UX