

IE3100M SYSTEMS DESIGN PROJECT AY18/19 STREAMLINING WORK PROCESSES & MANAGING FOREX EXCHANGE

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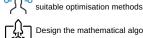
EXCHANGE RATE RISK MANAGEMENT

Every remittance and prefunding goes through PIL, resulting in excessive number of transactions and thus subjecting PIL to both exchange rate losses and unnecessary bank charges. Therefore, our objective is to build a forex model to identify which remittance currencies should be converted to the required prefunding currencies to maximise the return of US Dollars.

Methodology



Understand PIL transaction flow with agents and define the problem Conceptualise the idea and identify



Design the mathematical algorithm using Excel and Python solver



Extract key information with data cleaning and source for forex rate



Test and evaluate the new model **↑** against the old process

Product Implementation





US\$16,679.49 US\$867,333.43 Projected savings for the period from August 2017 - August 2018

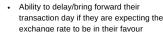
Future Directions Includes

predictive analysis of future exchange rate

Possible Suggestions:

- Holt-Winters Model with Particle Swarm Optimisation
- Econometric model using a list of possible factors such as GDP, income growth rate etc.

Potential Benefits



Projected to increase amount of savings due to possession of stronger currency

LOAN REPAYMENT **PROCESS**

Problem PIL manually updates the loan instructions, resulting in outdated repayment schedules or risk of missed/erroneous payments. Hence, our aim is to automate the whole process to allow for real time visibility to verify invoices and better plan for future cash flow.

Methodology



Facility Loan process



Gathering user requirements for the software



Design and implement features incrementally



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information used for financial judgement. Thus, our goal is to perform data analysis to identify patterns or trends to allow for better understanding of the timeliness problem.

Methodology



Understanding the procedures for recording invoices



INVOICE SUBMISSION

TIMELINESS

Problem The agents often take more than 30 days to report their

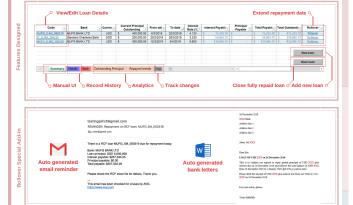
invoices into the Liner Management System. This affects the accounting

Perform data analysis on past records of invoices to



Build two dashboards using Tableau for general overview trends and specific agent ranking

Product Implementation



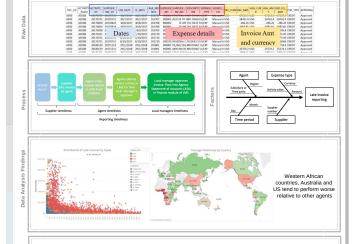
Future Directions To digitalise PIL entire loan portfolio and also to create a database to hold all the information together.



Potential Benefits:

- Prevent human error for all the loans
- Increase the team's productivity

Product Implementation



Key Skillsets



Management



Programming



Process Improvement







Operation Research



Overview Trends Dashboard 2 Agents Ranking Dashboard

This shows the overall performance trends of all agents on a monthly basis. It provides PIL the big picture of the promptness of invoice submission

This compares the timeliness performance of invoice submission between individual agents on a monthly basis. It allows PIL to empower its agent to perform better

Future Directions $_{\text{To have data collection of more}}$

parameters and to forecast the expenses of individual agents. Potential Benefits:



