Improving Over Indebtedness in Singapore

Borrowers Exploitation by Unlicensed Moneylender

Executive Summary

Issue

- COVID-19 has put a strain on financial health and in 2020, 989 unlicensed moneylending cases and 3,344 harassment cases recorded

Context

- Stringent assessment and relatively slow loan approval process by banks and licensed moneylenders deter potential borrowers

Pain point

- Credit analysts assess risk by thoroughly analysing a borrower’s capability to repay a loan that is tedious and time-consuming

Solution

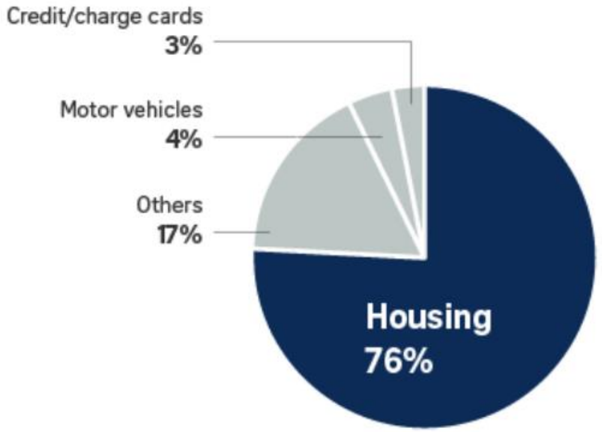
- Include automated risk rating based on probability of default using borrowers’ personal and loan historical information

Objective

- Differentiate between loan applications that are ready for decision and those that require more documentation thus reducing decision time and increase approval rate

Source: Kaggle and Department of Statistics, Singapore |
Prepared by: Alvin Lie

Families could face difficulty with home loan payments



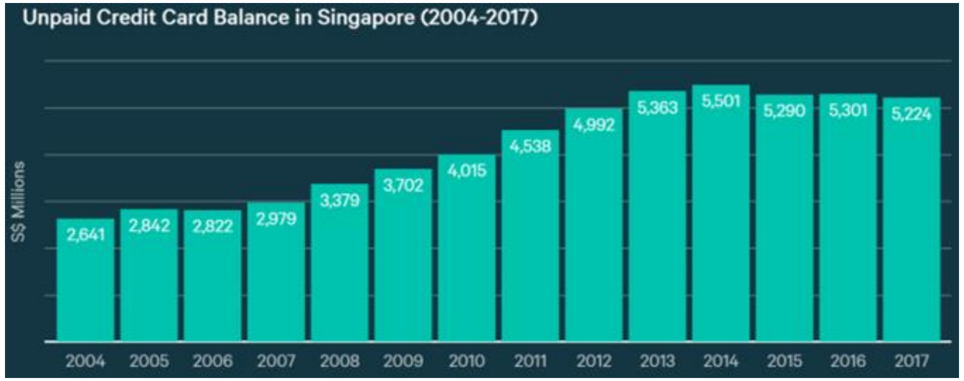
Breakdown of Outstanding Household Debt

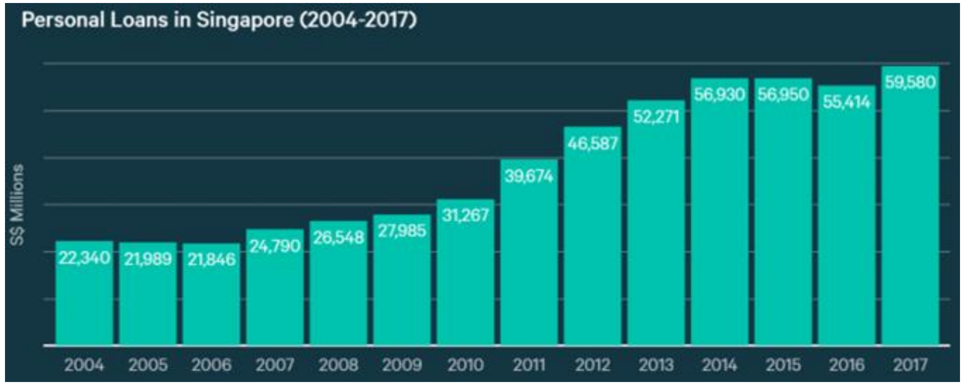
Credit card charge-off rate rose from 5.9% to 9.1% from last year

- COVID-19 has put a strain on financial health, impacting families' ability to pay their housing loans
- Credit card charge-off rate measures bad debt written off during the year against the average rollover balance, and is a leading indicator for the credit quality of housing loans
- A borrower is likely to miss payments for their credit card bills in the initial period of financial distress

Potential business lost to unlicensed moneylenders

- Stringent assessment and relatively slow loan approval process by banks and licensed moneylenders deter potential borrowers
- Unlicensed moneylenders offer quick approval and hassle-free applications
- Other than house loan payments, borrowers may borrow to fund educational needs, a medical emergency or to tide over short-term cash flow challenges for a small business

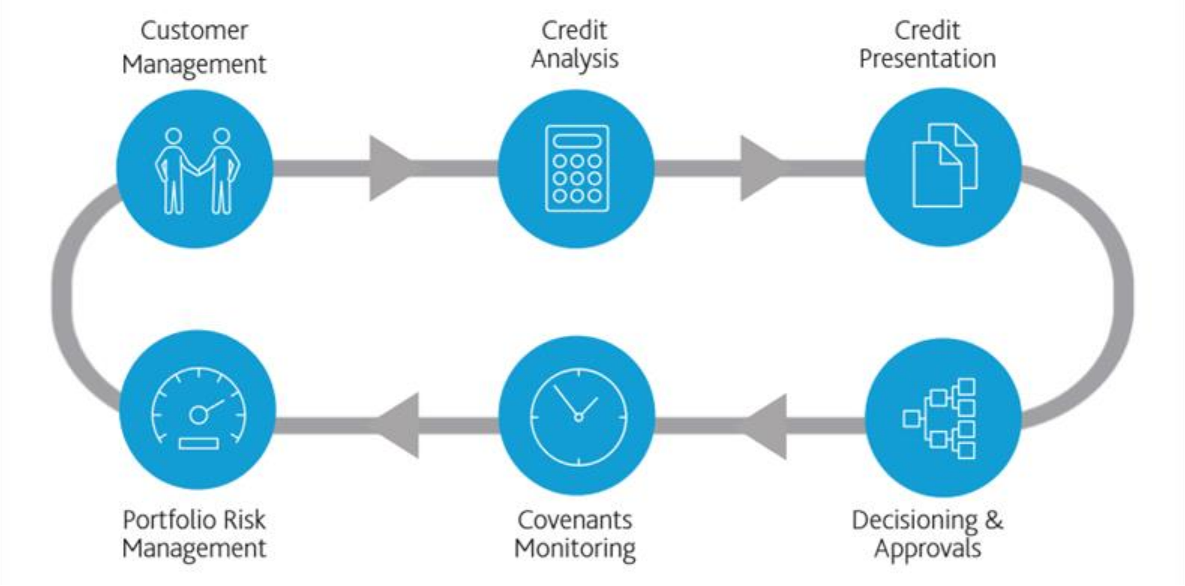




Credit card debt and personal loans have been the fastest growing categories of consumer debt

Loan process automation for quick approval

- Credit analysis can include automated risk rating based on probability of default and give more time back to the analyst to perform their risk assessment work
- Automation of the lending process increase efficiency and reduce decision time
- Differentiate between loan applications that are ready for decision and those that require more documentation



Value for all stakeholders

Society	• Improve financial well-being of those in need • Reduce societal issues caused by unlicensed moneylender
Bank/Licensed moneylender	• Increase productivity of credit analyst • Competitive approval process
Borrower	• Reduced waiting time of loan process • Better alternative to unlicensed moneylender

The dataset will be used to predict credit default risk

- 32,581 borrowers' personal and loan information as 12 indicators

	Age	Income	Loan Amount	Interest Rate	Loan Grade	Credit History	Default History	Loan Status
Description	Age of the borrower in years	Annual income in dollars	Amount of loan in dollars	Interest rate of loan in percentage	A function of variables to grade the loan from 'A' to 'G'	The number of years since the loan was taken	'Y' for defaulted before or 'N' for never defaulted	'0' for non-default or '1' for default

	Home Ownership	Employment Length	Loan Intent	Loan-Income Ratio
Description	Current status of home ownership: 'own', 'rent' or 'mortgage'	Number of years in employment	Intended use for loan: 'education', 'medical', 'venture', 'home improvement', 'personal' or 'debt consolidation'	Ratio of loan to annual income

Interpretation of the indicators

- Age of borrower: a productive age range is to be identified as it affects their income
- Income: a higher income increases the probability of repayment of the loan
- Loan amount: the loan amount affects the interest rate charged to the borrower
- Interest rate: higher interest rate indicates higher risk of the loan
- Loan grade: grade is determined by a number of factors such as loan amount and interest rate
- Credit history: higher number of years since loan was taken indicates better repayment history
- Default history: borrower that has defaulted before may increase the probability of credit default
- Loan status: current status of their loan will be used to predict the probability of default for future loans
- Home ownership: whether they own, rent or mortgage their home shows their financial liability
- Employment length: length of employment may indicate the stability of their income
- Loan intent: the intention of their loan may affect future income and determines the loan’s risk
- Loan-income ratio: higher ratio indicates over-borrowing and increases credit default risk

Success is defined by 2 measurable factors

Short-term key success factor

Increase the loan approval rate for credit analysts and have more quality borrowers

Long-term key success factor

Decrease the number of credit default and increase profitability for the lender