FIT5145: ASSIGNMENT 1

Predictive Modelling for Loan Approval: A Data-Driven Approach

BHAVNA BALAKRISHNAN
33954437

INTRODUCTION

In the world of the Financial Services sector, it is imperative to make an accurate assessment of one's credit risk and therefore loan eligibility. Leveraging Data Science techniques would make this an easy and effective process give us a more insightful understanding of the same. It is crucial to ensure that the determination of loan eligibility is done in a meaningful and fair manner that is in compliance with risk management policies that would both satisfy a customer and be profitable to the business. Loan eligibility is an important topic as it is a stepping stone for people to get assistance, they would require to achieve their financial goals and requirements such while also being sustainable for the institutions handing them out.

PROJECT DESCRIPTION

The aim of this project is to develop a predictive model to assess the eligibility of a loan applicant using certain criteria like applicants' income, employment status, age etc. The project would begin by giving us insights about customer demographics and information followed by an exploratory data analysis to identify any trends or patterns present in the dataset. Post this, tools like regression may be used to determine the eligibility to determine a predictive model while also eliminating any bias. A Data Analyst would be responsible for data collection, cleaning and preparation and would perform exploratory analysis on the dataset. Following this, a Data Scientist would start designing and implementing the predictive modelling framework by use of models like logistical regression to determine loan eligibility. Another important role would be that of a Data Engineer who will assist the Data Analyst in the pre-processing and cleaning of data and then optimize the algorithm once it starts performing while ensuring that it works reliably and is scalable meeting the project requirements.

OBJECTIVE:

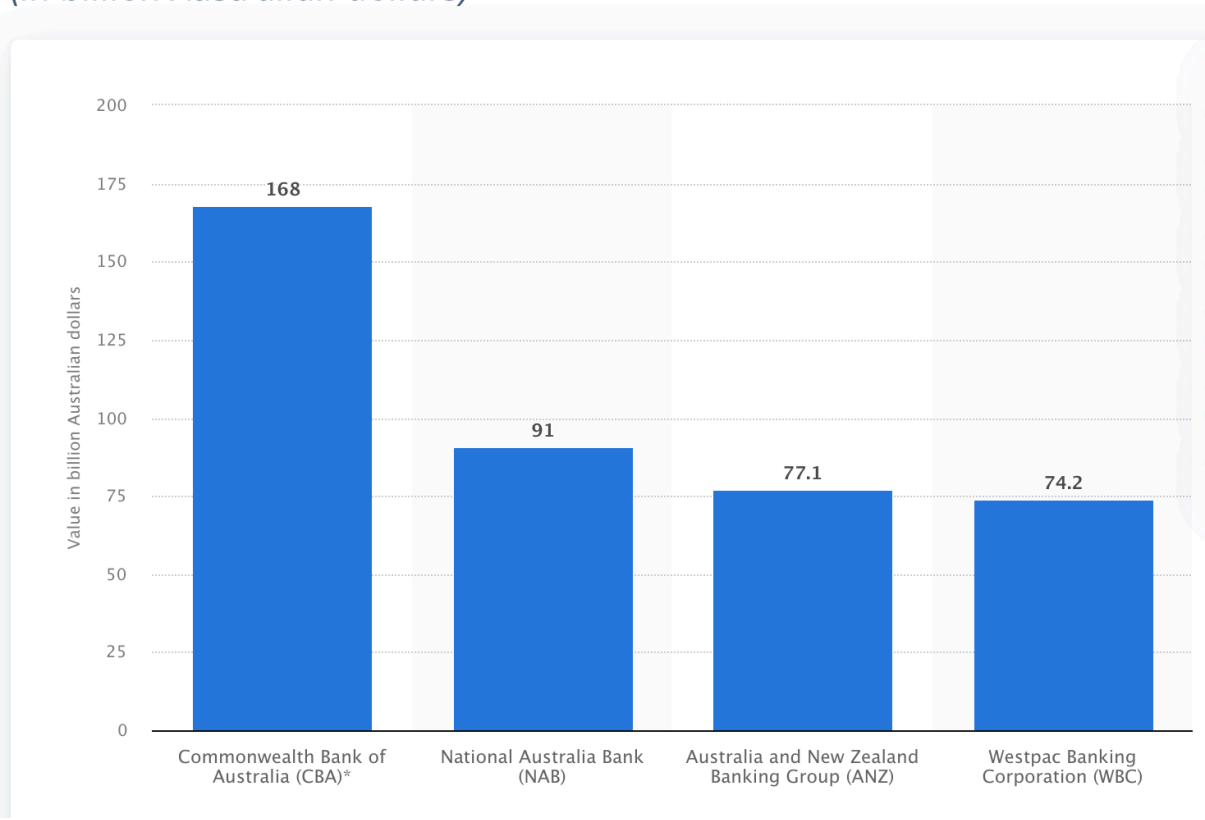
- To create a data driven loan eligibility assessment tool.
- To make accurate loan eligibility assessments by automating loan eligibility assessment would make the process more streamlined and efficient while cutting back manual time and errors.
- To mitigate potential credit risks by identifying possible defaulters and determine the credit worthiness of an individual.

BUSINESS MODEL:

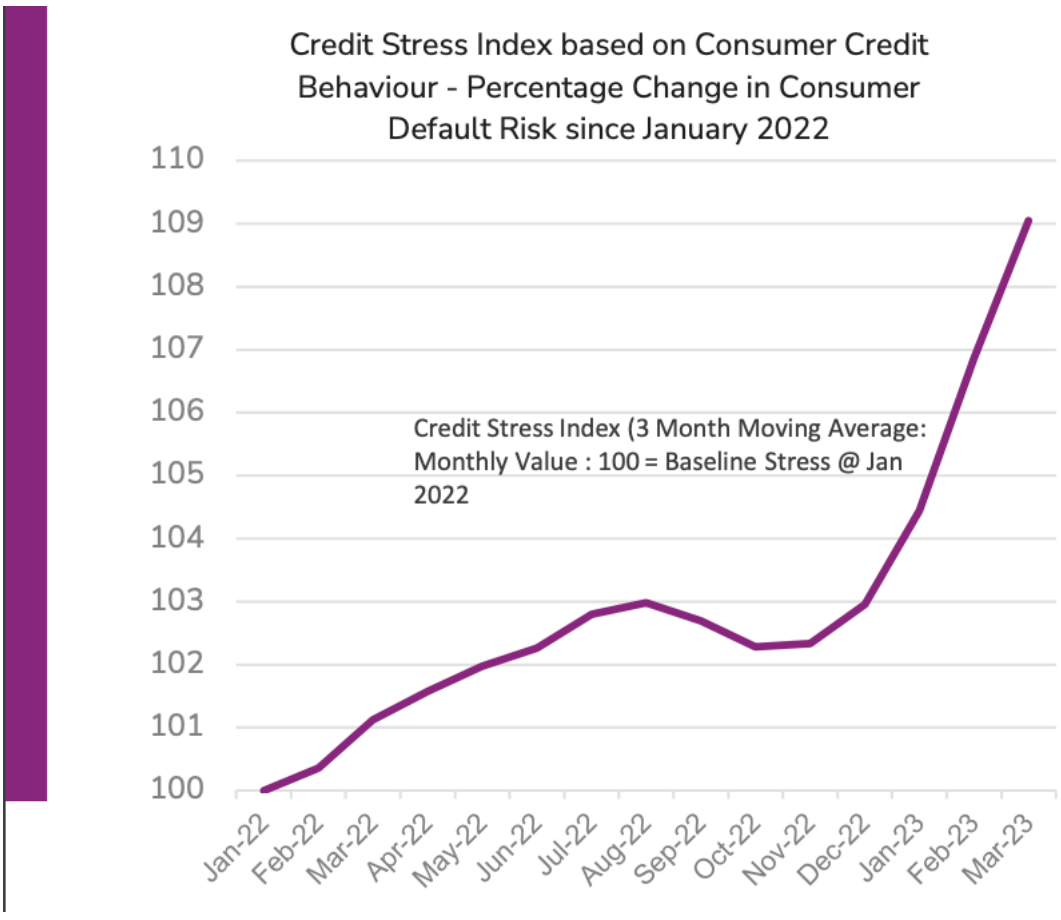
This project would be most useful in the Financial Services sector and money lending institutions to deliver timely and accurate results of an applicant's loan eligibility without any bias. It will also cut down on manual processing time and errors while streamlining the process.

Below we see the market capitalisation of Australia's biggest banks that would benefit from using such a model-

(in billion Australian dollars)



We can also see below graph talking about the rise of credit risk –
The rise in number of defaulters and increasing credit risk makes it crucial that banks and other financial service providers implement a better loan eligibility system to ensure the credit worthiness of a loan applicant.



BENEFITS:

- Business Benefit:
  - Fast and accurate processing.
  - Regulatory Compliance
  - Risk Mitigation by identifying potential defaulters.
  - Customer demographics to understand customers better.

- Customer Benefit:
  - Timely responses
  - Unbiased results.

CHALLENGES:

- Data Quality: Collected data should be accurate, complete and available to build a predictive model.
  - Datasets for the same found on Kaggle
  - Data must be thoroughly cleaned.
- Ethical Considerations: Issues like confidentiality and protection of customer data may come up.
- Scalability and Reliability of the Model must be regularly tested.
- Programming knowledge and excel expertise required.

CONCLUSION:

The financial services industry is the pillar stone of society in order to help achieve financial stability and goals. Therefore, the development of a system that would make the assessment of one's loan eligibility is pivotal in terms of mitigating risks of possible defaulters to finding that balance between speedy and accurate results on the business end and customer satisfaction is revolutionary. To add to this, the model must also be in compliance with regulations required for lending. A Data-driven approach to this subject could be transformative to the industry as well as cost effective on the side of human errors and pace.

REFERENCES

(n.d.). *Market capitalization of the big four banks in Australia as at September 30, 2023*. Statista. https://www.statista.com/statistics/1062128/australia-market-capitalization-of-major-banks/

Landgraf, M. (2023). Australia's Credit Stress Barometer. https://www.illion.com.au/wp-content/uploads/2023/06/Barometer-Credit-Stress-Barometer-June-2023.pdf

FloRA. (24). https://www.floraengine.org/moodle/my/courses.php.