ANZ Gig Incubation Program 2021

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Q1. Which customers should Bank X provide their service to and why? Provide the criteria, explanation or approach to obtain the list of customers.

List of top 5 customers Bank X should provide their services to (With 1 being the high preference and 5 being the lowest):

1. Department of Defence (Has max mean contract value, maximum number of contracts)
2. Australian Office of Financial Management (Has 2nd best max mean contract value, average length of contract is less than 1 year while max length is only 1 year)
3. Department of Health (3rd highest max contract value with average length of contract less than 1 and max as 1)
4. Department of Home Affairs (Has one of the best mean and high contract value and given the average contract time is less than 1 and max is 1 year)
5. Services Australia (Has high number of contracts, average completing time for an contract is less than 1 year and max being 2 years)

Other customs are:

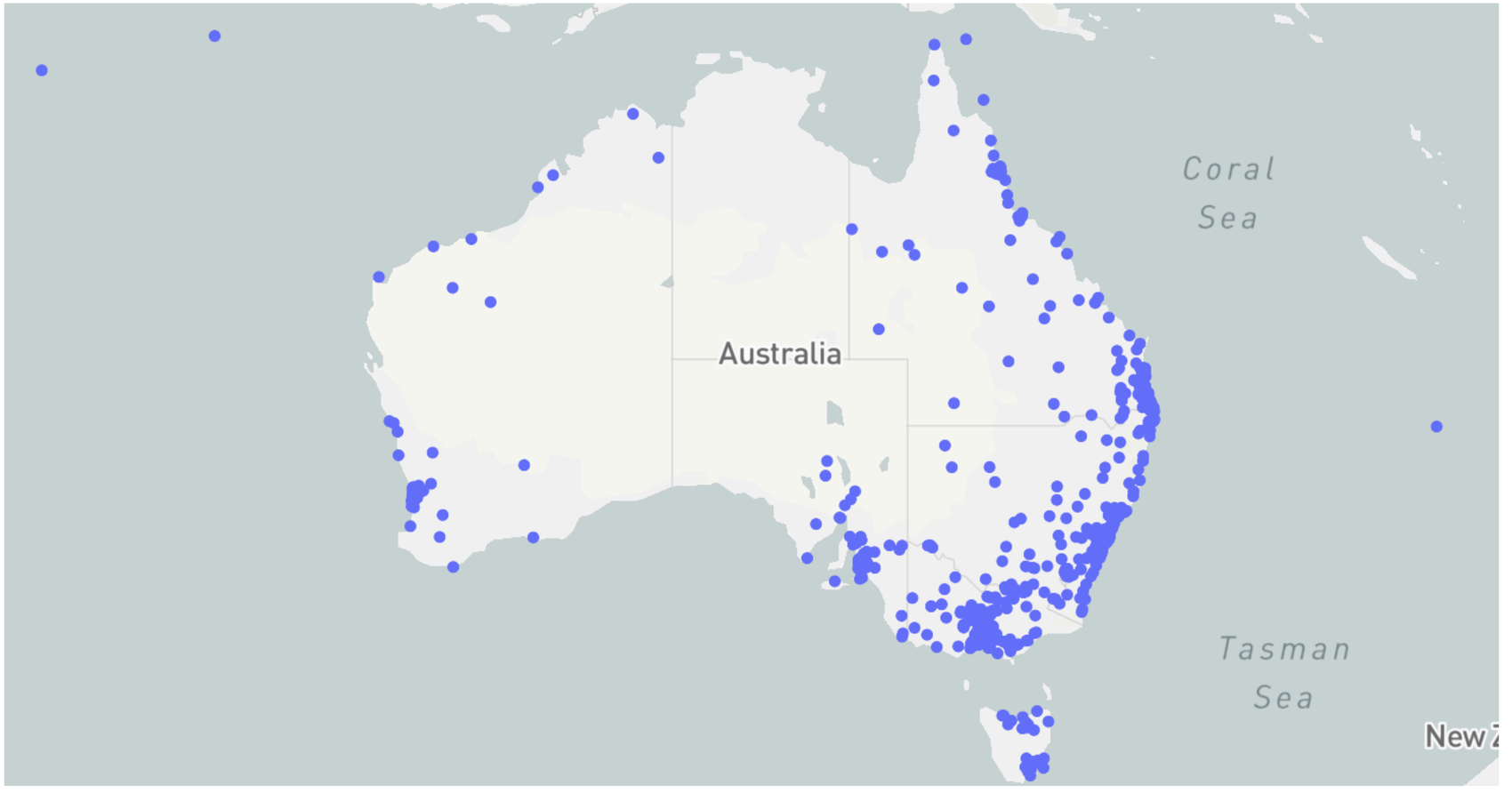
1. Australian Taxation Office
2. Bureau of Meteorology
3. Department of the Prime Minister and Cabinet
4. Australian Criminal Intelligence Commission
5. Australian Federal Police
6. IP Australia
7. Department of Infrastructure, Transport, Regional Development and Communications
8. Australian Electoral Commission
9. Department of Industry, Science, Energy and Resources
10. Australian Bureau of Statistics
11. Department of Foreign Affairs and Trade
12. Australian Securities and Investments Commission
13. Department of Veterans' Affairs
14. Office of Parliamentary Counsel
15. Department of the Treasury
16. Future Fund Management Agency
17. Department of Agriculture, Water and the Environment
18. Department of Education, Skills and Employment
19. Australian Skills Quality Authority
20. Department of Social Services
21. Australian Signals Directorate
22. Australian Communications and Media Authority
23. Clean Energy Regulator
24. Australian Prudential Regulation Authority
25. Australian Financial Security Authority
26. Department of Parliamentary Services

For selecting top customer following steps were followed

1. Data was scrapped from online sources for different banks in Australia.
2. Supplier name was matched based on the different banks, credit organisations and other international banks in Australia.
3. Data was grouped based on the different customer and filtered on banks.
4. Aggregation was performed on the value of the contract and time period for each contract and following descriptive stats were found:
    - Mean
    - Median
    - Min
    - Max
    - Count
5. Customers were removed that has less than 2 contracts in the data.
6. The stats were used to sort the grouped data based on mean value of contract value, max value of contract value and time period to complete contracts by different customers.

Q2. To meet with agency/supplier representatives regularly, where should Bank X set up their office(s) to serve them better?

a. Provide visualisation to illustrate the choices of locations.



b. The rent in capital cities is generally high. Consider where the alternative locations should be.

1. Dataset will be taken and list of capital cities will be used and the post code will be extracted and merged with the nearby postcode.
2. A distance metric will be taken out and the average rent/property cost of each suburb will be used and sorted and grouped based on the distance between the main location and average rent.
3. Based on the following grouped data best location will be suggested.

Q3. Bank X is planning to use machine learning to drive decision-making. Provide a machine learning use case for this dataset with the following details.

Problem statement:

1. Based on the date time data predict the next possible value project that can be published by a customer, this can help in identifying potential future customer.
2. We can predict which customer will publish a high value contract and capture that customer beforehand based on their time series pattern data.

Proposed solution:

1. Use time series forecasting method of machine learning.
2. Group the data based on each customer as listed in slide Q1.
3. Take the column named ‘Publish Date’.

Machine learning algorithm:

1. Divide the data based on grouped data from slide 1 Q1, and get the grouped data for ‘Publish Date’, which is the publish date for each contract.
2. Use the grouped data from each customer and partition the data into trying and test dataset.
3. Feed the model with the training data
4. Use that data to train different time series model like:
    - LSTM
    - Autoregression
    - Moving Average
    - Autoregressive Integrated Moving Average, etc
5. Compare different model’s accuracy based on different hyper parameter tuned values.
6. Use the best model with high accuracy, f1 score, and other metrics.

Pros:

1. It can work great for customers like ‘Department of Defence’, ‘Services Australia’, ‘Australian Office of Financial Management’, etc.
2. It can lead to high profit in 1 year spam.
3. Ability to track fashion of different customers.
4. Different customers will have different model, hence will be customer centric.
5. As a result will have high level of sensitivity against changes.

Cons:

1. Will work with customers that have high level of contracts in the past.
2. Unable to identify new customers.
3. Will not work for customers with less than 5 contracts in the past.