Background pattern

Description automatically generatedData Science Use Case: Mortgage Holders

Data Science in Business

(Financial Institution)

*This 2-part use case counts toward 15% of your grade*

**Reminder:**

The use cases you are going to work on throughout the course are real-life data science projects. They are real business questions that we are trying to solve using data science techniques. However, the optimization of these techniques is not the focus of the course. In other words – you do not need to spend time optimizing the performance of those techniques or use a fancy algorithm: you will not be graded on this. What you will be graded on is:

* How well you understood the business context and the business question
* How well you use that understanding and your data science toolkit to solve the business question
* How well you translated the technical results in insights and recommendations for the business
* How well you communicate the results to business stakeholders (me)

**Mortgage Holders use case: The Business Question**

You work as a data scientist in the Analytics department of a medium-size bank. You are approached by the Manager of the Mortgage team with the following question:

*“The next two years are big years for us as we have a lot of customers that are coming up to their mortgage renewal date (over $5B in mortgage books is due to renew in the next 24 months). Renewal is a critical time where customers shop around and might take their mortgage somewhere else. We want to proactively reach-out to mortgage holders in order to try to convince them to stay with us for another term, and potentially entice them with offers.*

*However, we cannot reach-out to all our mortgage holders. Can you help us determine who we should reach-out to?”*

Mortgages are the biggest revenue generator for the bank, so it is an important project. Your Analyst colleague gave you all the data the bank has about those mortgage holders that are renewing in the next 24 months. You have limited understanding of the mortgage business, but the business stakeholder (Mortgage Team Manager) wants to work with you and support you with his mortgage expertise.

**Mortgage Holders use case: The steps**

Before moving on to each next steps, please check with me to validate that you are going in the right direction.

Part 1:

* Think, understand and plan: how are you going to answer the question?
* Explore, transform, define
* Apply technique, understand results

Part 2:

* Incorporate new data in your analysis
* Create recommendations for the business
* Prepare a 7-min presentation

**Data Dictionary**

ID: Unique identifier

Beacon\_Score: Credit Score. <640 is low (your bank doesn’t lend to these customers as their credit risk is too high)

Mortgage\_Balance: Balance of the mortgage product.

Services: # of Services the customer has with the bank

Avg\_Monthly\_Transactions: Average # of monthly transactions over the last 12 months

Has\_Payroll, Has\_Investment, Has\_Visa, Has\_Deposit: flag indicating having the service or not

VISA\_balance: balance carried on the VISA card

Not\_Mortgage\_Balance: Balance of assets and liabilities outside of the mortgage product. E.g. a customer has $500k mortgage, $55k in savings and $20k in loans (-$20k), not\_mortgage\_balance=$75k.

Income: income captured by front-line staff at account opening

Age

Gender

Sector: indicate if the customer is also staff at the Bank

Tenure\_In\_Months: length in months since they joined the Bank

City

TermInMonths: Mortgage Term, in months

TermToMaturity: Months to mortgage term maturity (renewal)

NumberOfParties: numbers of signers on the mortgage product

InterestRate: mortgage product interest rate

Type: Open or Fixed term (OpenT or FixedT), Fixed or Variable rate (FixedR or VariableR)

not mortgage lending: Balance of lending outside of mortgage (e.g. above=$20k)

deposit: deposit balance (e.g. above = $55k)

**Deliverables:**

* Presentation material (ppt, pdf, prezi, video, gif…) to be uploaded to Canvas (or Slack) before the start of the session where it will be presented. Group number should appear in the file name.
* Presentation: 7min (Max) + 3min questions

**Group work:**

* In the appendix, briefly list the contributions of each team member
* If you have any concerns about someone not contributing fairly to the group effort – please let me know before the presentation

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| Grading elements | Use Cases | | |
|  | Points | | Item |
|  | 10 | Understanding of the business problem | |
|  | 10 | Identify correct methodology to use | |
|  | 10 | Understanding of data logic (temporality, relevant fields...) | |
|  | 10 | Transform data accordingly | |
|  |  |  | |
|  |  |  | |
|  | 15 | Structure and quality of presented material | |
|  | 15 | Delivery of presentation (clarity, flow, pace...) | |
|  | 10 | Translation of results into business insights | |
|  | 10 | Relevant business recommendations | |
|  | 10 | Right level of details for the audience | |