COMMERCIAL BANKING, CORP

REQUEST FOR PROPOSAL
RFP #: CS – S1.H1

TITLE: RETAIL CREDIT SCORING
CLOSING DATE AND TIME: JANUARY 29. 2024 @ 5:00 PM

Retail Credit Scoring: CS – S1.H1

Background and Purpose

By responding to this Request for Proposal (RFP), the Proposer agrees that s/he has read and understood all documents within this RFP package.

Submission Details

Responders to this RFP should supply:
- A business report up to 5 pages, including any supporting plots and tables.
- The code used if using R or Python.

The report should address **all points described in the "Objective" section** below.

The report should be returned in the following way:
- Electronic – Moodle submission on AA503 website

Objective

The Commercial Banking Corporation (hereafter the "Bank"), acting by and through its department of *Revolving Lines of Credit* is seeking proposals for banking services. The scope of services includes the following:
- Creation of a scorecard, to be used for evaluating all retail credit applications (credit facilities, revolving lines of credit, etc.)
- Creation of a distribution to associate score buckets (preferably deciles) with default rate.
- Regulatory compliance (FDIC) requires the usage of reject inference. The reject inference technique is on the discretion of the Responder but it should be clearly stated in the report.
- The Bank's analysts suggest a training / validation mix of 70% / 30%; the Bank is open to other proposals as long as they are clearly stated and supported.
- General guidelines for final cutoff points: Respondents to this RFP can define either:
  - Single cutoff points (e.g. Reject if Score $\leq$ 400; Accept if Score $\geq$ 401) or
  - Cutoff ranges (e.g. Reject if Score $\leq$ 400; Accept if Score $\geq$ 450; Further evaluation for scores within 401 to 449)
- Cutoff points should be identified with the purpose of:
  - Maintaining the **existing acceptance rate (75%)** while minimizing event (default) rates and/or
  - Maintaining the **current event rate (3.23%)** while maximizing the acceptance rate
  - Maximizing the profitability of the department, considering the following:
    - Expected revenue of accepted good customers: $2,000
    - Expected cost of accepted bad customers: $52,000
- The Bank assigns a score of 500 to applicants with odds-ratio 20:1.
- Doubling the odds is associated with a change of 50 points in the scorecard.

Data Provided

The following two sets of data are provided for the proposal:

- The data set **ACCEPTED_CUSTOMERS** contains 3,000 observations and 26 variables. The sample is balanced, consisting of 1,500 "good" and 1,500 "bad" accepted applicants. "Bad" has been defined as having been 90 days past due once. Everyone not "bad" is "good", so there are no indeterminate cases.
    - The actual bad rate in the original development sample 3.23%. Over-sampling has been corrected through the use of a weight variable. Verify that weights are assigned correctly.
- The data set **REJECTED_CUSTOMERS** contains the data on rejected applicants.
- The table below describes the Roles, Measurement levels and Description of the variables found in the **ACCEPTED_CUSTOMERS** and **REJECTED_CUSTOMERS** data sets.

Name	Model Role	Measurement Level	Description
Age	Input	Interval	Age
Bureau	Input	Nominal	Credit bureau risk class
Car	Input	Nominal	Type of vehicle
Cards	Input	Nominal	Credit cards
Cash	Input	Interval	Requested cash
Children	Input	Interval	Number of children
Div	Input	Binary	Region
Ec_card	Input	Binary	EC card holder
Finloan	Input	Binary	Finished paying off previous loans
GB	Target	Binary	Good – 0 / Bad – 1
Income	Input	Interval	Income
Loans	Input	Interval	Number of loans outside the bank
Location	Input	Binary	Location of credit bureau
Nat	Input	Nominal	Nationality
Nmbloan	Input	Interval	Number of loans with the bank
Pers_h	Input	Interval	Number of persons in household
Product	Input	Nominal	Type of credit product
Prof	Input	Nominal	Profession
Regn	Input	Nominal	Region
Resid	Input	Binary	Residence Type
Tel	Input	Nominal	Telephone
Tmadd	Input	Interval	Time at address
Tmjob1	Input	Interval	Time at job
freq	Frequency	Binary	Weight variable