BU7142 Group Assignment

This group assignment is a data analysis project. You are given a data set about bank marketing. The data is related with direct marketing campaigns of a Portuguese banking institution. The marketing campaigns were based on phone calls. This dataset is public available for research. More details can be found in below two publications.

S. Moro, R. Laureano and P. Cortez. Using Data Mining for Bank Direct Marketing: An Application of the CRISP-DM Methodology.

S. Moro, R. Laureano and P. Cortez. Using Data Mining for Bank Direct Marketing: An Application of the CRISP-DM Methodology. In P. Novais et al. (Eds.), Proceedings of the European Simulation and Modelling Conference - ESM'2011, pp. 117-121, Guimaraes, Portugal, October, 2011. EUROSIS.

Below is the information about the data set for this group assignment, and the data set is available on Blackboard in Excel format. The original data set in CSV format can be found at: [https://archive.ics.uci.edu/ml/datasets/bank+marketing](https://archive.ics.uci.edu/ml/datasets/bank%2Bmarketing)

**Number of records: 4521 1**

**Number of variables: 17.**

**List of variables:**

1. - age (numeric)
2. - job : type of job

(categorical:"admin.","unknown","unemployed","management","housemaid","entrepreneur","student", "blue-collar","self-employed","retired","technician","services")

1. - marital : marital status (categorical: "married","divorced","single"; note: "divorced" means divorced or widowed)
2. - education (categorical: "unknown","secondary","primary","tertiary") 5 - default: has credit in default? (binary: "yes","no")

6 - balance: average yearly balance, in euros (numeric) 7 - housing: has housing loan? (binary: "yes","no")

1. - loan: has personal loan? (binary: "yes","no")

# related with the last contact of the current campaign:

1. - contact: contact communication type (categorical: "unknown","telephone","cellular") 10 - day: last contact day of the month (numeric)

11 - month: last contact month of year (categorical: "jan", "feb", "mar", ..., "nov", "dec") 12 - duration: last contact duration, in seconds (numeric)

1. - campaign: number of contacts performed during this campaign and for this client (numeric, includes last contact)
2. - pdays: number of days that passed by after the client was last contacted from a previous campaign (numeric, -1 means client was not previously contacted)
3. - previous: number of contacts performed before this campaign and for this client (numeric)
4. - poutcome: outcome of the previous marketing campaign (categorical: "unknown","other","failure","success")
5. - y - has the client subscribed a term deposit? (binary: "yes","no")

As a business analyst, you can freely explore the data set and find insights through data analysis. You need to complete a report to summarize all insights supported by data analysis and discussions. In your report, you should study and answer **at least three different research questions** with a word limit of **3000** (excluding figures, tables, references, and appendix).

Students will act as Data Analysts to provide meaningful insights to an e-commerce, banking or digital marketing team. Students must define their own project goals.

The report should contain the following sections:

• Executive Summary.

• Project Goals - This section should:

o Outline the objectives you wish to explore.

o Present the methodology adopted.

• Literature Review - This section should provide insight from the literature (e.g. digital marketing, banking and e-business theories).

• Methodology - This section should provide an overview of the tools and techniques that are used in your report.

• Discussion of Findings.

• Recommendations. This section should include:

* Customer-specific decisions that the banking/e-business/digital marketing team can take.

• References (HARVARD Style).

• Appendices (not mandatory section). This can include:

* R-Codes (if any).
* Additional visualizations etc. (if any).

Below is a list of sample questions for your reference, please feel free to explore other questions that you find interesting:

* + The factors affecting a client’s decision to subscribe a term deposit
  + The factors affecting a client’s balance
  + Impact of age, marital status or education on loan, deposit or previous marketing campaign outcome

The following report structure will apply for this assignment:

• Executive Summary (5%)

- Does the student properly summarize the objective(s) of the report and the context of the study?

- Does the student properly summarize the research methodology and the findings of the study?

- Does the student clearly present the managerial implications/recommendations?

• Project Goals (5%)

- Does the student outline the objective(s) of the study?

- Does the student clarify what is the contribution of the study to the decision- making process?

• Literature Review (10%).

- Does the Literature Review feature current material?

- Has the Literature Review sufficient focus AND depth or is it too thin and broad?

- Does the student organize the literature creatively (e.g. thematically or in terms of different strands/sides of an argument)?

- Is the student critically aware of literature sources? E.g. is the article based on empirical work, does the author address competing views on the issue in question, is the author biased?

- Does the student highlight how her/his research question is located in literature?

• Methodology (25%)

- Are the data source and the dataset clearly described?

- Does the student properly describe the research methodology and the analytics technique(s) adopted?

- Does the student justify the reasons behind the use of specific techniques?

- Does the student demonstrate an adequate knowledge of the benefits and

the limitations of the techniques adopted?

- Does the student discuss the fit between the methodology adopted and the research questions?

• Discussion of Findings (25%)

- Does the student present all the results necessary to answer the research questions?

- Does the student adopt adequate visualization techniques?

- Does the student understand the meaning of all the metrics presented?

- Does the student critically interpret the results of the analysis and link it to the context of the dataset/project?

• Recommendations (e.g. for business teams) (25%)

- Does the student provide adequate recommendations for business?

- Are recommendations properly linked to the results of the analysis?

• Housekeeping (5%)

- Ability to sustain a logical thread throughout the manuscript.

- Neatness, presentation and prose.

- Referencing. Are all cited sources referenced correctly?

- Spelling.

**A modelling guide for the sample project**

[build your own figure based on the current problem, this is just an example based on the sample project]

