Demo Day Proposal

Machine Learning with TensorFlow Training
Professional Academy Digital Talent Scholarship 2022

Group Number	**FIN_7**
Dataset	**Fintech/ Banking and Finance**
Name - DTS ID	1. **Godfried Junio Sebastian Matahelemual – 152236035101-175** 2. **Hartmann Hardyanto Ngono – 152236035100-603** 3. **Yanuar Bhakti Wira Tama – 152236035101-303**

Selected Theme: Prediction Model for Banking Sector

Project Title:
Prediction Model for Direct Marketing Campaign Conversion on Term Deposit Product in Banking Sector

Executive Summary:

Problem Statement

Recent studies suggest that as of June 2020, companies and organizations within the banking and financial sector are spending an average of 13% of their overall budget on marketing [1]. One of alternative in marketing is telemarketing or direct marketing by telephone. Telemarketing can be an effective method for reaching your customers. The telephone can be used to contact new customers, to maintain contact with current customers and to remind slow payers personally. One advantage to telemarketing is that you will get an instant response [2].
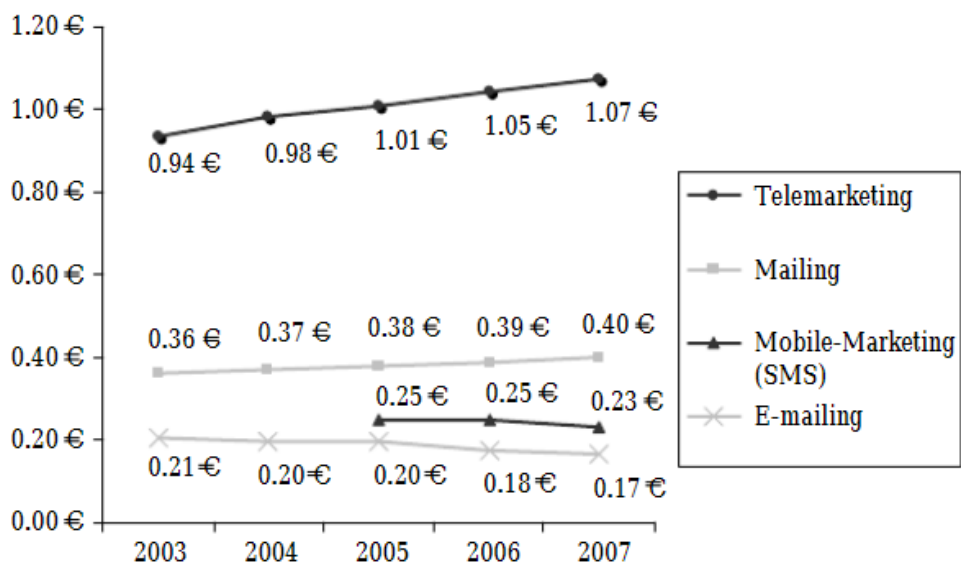

Figure 1-1. Unit Cost Per Contact and Media (2003-2007)
(taken from [2])

However, as seen at Figure 1-1, cost per contact for telemarketing has rising up from 2003 to 2007 and expected to be much higher now at 2022. Therefore, to maximize profitability, we need to reduce these marketing cost or increase the effectiveness of the cost with higher conversion.
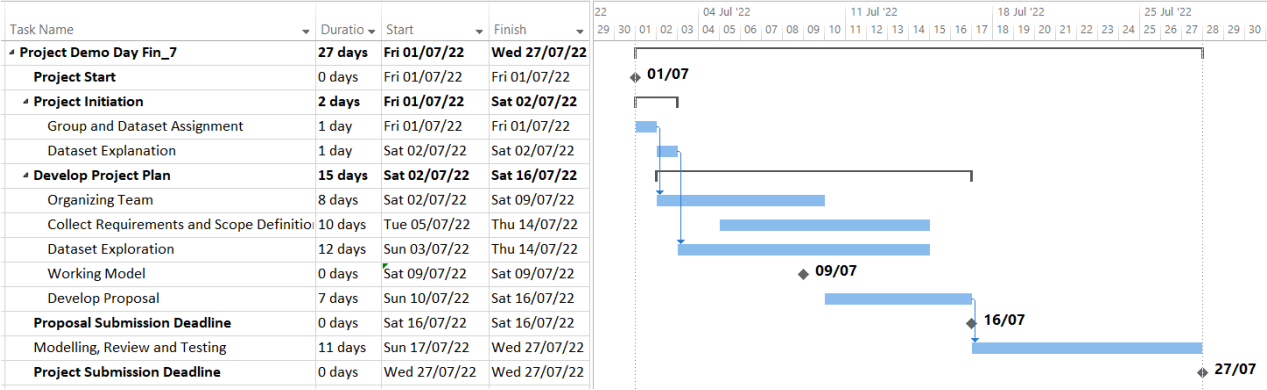
Proposed Solution

To be cost effective, companies must target their marketing plan [3]. It is more cost effective for companies to spend resource on customers which more likely to convert or subscribe to their products. We will develop a model based on historical marketing campaign efforts and results to predict with high accuracy whether a potential customer will subscribe to our products upon contact. Using this model, companies can save resources on marketing cost by focusing marketing efforts on customers which yield positive result.

Project Scope & Deliverables:

Scope Description	Develop a model capable of predicting the success of direct marketing campaign conversion for term deposit product in banking sector based on age, job/employment, marital status, educational background, credit history, existing loan, and previous campaign history.
Project Deliverables	• a prediction model (.ipynb) • a well-defined documentation describing work process and parameter tuning
Acceptance Criteria	• prediction model has minimum accuracy of 92% in testing phase • prediction model has precision score for label 1 (y) at minimum 80% • prediction model has recall score for label 1 (y) at minimum 90%
Constraints	• Since train dataset was made using Portuguese banking data, dataset for prediction requires all monetary values to be stated in Euros (€)
Assumptions	• The customer didn't receive any contacts through other means beside phone calls

Project Schedule

Task Name	Duration	Start	Finish
⊿ Project Demo Day Fin_7	27 days	Fri 01/07/22	Wed 27/07/22
Project Start	0 days	Fri 01/07/22	Fri 01/07/22
⊿ Project Initiation	2 days	Fri 01/07/22	Sat 02/07/22
Group and Dataset Assignment	1 day	Fri 01/07/22	Fri 01/07/22
Dataset Explanation	1 day	Sat 02/07/22	Sat 02/07/22
⊿ Develop Project Plan	15 days	Sat 02/07/22	Sat 16/07/22
Organizing Team	8 days	Sat 02/07/22	Sat 09/07/22
Collect Requirements and Scope Definitio	10 days	Tue 05/07/22	Thu 14/07/22
Dataset Exploration	12 days	Sun 03/07/22	Thu 14/07/22
Working Model	0 days	Sat 09/07/22	Sat 09/07/22
Develop Proposal	7 days	Sun 10/07/22	Sat 16/07/22
Proposal Submission Deadline	0 days	Sat 16/07/22	Sat 16/07/22
Modelling, Review and Testing	11 days	Sun 17/07/22	Wed 27/07/22
Project Submission Deadline	0 days	Wed 27/07/22	Wed 27/07/22

Risk and Issue Management Plan

- List of threat factors that endangers project:
  - training this model requires a significant amount of computational resources that even with GPU hardware accelerator in Google Colab environment, it still takes too much time to complete a single training run. With current project timeframe (only 1 month), there is a risk that the model will not have satisfactory result by the project submission date due to not enough time to tuning parameters and train.

Risk and Issue Management Process

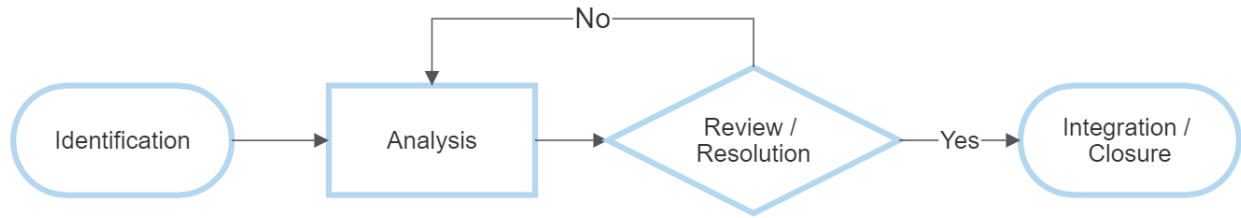The following illustrates the risk and issue management process for this project.

Figure 1-1. Risk and Issue Management Process Flow

Identification

At any time during the project, a project team member can initiate a risk or issue by providing the project team with the following:

1. Title
2. Category
3. Description

A project team member will log the risk into the Risk, Action, Issues, Decisions (RAID) Log. The project team will review the item, set the Risk Probability or Issue Priority and make sure it is valid and clear.

Analysis

If the item is valid, the project team will explore alternatives and develop the recommended risk strategy, response plan, and identify the risk triggers, or develop the issue resolution recommendation.

Review / Resolution

Risks and issues will be reviewed during the project team meeting. Risks and issues will only be closed by consensus of the team. If there is no impact to the project scope, schedule or budget, the project team can decide to accept the response plan / resolution recommendation. A project team will record whether the risk response plan / issue resolution recommendation is approved in the RAID Log. If the recommended risk response plan / resolution is not approved by consensus of the project team, the risk will be returned to the Analysis stage.

Integration / Closure

A project team member will update the necessary project control documents when a risk response plan or issue resolution is approved, if appropriate. One or more of the following may be needed:
• Include new tasks required to implement the response plan in the project schedule.
• Update the scope statement in the project scope if needed.

Once a risk trigger is realized, it becomes an issue and is closed and follows the issue management process.

Project RAID Log

All project risks and issues will be tracked in the RAID Log.
The following information will be captured as needed in the issues log:
• Date submitted/identified.
• Issue category (e.g., budget, requirements, resources, schedule, scope).
• Issue title.
• Description.
• Resolution.
• Other issues that are related to the issue.

Additional documentation may be attached as needed.

The following information will be captured as needed in the risk log:

Field	Definition
Number	Sequential
Title	Brief description
Category	E.g., budget, implementation, quality, resources, schedule, scope
Description	Longer description of the risk
Risk Impact	E.g., budget, implementation, quality, resources, schedule, scope
Consequence	Description of consequence to project if risk is realized
Risk Strategy	Avoid, Transfer, Mitigate, Accept
Planned Response	Description of how to respond to the risk.
Risk Trigger	Description of how to identify if the risk is occurring or becomes an issue

Project Reference:

[Dataset]   [Moro et al., 2011] 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, Guimarães, Portugal, October, 2011. EUROSIS.
[taken at July 1st, 2022 at https://archive.ics.uci.edu/ml/datasets/bank+marketing or also available at https://drive.google.com/file/d/1-A9DplqY6rEDx4c7ZNXYmJHM4kS2TTvG/view?usp=sharing]

[1]   ActiveWin.co.uk (2020). How Much Do Banks Spend on Marketing?. November 6th,2020.
[taken at July 9th, 2022 at https://www.activewin.co.uk/blog/how-much-do-banks-spend-on-marketing]

[2]   Reinares, Pedro & Casado, José Manuel. (2008). Evaluation of cost per contact and cost per response in interactive and direct media planning: A Spanish case study. Direct Marketing: An International Journal. 2. 159-173. 10.1108/17505930810899311.
[taken at July 9th, 2022 at https://www.researchgate.net/publication/235283823_Evaluation_of_cost_per_contact_and_cost_per_response_in_interactive_and_direct_media_planning_A_Spanish_case_study]

[3]   Vachowiak, Connie L. (2006). Cost/Benefit Analysis of Marketing Efforts In A Bank. University of Wisconsin-Stout, December 2006.
[taken at July 9th, 2022 at https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.390.3273&rep=rep1&type=pdf]