Final Project Report - Power BI

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Course: Data Science and Machine Learning

Project Duration: 09-05-2025 to 09-06-2025

Tool Used: Power BI Desktop

Dataset: Bank Marketing Dataset

# 1. Objective

The objective of this project is to analyze the Bank Marketing dataset using Power BI to understand customer behavior and identify key factors that influence subscription to a term deposit. The goal is to build insightful dashboards to help business stakeholders make data-driven decisions.

# 2. Dataset Summary

The dataset contains details of a marketing campaign conducted by a Portuguese banking institution. It includes client information (age, job, marital status), contact information, campaign details, and whether the client subscribed to a term deposit.

# 3. Data Cleaning and Preprocessing

Data types were validated and corrected where necessary. Missing values labeled as "unknown" were replaced with "Missing". A new column "Age Group" was derived to categorize customers by age. Irrelevant columns such as "pdays" and "previous" were optionally removed.

# 4. Dashboard Pages and Visuals

Page 1: Subscription Overview

- Pie Chart of Term Deposit Subscription

- Bar Chart of Job vs Subscription

- Bar Chart of Education vs Subscription

- Slicers for marital status, education, housing, and loan

Page 2: Campaign Analysis

- Column Chart: Month vs Subscription

- Bar Chart: Contact Method vs Subscription

- Line Chart: Duration vs Subscription

- Slicers: campaign, contact method, month

Page 3: Key Influencers

- Key Influencer chart showing top variables impacting subscription

# 5. Key Insights

- Job roles like management and blue-collar have a higher impact on term deposit subscriptions.  
- Longer call duration significantly increases the chances of subscription.  
- Best contact methods were cellular, and the months of May and August showed better campaign performance.  
- The Key Influencers visual identified duration, contact method, and job as the most influential factors.

# 6. Conclusion

This Power BI project successfully helped visualize and interpret customer behavior from the bank marketing dataset. It emphasized the importance of duration and customer profiling for successful campaign outcomes. These insights can guide future marketing efforts to improve effectiveness and ROI.