

Introduction to Bank Marketing Analysis

In a highly competitive Banking, Financial Services & Insurance (BFSI) environment, understanding which customers are most receptive to term-deposit offerings—and why—is critical for maximizing marketing ROI, optimizing resource allocation, and improving overall campaign performance. The “Bank Marketing” dataset captures a Portuguese bank’s telemarketing efforts, recording demographic, behavioural, and outcome data for each outreach attempt. By leveraging Power BI to explore, profile, and visualize these records, stakeholders can move beyond gut feel to data-driven decision-making—identifying high-value segments, uncovering seasonal patterns, and quantifying the impact of call strategies.

Problem Statement

The marketing division of a mid-sized European bank ran a direct telephone campaign to sell term-deposit products. Your goal is to use Power BI Desktop to ingest, transform, model, and visualize the “Bank Marketing” dataset (4,521 records, 17 fields) so that stakeholders can:

- **Assess campaign effectiveness** (which channels, customer profiles, and timing delivered the highest subscription rates)
- **Identify customer segments** most likely to subscribe
- **Build forecasting models** for future term-deposit uptake
- **Recommend optimizations** for call strategy and resource allocation

Use the following dataset fields (among others):

age, job, marital, education, default, balance, housing, loan, contact, day, month, duration, campaign, pdays, previous, poutcome, y

Tasks & Deliverables

1. Data Ingestion & Profiling

- **Deliverable:** A “Data Profile” summary listing each field’s type, record count, distinct-value count, top values, and percent unknowns; plus a narrative of any data anomalies.

2. Data Cleaning & Transformation

- **Deliverable:** A “Clean-Data Log” detailing recoding rules (e.g. mapping “unknown” to “Not Specified”), before-and-after counts for recoded or filtered categories, and notes on any outlier flags.

3. Date Handling

- **Deliverable:** A new **ContactDate** field and a linked Date dimension (Year, Quarter, MonthName, MonthNumber, Weekday), with a brief write-up on enabling time-intelligence analyses.

4. Calculated Columns & Measures

- **Deliverable:** A catalog of core DAX measures with business definitions—e.g., TotalCalls, SuccessCount, SubscriptionRate, AvgBalance, AvgDuration—and a small validation table displaying overall values.

5. Customer Profile Analysis

- **Deliverable:** Conversion-rate breakdowns by Job role and Education level, along with filter-context insights for marital, housing-loan, and personal-loan segments; plus a concise interpretation of top-performing profiles.

6. Campaign Performance Dashboard

- **Deliverable:** A multi-page report including:
 - **Overview:** KPI cards for TotalCalls, SuccessCount, SubscriptionRate, AvgDuration
 - **Channel & Outcome:** Contact-type share and prior-outcome success distribution
 - **Demographics:** Subscription rates by age buckets vs. balance ranges
 - **Key Takeaways:** Bulleted insights on each page.

7. Trend & Seasonality

- **Deliverable:** A time-series chart of monthly SuccessCount and SubscriptionRate, an accompanying forecast for the next three months (with confidence bands), and a summary of seasonal peaks and anomalies.

8. Funnel Visualization

- **Deliverable:** A four-stage funnel (Initial Contacts → Repeat Contacts → Qualified Leads → Final Subscriptions) annotated with drop-off percentages and an executive summary of where prospects are most likely to drop out.

9. Customer Segmentation

- **Deliverable:** 3–5 customer clusters defined by age, balance, and call duration; for each cluster, report its size, average subscription rate, and a descriptive label, plus a prioritization recommendation.

10. Insights & Recommendations

- **Deliverable:** A one-page executive summary with 3–5 actionable recommendations—each tied to specific findings (e.g., optimal call duration, segment targeting, seasonal campaign timing)—and suggested KPIs for the next cycle.

Submission Guidelines

1. Format:

- Submit a **Power BI (.pbix) file** containing all reports and dashboards.
- Include **DAX formulas** in the Power BI file or a separate **.txt file**.

2. Evaluation Criteria:

- **Accuracy** of reports and calculations.
- **Efficiency** of DAX formulas.
- **Use of best practices** (data modeling, relationships, and visual formatting).

3. Presentation:

- Candidates must **explain their Power BI dashboards** in a short **live demonstration**.
- The **skill test is incomplete without the presentation**.

