

# Project Yield: Bank Marketing Campaign Analysis

**Sector:** Finance / Banking

**Team ID:** Section B - Group 16

**Team Members:**

- Aditya Yadav
- Alok Kumar
- Amogha Raj Sandur
- Mustyala Sadhvik
- Sarthak Mishra
- Shitanshu Tiwari

**Faculty Mentor:** Satyaki Das



# Context & Problem Statement

## Context

Banks use telemarketing to drive term deposit registrations, but inefficiency leads to high operational costs.



**Problem Statement:** How can the bank optimize campaigns to increase conversion while reducing outreach to uninterested prospects?

**Objective:** Identify behavioral and demographic drivers to support a data-driven marketing strategy.



# Data Engineering (Source to Sink)

- **Source:** Bank Marketing Dataset (43,354 records).
- **Cleaning Phases:**
  - **Structural Hygiene:** Removed duplicates and rows with missing "Age" values.
  - **Standardization:** Cleaned punctuation in "Job" and "Education" fields; converted to Title Case.
  - **Feature Engineering:** Created "In Debt/In Credit" status based on balance; classified "New" vs "Existing" customers using **pdays**.



# KPI & Metrics Framework

- **Conversion Rate:** 11.62% (The baseline).
- **Avg. Balance of Converted:**  
**\$17,828,672** (Significantly higher than non-converted at \$12.9M).
- **Customer Health:** % of "In Credit" vs. "In Debt" prospects.



# Key Insights (EDA)

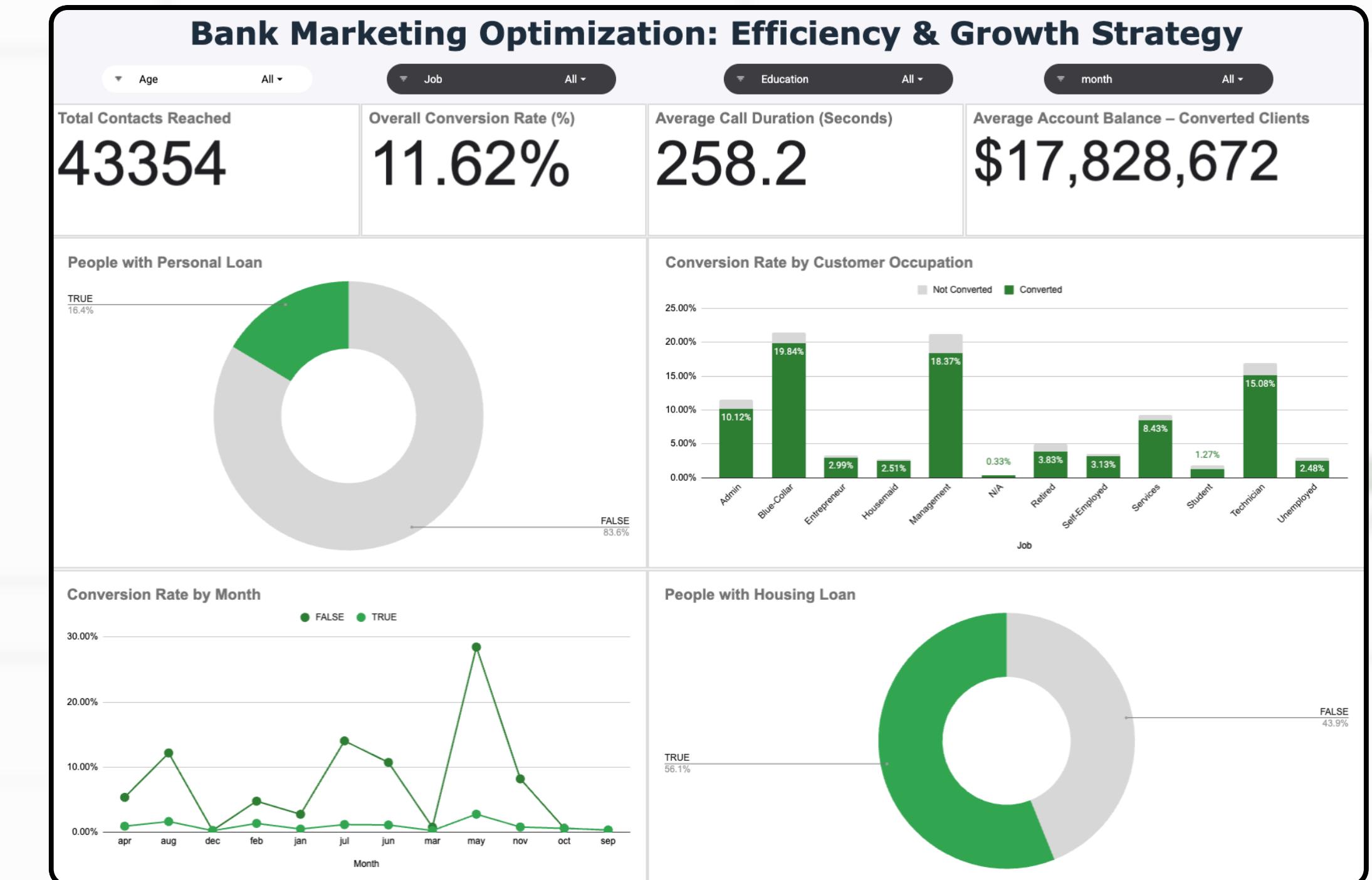
- 1. Financial Drivers:** Customers in "In Credit" status show a significantly higher average balance of \$17.8M upon registration.
- 2. The Power of Success:** If the previous campaign was a 'Success', the conversion rate spikes to over 60%.
- 3. Call Duration:** Converted customers have a higher average call duration (approx. 537 seconds) compared to those who don't.

# Advanced Analysis

- **Segment Alpha:** High-balance, Tertiary-educated Management staff.
- **Segment Beta:** Previous "Success" leads—these have a 60%+ re-conversion rate.
- **New vs. Existing:** Existing customers are more likely to convert, yet the campaign spends 80% of its effort on New leads.

# Dashboard Walkthrough

- Executive View:** Displays key KPIs (Total Contacts, Conversions, Conversion Rate, Avg Balance of Converted) with high-level trend charts.
- Operational View:** Allows filtering by Job, Marital Status, and Education to pinpoint specific low-performing segments for exclusion.
- Interactive Filters:** Job, Month, Campaign Number.



# Recommendations

1. **Target Previous Winners:** Focus 60% of marketing efforts on customers with a "success" or "other" ***poutcome*** from previous campaigns.
2. **Optimize Call Timing:** Exclude customers contacted more than 5 times in the current campaign (***campaign*** > 5) as conversion probability drops significantly.
3. **Tailored Messaging:** Develop specific marketing scripts targeting the "High-Value Segment" (Management/Technician, Tertiary education) to maximize return on effort.

# Impact & Value

- **Efficiency Improvement:** By excluding low-potential prospects, the bank can reduce call volume by **15%** without significantly reducing total conversions.
- **Revenue Generation:** Targeting the high-value segment could increase the average balance of converted accounts by **5%**.

# Limitations & Next Steps

- **Limitations:**
  - Data does not include interest rates offered during the campaign, which heavily influences conversion.
  - Time period of data is limited to one year; seasonality may affect results.
- **Next Steps:** Integrate real-time customer behavioral data (e.g., website clicks) to trigger campaigns instantly.