

## GROUP MEMBERS

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## BIT 2119 – Business Intelligence & DSS

### Group Report – Assignment 1

**Domain:** Banking – Marketing Performance & Credit Risk

#### 1. Overview

Our project applies BI and DSS techniques to support decision-making in a banking environment. Using Python, the team analyzed customer marketing and credit behavior using the EPIC storytelling framework. All work was collaboratively executed in Git/GitHub.

#### 2. Dataset Summary

We used **34,521 customer records** drawn from two structured datasets:

##### Marketing Campaign (4,521 records)

- Variables: demographics, account balance, loans, contact type, campaign history.
- Target: *Subscribed to term deposit (yes/no)*.

##### Credit Default (30,000 records)

- Variables: repayment history, bill amounts, credit usage, demographics.
- Target: *Default next month (0/1)*.

Feature engineering included: utilization ratios, engagement indicators, segmentation groups, and RFM-style metrics.

#### 3. Methods

- **Data cleaning:** handling missing values, removing duplicates, outlier screening.
- **EDA:** descriptive summaries, trend charts, pivot insights.

- **Modeling:** Logistic Regression & Random Forest with 5-fold CV and AUC, precision, recall evaluation.
- **Segmentation:** Age groups, job types, financial behavior profiles.

#### 4. Key Insights

##### Marketing

- Overall conversion: **11.5%**.
- **Retired customers:** highest conversion at **23.5%**.
- **Cellular contact** performs better than telephone (14.4% vs 8.9%).
- **October** shows strongest conversion trend.

##### Credit Risk

- Default rate: **22.1%**.
- High utilization (>80%): **3.24× higher default likelihood**.
- Customers under 30 show elevated risk.
- Model performance: **AUC  $\approx$  0.78**.

#### 5. Recommendations

##### Immediate

- Target retired customers; prioritize mobile outreach.
- Flag high-utilization customers for proactive intervention.

##### Short-Term

- Align marketing campaigns with high-performing months.
- Integrate utilization-based monitoring into workflows.

##### Long-Term

- Deploy predictive scoring across marketing and credit.
- Build a unified customer intelligence system.

## **6. Conclusion**

The analysis demonstrates how BI and DSS methods can strengthen marketing efficiency, reduce credit risk, and inform strategic decisions. Insights and visuals in the repository provide a clear basis for operational and long-term improvements.