**Bank Loan Data Analysis Report**

**Problems and Background**

* **Why are we doing this?**  
  Banks rely heavily on loan data to make informed decisions, manage risk, and improve profitability. However, challenges such as increasing default rates, regulatory compliance, and customer retention require robust data analysis to address inefficiencies and enhance decision-making.
* **What's the problem to solve?**  
  The key issues include identifying high-risk borrowers, optimizing loan portfolios, detecting fraud, and retaining profitable customers.
* **Is it strategic or tactical?**  
  This is a **strategic project**, aimed at enhancing the bank's overall decision-making framework and ensuring sustainable growth.
* **Customer insights or data backing?**  
  Research highlights that loan defaults account for approximately 15-20% of lending losses in banks. Addressing these through data analysis could significantly reduce risk and improve customer satisfaction.
* **Scope of the project?**  
  A **medium-scale project** involving multiple teams, leveraging both internal and external datasets.

**Solution**

* **Data Analysis**  
  Gather and analyze historical loan data to identify patterns, trends, and insights that can reduce risk and improve decision-making.
* **Data-Driven Insights**  
  Use advanced analytics to predict loan defaults, identify profitable customer segments, and optimize loan pricing.
* **Stakeholder Engagement**  
  Collaborate with risk management, marketing, and customer relationship teams to implement insights effectively.

**Project Scope**

1. **Step-by-Step Plan**
   * **Step 1:** Data collection and extraction (SQL, AWS, scraping, etc.).
   * **Step 2:** Data wrangling (cleaning, merging, manipulation).
   * **Step 3:** Analyze trends in loan performance (default rates, repayment behavior).
   * **Step 4:** Develop predictive models for credit risk and customer segmentation.
   * **Step 5:** Visualize findings using dashboards (Power BI or Tableau).
2. **Timeline of Events**
   * Week 1: Data collection and initial cleaning.
   * Week 2: Exploratory data analysis and merging datasets.
   * Week 3: Building predictive models and generating insights.
   * Week 4: Finalizing dashboards and presenting results to stakeholders.
3. **Marketing Domains**
   * Product: Analyze loan types and their performance.
   * Price: Study interest rates and repayment terms.
   * Promotion: Targeted marketing campaigns for profitable customer segments.
   * Place: Regional loan performance comparison.
   * People: Customer demographic analysis to improve service.

**Stakeholders**

* **Internal Stakeholders:**
  + Risk Management Team
  + Loan Processing Team
  + Marketing Department
  + Customer Service Team
* **External Stakeholders:**
  + Borrowers
  + Credit Bureaus
  + Regulatory Authorities

**Methodology**

1. **Data Sources**
   * SQL databases for historical loan data.
   * AWS for external data integration.
   * Local data files for supplemental information.
2. **Processes**
   * Data wrangling: Cleaning, merging, and restructuring datasets.
   * Data analysis: Identifying trends, patterns, and customer behavior.
   * Data visualization: Presenting insights through Power BI dashboards.
3. **Techniques Used**
   * **VLOOKUP:** For merging datasets.
   * **Pandas (Python):** For advanced data cleaning and manipulation.
   * **Database Schema:** Designing efficient schemas for loan data storage.

**Goals and KPIs**

1. **Goal 1:** Increase total disbursed loans to ₹6.5 Cr+
   * **KPI:** Monthly loan disbursement trends.
2. **Goal 2:** Reduce loan default rate to <5%
   * **KPI:** Loan default trends by customer segment.
3. **Goal 3:** Improve customer retention to 50%+
   * **KPI:** Retention rates post-loan repayment.
4. **Goal 4:** Achieve a YOY growth rate of 10.5%+
   * **KPI:** Quarterly loan portfolio growth.

**Technical Processes**

* **Data Cleaning:** Handled missing values, outliers, and inconsistent formats.
* **Data Manipulation:** Used SQL queries and Pandas for efficient data merging.
* **Visualization:** Created dashboards to track key metrics like default rates, loan disbursement, and customer retention.

**Business Concepts Used**

1. **Market Understanding:** Analysis of loan demand across regions.
2. **Customer Behavior:** Studied repayment patterns and default tendencies.
3. **Retention Strategies:** Identified high-value customers for targeted campaigns.

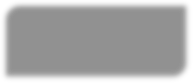
**Recommended Analysis**

1. **Risk Assessment:**
   * **Process:** Analyze credit scores, DTI ratios, and repayment history.
   * **Impact:** Predict defaults and set accurate interest rates.
2. **Loan Portfolio Management:**
   * **Process:** Study disbursement trends and regional performance.
   * **Impact:** Optimize loan offerings and pricing strategies.
3. **Fraud Detection:**
   * **Process:** Identify inconsistencies in applications and repayment patterns.
   * **Impact:** Reduce fraudulent loans and associated losses.

**Project Owner**

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Do you have any Questions?



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