**SQL Project**

A close-up of a blackboard

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A diagram of a data project

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**What is a data warehouse ?**

**A close-up of a data warehouse

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**Subject oriented.**

It means data warehouse is always focused on a business area like the sales, customers, finance and so on.

**Integrated**

because it goes and integrates multiple source systems.

Usually you build a warehouse not only for one source, but for multiple sources.

**Time variance**

It means you can keep historical data inside the data warehouse

**non-volatile**

It means once the data enter the data warehouse, it is not deleted or modified.

So this is how Bill Inmon defined a data warehouse.

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A diagram of a diagram of a company

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**A drawing of a gear and a server

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A collage of food and a diagram

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A diagram of a process

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**Data Architecture**

A diagram of data warehouse

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A diagram of a structure

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**Power BI Project**

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**Project Objective**

The primary objective of this project is to **analyze the bank’s loan portfolio** to understand the performance of **good loans versus bad loans**, assess overall lending health, and support **data-driven decision-making**.

Specifically, this project aims to:

1. **Evaluate loan portfolio quality** by measuring the proportion of good loans and bad loans based on application count, funded amount, and amount received.
2. **Monitor key lending KPIs** such as Total Loan Applications, Total Funded Amount, Total Amount Received, Average Interest Rate, and Average Debt-to-Income (DTI).
3. **Track loan performance trends** across time (monthly), geography (state-wise), borrower characteristics (employment length, home ownership), and loan attributes (purpose, term, grade).
4. **Identify risk patterns** associated with bad loans to minimize defaults and financial losses.
5. **Provide an interactive reporting solution** that enables stakeholders to drill down from high-level summaries to detailed loan-level data for better monitoring and strategic planning.

**📊 Key Insights Observed from the Dashboard**

* **Good Loans dominate the portfolio**
  + ~86.2% of loans are classified as good loans
  + Bad loans account for ~13.8%, which still represents a significant risk exposure
* **Bad loans contribute lower collections** compared to funded amounts, impacting profitability.
* **Debt Consolidation** is the most common loan purpose, contributing the highest volume of applications.
* **Renters and mortgage holders** form a large share of borrowers.
* **Higher interest rates and DTI** are more prominent in charged-off (bad) loans.
* Loan applications show a **steady upward trend over months**, indicating growing demand.

**✅ Recommendations**

**1️⃣ Strengthen Credit Risk Assessment**

* Apply **stricter credit checks** for borrowers with:
  + High DTI ratios
  + Lower loan grades and sub-grades
  + Short employment length
* Introduce **risk-based approval rules** to reduce future bad loans.

**2️⃣ Optimize Interest Rate Strategy**

* Since bad loans have **higher average interest rates**, reassess whether higher rates are:
  + Compensating adequately for risk, or
  + Increasing default probability
* Consider **balanced pricing models** that attract reliable borrowers while controlling risk.

**3️⃣ Focus on High-Performing Loan Segments**

* Prioritize lending to:
  + Borrowers with **longer employment tenure**
  + Better loan grades (A & B)
  + Loan purposes with **lower default rates**
* Expand offerings in these segments to improve portfolio stability.

**4️⃣ Improve Monitoring of Bad Loan Segments**

* Closely track loans marked as **Charged Off** using:
  + Early warning indicators (missed installments, rising DTI)
* Implement **early intervention strategies** such as restructuring or reminders to reduce losses.

**5️⃣ Geographic & Purpose-Based Strategy**

* Use state-wise insights to:
  + Identify **high-risk regions**
  + Adjust lending limits or approval criteria regionally
* Re-evaluate high-volume purposes like **Debt Consolidation**, as they may carry elevated risk.

**6️⃣ Enhance Collection & Recovery Processes**

* Since the **total amount received from bad loans is significantly lower**, strengthen:
  + Collection strategies
  + Follow-up mechanisms
  + Recovery policies for delinquent loans

**7️⃣ Use Dashboard for Continuous Decision-Making**

* The Power BI dashboard should be used as a **live monitoring tool** to:
  + Track month-to-date (MTD) performance
  + Compare good vs bad loan trends
  + Support management and policy decisions in real time

**🎯 Final Outcome**

By implementing these recommendations, the bank can:

* Reduce bad loan ratios
* Improve profitability and cash recovery
* Strengthen risk management
* Make faster, data-driven lending decisions

**Conclusion**

* This Bank Loan Analysis project successfully provides a **comprehensive view of the bank’s lending performance**, with a strong focus on **good loans vs bad loans**.
* The analysis shows that **good loans form the majority of the portfolio (≈86%)**, indicating overall portfolio stability, while **bad loans (≈14%)** represent a critical risk area that requires continuous monitoring.
* Key KPIs such as **Total Loan Applications, Funded Amount, Amount Received, Average Interest Rate, and DTI** help assess both **profitability and credit risk**.
* Trend, geographic, and borrower-level analysis highlights **patterns influencing loan performance**, enabling identification of high-risk segments.
* The interactive Power BI dashboards allow stakeholders to **drill down from summary insights to detailed loan records**, supporting transparent and data-driven decisions.
* Overall, this project demonstrates how **data analytics can enhance credit risk management, optimize lending strategies, and improve financial health** of the bank.