Credit Score Analysis Project Documentation

Project Idea

The *Credit Score Analysis Project* is a data-driven financial analytics initiative designed to study and improve understanding of customer creditworthiness. The project transforms raw financial data into meaningful insights through data cleaning, modeling, and visualization.

The analysis aims to help financial institutions:

- Reduce lending risks
- Identify reliable borrowers
- Improve decision-making with data
- Support customer financial health through better understanding of credit score behaviors

This project uses a blend of **Power Query, Excel, Power BI, and Tableau** to process over 148,000 financial transaction records and produce interactive dashboards that highlight key patterns and risk factors.

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Project Deliverables

1. Data Processing & Cleaning

Using Power Query and Excel, the team performed:

- Removal of placeholder characters
- Fixing mixed data types
- Formatting numeric fields
- Cleaning missing values
- Standardizing credit history formats
- Merging and transforming multi-table datasets

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This resulted in clean, structured datasets prepared for modeling and visualization.

2. Data Modeling

The project included:

- Creating a relational data model
- Building relationships among customer, account, time, and transactional fact tables

- Designing DAX measures
- Preparing calculated fields for dashboards

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3. Visualization Dashboards

Two main dashboard systems were developed:

Power BI Dashboard

- KPI indicators (Avg Credit Score, Risk Tiers, Debt-to-Income)
- Slicers for demographic and time filtering
- Credit behavior and income analysis
- Risk segmentation visuals

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Tableau Dashboard

- Story-style analytical flow
- Trend comparison and customer segmentation
- Payment behavior patterns
- Predictive and comparative insights
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Dataset Overview

The project uses **four primary datasets**, each cleaned and linked into a unified system:

Dataset	Description	Size
Dim_Customer_Uncleaned.csv	**Customer demographic information**	**12,509 rows**
Dim_Account_Uncleaned.csv	**Account-level data**	**12,509 rows**
Fact_Monthly_Records_Uncleaned.csv	**Monthly financial behavior records**	**148,749 rows**
Dim_Time_Uncleaned.csv	**Calendar/time references**	**12 rows**

Key Insights & Findings

From analyzing the cleaned dataset, the team discovered:

1. Credit Score Distribution

Most customers fall into “good” credit categories — showing stability but also revealing improvement opportunities.

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2. Income vs Credit Score

A strong positive correlation:
Higher income → Higher credit score.

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3. Payment Delays

Late payments significantly reduce credit scores.
This suggests the need for early warning systems.

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4. Debt-to-Income Ratio

High debt relative to income often leads to poor credit ratings.

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5. Credit History Length

Longer history = Higher stability = Better credit score.

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6. Account Diversity

Customers with multiple credit products show better financial behavior patterns.

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Recommendations

Based on key insights, the team proposes:

1. Early Warning Systems

To track behavioral changes and reduce defaults.

2. Income-Based Lending Models

Improves accuracy of risk segmentation.

3. Financial Education Programs

Especially for customers with short credit histories.

4. Debt Management Support

Counseling or consolidation for high risk customers.

5. Product Diversification Strategies

Encourage stable borrowers to use diverse credit types.

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Team Members & Roles

Team 3 – DEPI Program

(From the PPTX content)

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Mark Ayman (Team Leader)

Data cleaning, Power BI, presentation.

Rawan Mahmoud

Tableau + Power BI visualizations.

Jana Ehab

Excel, analysis, Power BI.

Filopater Hosny

Power BI implementation and dashboard building.

Challenges & How They Were Solved

Main Challenges

- Large dataset performance issues
- Missing values & mixed formats
- Complex transformations
- Multi-tool workflow synchronization
- Tight deadlines

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Solutions

- Automated Power Query pipelines
- Dividing data cleaning tasks
- Iterative dashboard development
- Regular team review meetings
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Conclusion

The project successfully:

- Cleaned and prepared over **148,000+ records**
- Built a full BI system using multiple tools
- Produced advanced dashboards
- Identified key financial behavior patterns
- Provided actionable business recommendations

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The final outcome supports both **financial institutions** and **customers** in making informed, data-driven credit decisions.