

Library Management Data Analysis Project

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Project Overview

This project focuses on analyzing data from a Library Management System to gain insights into book circulation, member activity, staff performance, and financial outcomes.

The goal is to support data-driven decision-making for optimizing operations, enhancing customer satisfaction, and improving overall efficiency.

Data Sources

The dataset consists of six main tables:

Books – Contains book details such as title, author, category, rental price, publisher, and availability status.

Members – Stores information about library members.

Employees – Includes details of staff handling transactions.

Branch – Contains branch locations and related details.

Issued_Status – Records book issue transactions.

Return_Status – Tracks book returns and corresponding dates.

Key Analysis Areas

Data Exploration – Understanding dataset structure, total members, books, employees, and transaction volumes.

Revenue Insights – Evaluating total revenue, top-earning categories, and monthly revenue trends.

Category Insights – Identifying most issued and returned book categories.

Member Insights – Highlighting the most active members and borrowing patterns.

Employee & Branch Insights – Measuring staff productivity and branch performance.

Return Insights – Analyzing return rates and average delays.

Advanced Analysis – Assessing profitability by category, publisher performance, and book availability rates.

Business Questions Answered

- 1.What are the top categories generating the highest revenue?
- 2.Which members are most active in borrowing books?
- 3.Which branches and employees are performing best?
- 4.What is the average return delay and overall return rate?
- 5.What percentage of books are currently available or issued?
- 6.Which publishers contribute most to total revenue?

Tools & Techniques Used

SQL Server – For data querying and insight extraction.

Data Cleaning & Transformation – Custom columns and filters for better analysis.

Analytical SQL Queries – Using joins, aggregations, ranking, and date functions.


Data Visualization (Optional) – Power BI or Excel can be used for dashboards.

Key Insights Summary

- 1.Total Members: 12
- 2.Total Employees: 11
- 3.Total Books: 35
- 4.Total Issued Books: 31
- 5.Total Returned Books: 35
- 6.Total Revenue: 230

 Top Performing Categories: History, Classic, Dystopian

 Most Active Members: Ivy Martinez, Jack Wilson, Grace Taylor

 Top Branch: B001 – 123 Main St (Highest Revenue & Transactions)

 Top Employees: Laura Martinez & Michelle Ramirez

 Return Rate: 100%

 Average Borrow Duration: 62 days

Conclusion

The analysis successfully highlights operational strengths and areas for improvement.

It provides valuable insights into revenue generation, customer engagement, and staff efficiency—helping the library make strategic, data-driven decisions for future growth.