Business Pulse – Executive Intelligence Dashboard

# 📊 Overview

This project simulates an executive-level business intelligence system for a multi-channel retail company using synthetic data. It covers full-stack analytics — from raw data ingestion to KPI generation and dashboard creation.

# 🎯 Project Objectives

- Create an end-to-end data pipeline using SQL + Python for analysis.

- Build a robust data model that supports executive insights.

- Enable dynamic visualization using Power BI/Tableau.

- Segment customers for targeting using RFM analysis.

# 🧪 Step-by-Step Project Breakdown

1. \*\*Data Collection\*\*: Uses customers.csv, products.csv, orders.csv — simulating real-world sales data.

2. \*\*Data Cleaning & Feature Engineering\*\*: Performed with Python (pandas, numpy) to handle merging, missing values, and derived columns.

3. \*\*KPI Aggregation\*\*: Outputs monthly\_sales\_summary.csv and rfm\_summary.csv used for KPI calculations.

4. \*\*RFM Segmentation\*\*: Customer classification using Recency, Frequency, and Monetary metrics.

5. \*\*SQL BI Queries\*\*: SQL queries implemented to answer real-world business questions for BI tools.

6. \*\*Dashboard Design\*\*: Used mockups via matplotlib and seaborn to simulate Tableau/Power BI dashboards.

# 📁 Repository Structure

BusinessPulse/

├── data/

│ ├── customers.csv

│ ├── products.csv

│ ├── orders.csv

│ ├── monthly\_sales\_summary.csv

│ └── rfm\_summary.csv

├── scripts/

│ ├── data\_cleaning\_and\_analysis.py

│ └── business\_pulse\_analysis.sql

├── visuals/

│ ├── dashboard\_mockup\_sales\_by\_region.png

│ ├── dashboard\_mockup\_rfm\_segmentation.png

│ └── dashboard\_mockup\_executive\_summary.png

├── README.md

└── requirements.txt

# 📦 Requirements

Install using pip:

pandas==1.5.3

numpy==1.21.6

matplotlib==3.7.1

seaborn==0.12.2

sqlalchemy==1.4.46

# 🧠 Key Features

- Full ETL process

- Customer segmentation with RFM

- Revenue analysis and BI integration

- SQL-compatible queries

- Visual logic for Tableau/Power BI dashboards

# 📈 KPIs Tracked

- Total Monthly Revenue

- Revenue by Region

- Revenue by Product Category

- Customer Segments (RFM)

- Repeat Purchase Rate

- Average Order Value (AOV)

# 📊 Dashboard Mockups

- dashboard\_mockup\_sales\_by\_region.png

- dashboard\_mockup\_rfm\_segmentation.png

- dashboard\_mockup\_executive\_summary.png

# ❓ Business Questions Answered

- What are the top-performing regions?

- Are there seasonal dips or spikes?

- Who are loyal/repeat customers?

- Which categories perform best?

- Customer lifetime value indicators?

# 🔍 Example Output

- Regional bar charts

- Monthly trend line plots

- RFM scatter segmentation

# 👩‍💻 Author

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# 📬 Contributions Welcome

Feel free to fork this repo, raise issues, or submit pull requests.