Investment Portfolio Analysis Report

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1. Executive Summary

This report presents the results of an investment portfolio analysis project that integrates **SQL analytics**, **Python & Jupyter Notebook**, and **Power BI** to evaluate portfolio performance, risk, diversification, and client behavior through comprehensive dashboards and KPI metrics.

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2. Project Overview

Objectives

- Provide actionable insights into investment portfolio performance
- Compare portfolios against market benchmarks
- Visualize risk-adjusted returns and client activity
- Deliver interactive dashboards for decision-makers

Methodology

- Constructed a **normalized relational schema** in MySQL via Docker
- Executed analytical queries using PostgreSQL-style SQL to compute performance, risk, fees, and allocation metrics
- Combined SQL output with **Python data analysis** in Jupyter
- Built a **Power BI dashboard** for visualization and KPI tracking

3. Technical Implementation

3.1 Database & SQL Queries

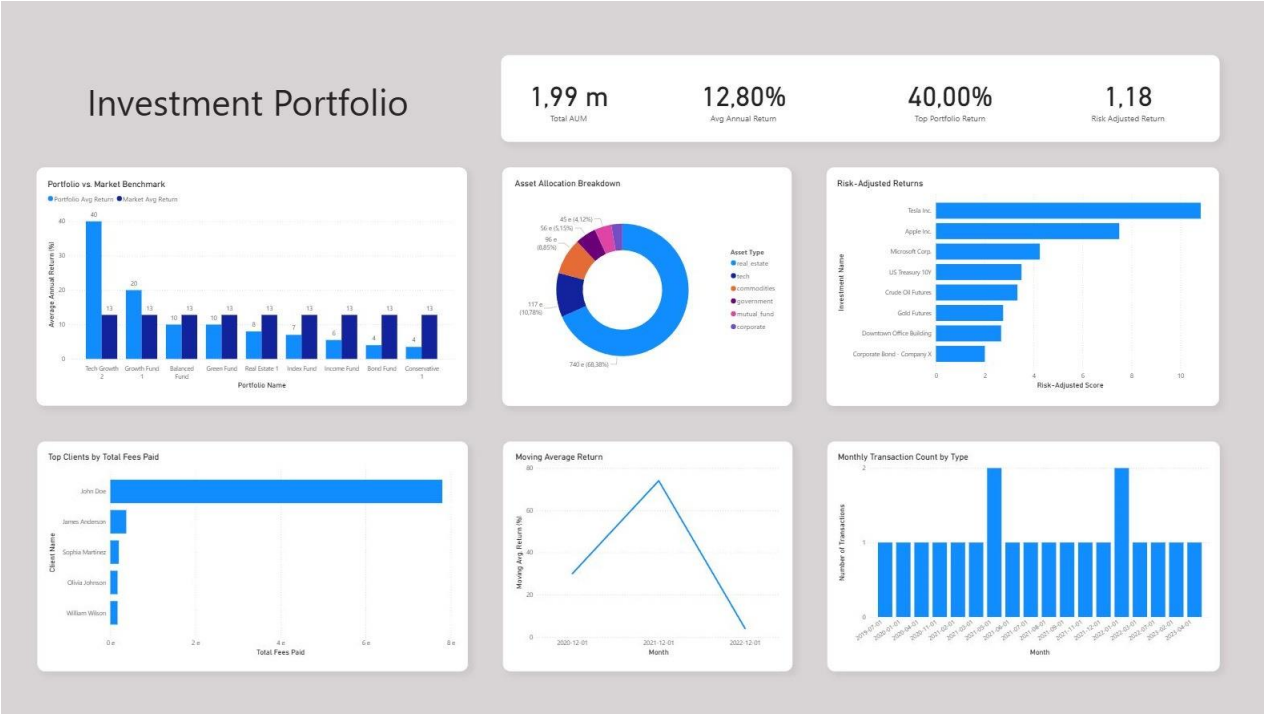
- MySQL 8 containerized with Docker Compose, initialized using init.sql
- Organized SQL-level analytics in scripts/queries/ with subfolders:
    - client_insights/ (e.g. top fee payers, client-owned value)
    - portfolio_analysis/ (weighted returns, diversification, rankings)
    - investment_analysis/ (risk-adjusted return calculations)
    - dashboards/ (monthly transaction trends)
    - advanced/ (moving averages, benchmark comparison)

3.2 Python & Jupyter Notebook

- Python scripts and a Jupyter Notebook (analysis_investment_portfolio.ipynb) used:
    - to load data from MySQL
    - run data exploration and statistics
    - produce deliverable outputs for Power BI integration

3.3 Power BI Dashboard

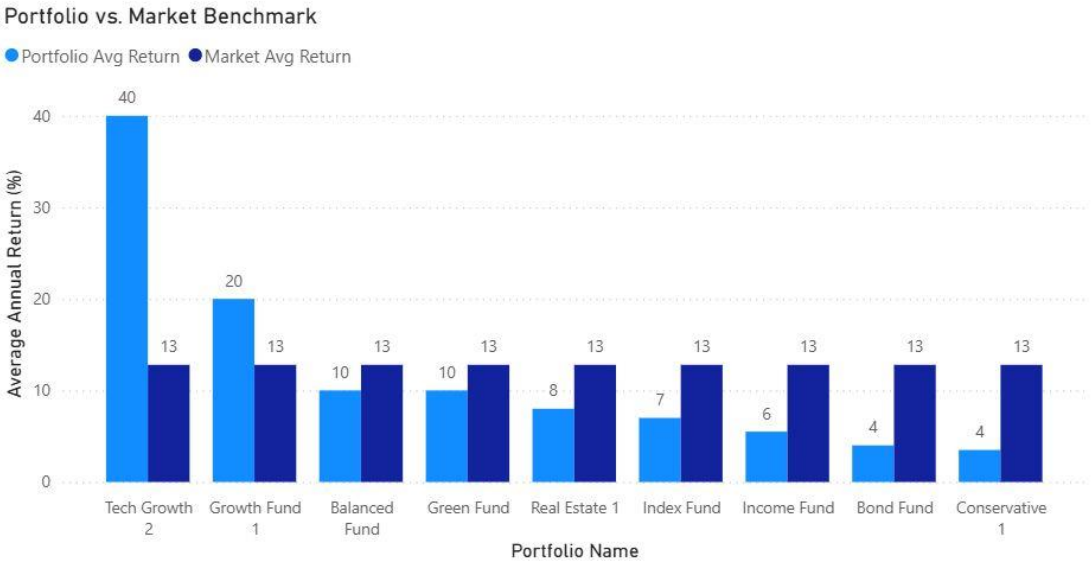
- Visual KPI tracks created in Power BI including:
    - Total Assets Under Management (AUM)
    - Average annual return
    - Risk-adjusted return
    - Top portfolio return
- Main visuals implemented:
    - Clustered column chart for Portfolio vs. Market Benchmark
    - Line chart for Moving Average Return
    - Donut chart for Asset Allocation Breakdown
    - Bar chart for Risk-Adjusted Returns
    - Stacked column chart for Monthly Transaction Trend
    - Bar chart for Top Clients by Fees



4. Key Findings & Insights

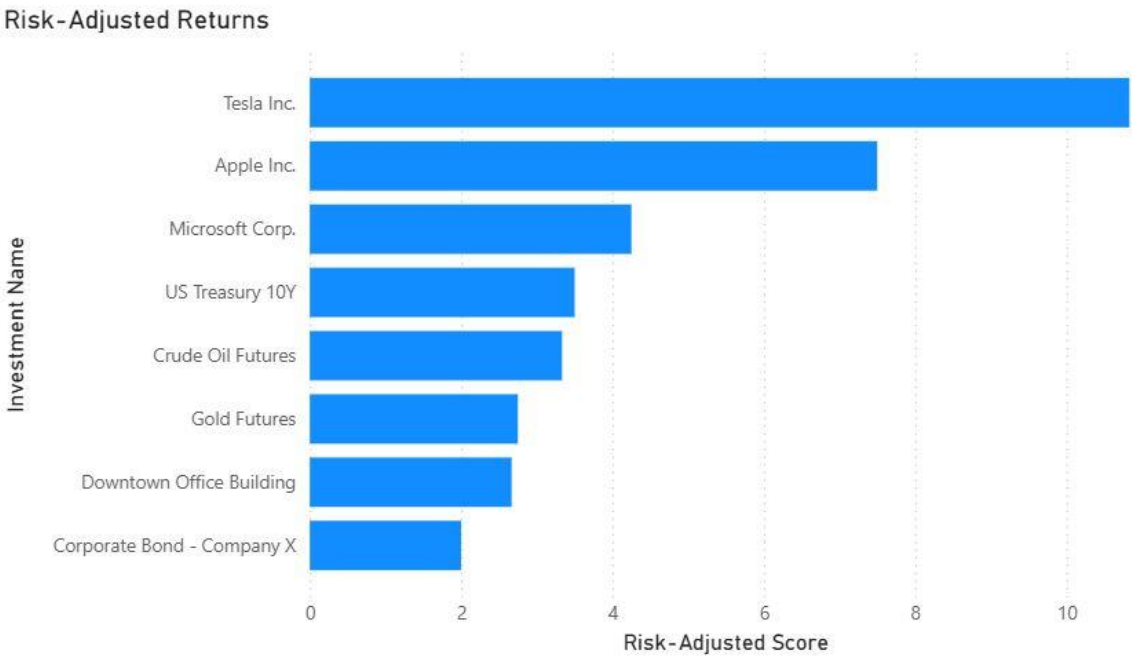
AUM & Performance

- Total AUM across all portfolios: *1,99 m*
- Average annual return: *12,8 %*
- Best-performing portfolio: *Tech Growth 2* with an annual return of *40%*



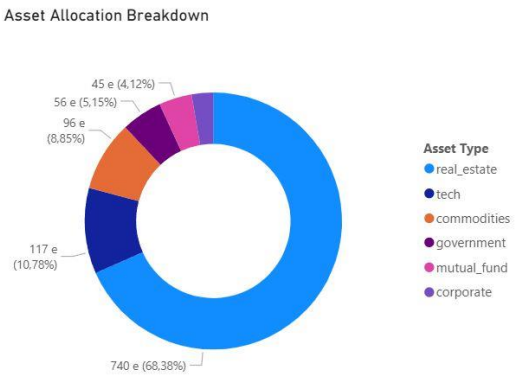
Risk-Adjusted Returns

- Investments with high volatility underperformed once adjusted for risk
- Top risk-adjusted return observed investment: Tesla Inc.



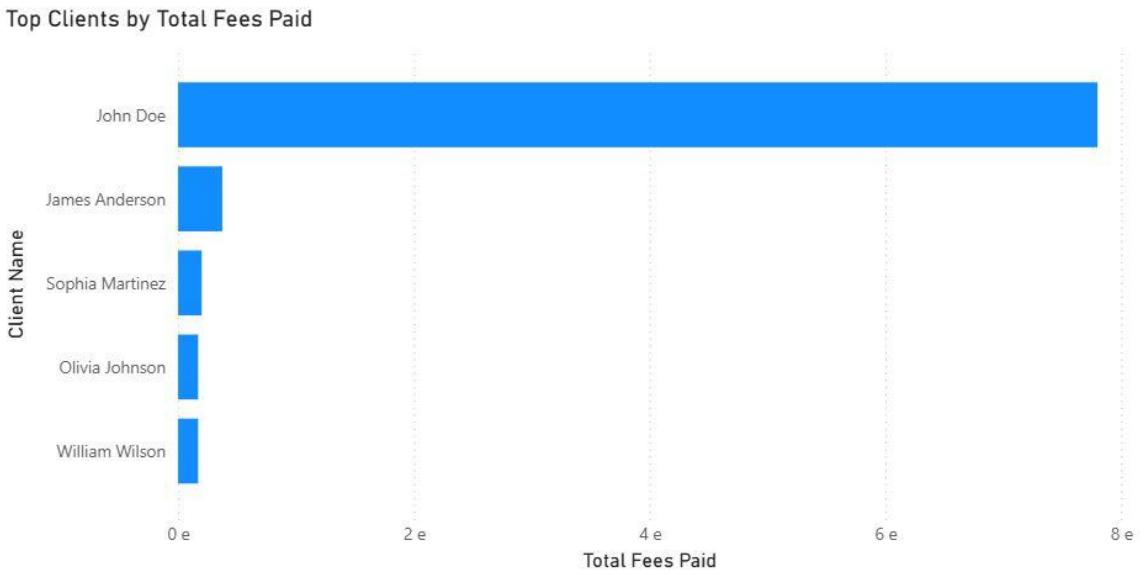
Allocation & Diversification

- Portfolios generally diverse across assets, though some show concentration in a few holdings
- Benchmarked portfolios outperform similar client-risk-profile groups



Client Behavior & Fees

- Clients with highest transaction volume also paid the most in fees
- Some high-fee clients appear to have lower net return after fees



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5. Recommendations

- Encourage optimization for **risk-adjusted performance**, not just raw return
- Reduce fee leakage where clients churn frequently
- Enhance diversification in under-diversified portfolios
- Incorporate benchmarking practices to drive competitive advantage

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6. Supplementary Materials

- **Power BI Dashboard File**: investment_portfolio_dashboard.pbix
- **Dashboard Snapshot**: benchmark_snapshot.jpeg (includes visual preview and KPI summary)
- **HTML Overview**: docs/index.html — interactive project overview and user guidance

7. Tools & Technology Stack

- **Database**: MySQL 8 containerized via Docker
- **SQL**: PostgreSQL-qualified SQL queries
- **Python**: Jupyter with pandas, sqlalchemy, python-dotenv, mysql-connector-python, matplotlib
- **Visualization**: Power BI Desktop for dashboards and data storytelling

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8. Project Files & Structure

```
investment_portfolio/
├── docker/              — Docker Compose and init.sql schema/data
├── scripts/             — Organized SQL queries
├── notebooks/           — Python/Jupyter analytics
├── powerbi/             — PBIX dashboard and snapshot PDF
├── docs/                — HTML documentation
├── requirements.txt     — Python dependencies
└── .gitignore
```

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9. License & Contact Information

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10. Contact Information

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