Retail Business Performance & Profitability Analysis

Internship Project Report

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Abstract

The purpose of this project was to perform a business analytics case study using real-world retail transaction data. The goal was to analyze sales performance, profit drivers, inventory turnover, and customer behavior using SQL, Python, and Power BI. A cleaned dataset was prepared and insights were visualized through an interactive dashboard.

1. Tools Used

- **Python**: Data cleaning, feature engineering, visualization

- **SQLite**: SQL-based analysis and aggregations

- **Power BI**: Interactive dashboard and storytelling

2. Steps Involved

2.1. 1. Data Cleaning and Preparation

The dataset was loaded using Python with encoding support for special characters. We removed rows with missing `CustomerID` and negative `Quantity`, calculated new fields like `Sales` and `Profit`, and parsed dates using `pandas.to_datetime()`.

2.2. 2. SQL-Based Aggregation

SQL queries were written to compute KPIs like total sales, top-selling products, monthly trends, and country-wise sales. This included filtering, grouping, and applying aggregation functions using SQLite.

2.3.   3. Python-Based Insights

Using Pandas and Seaborn, charts were generated for:

- Monthly sales trend

- Top 10 selling products

- Correlation between inventory turnover and profitability

2.4.   4. Power BI Dashboard

The cleaned dataset was visualized in Power BI using:

- KPI cards for sales, orders, and customers

- Line chart for monthly trend

- Bar chart for country and product performance

- Scatter plot showing profit vs. quantity

- Slicers for Country, Date, and Product filters

3.   Conclusion

This project successfully analyzed sales performance and profitability for a retail business. Key findings include:

- United Kingdom was the top market by revenue

- Clear seasonal spikes in monthly sales

- Top 10 products contributed majority of volume

- Strong correlation between quantity sold and profit

The dashboard enables managers to interactively explore the data and make data-driven decisions.

Deliverables

- `Retail_Analysis_Project.ipynb`

- `Cleaned_OnlineRetail.csv`

- `Retail_Analysis_Dashboard.pbix`

- `Retail_Report.pdf`

Thank you for reviewing this project.