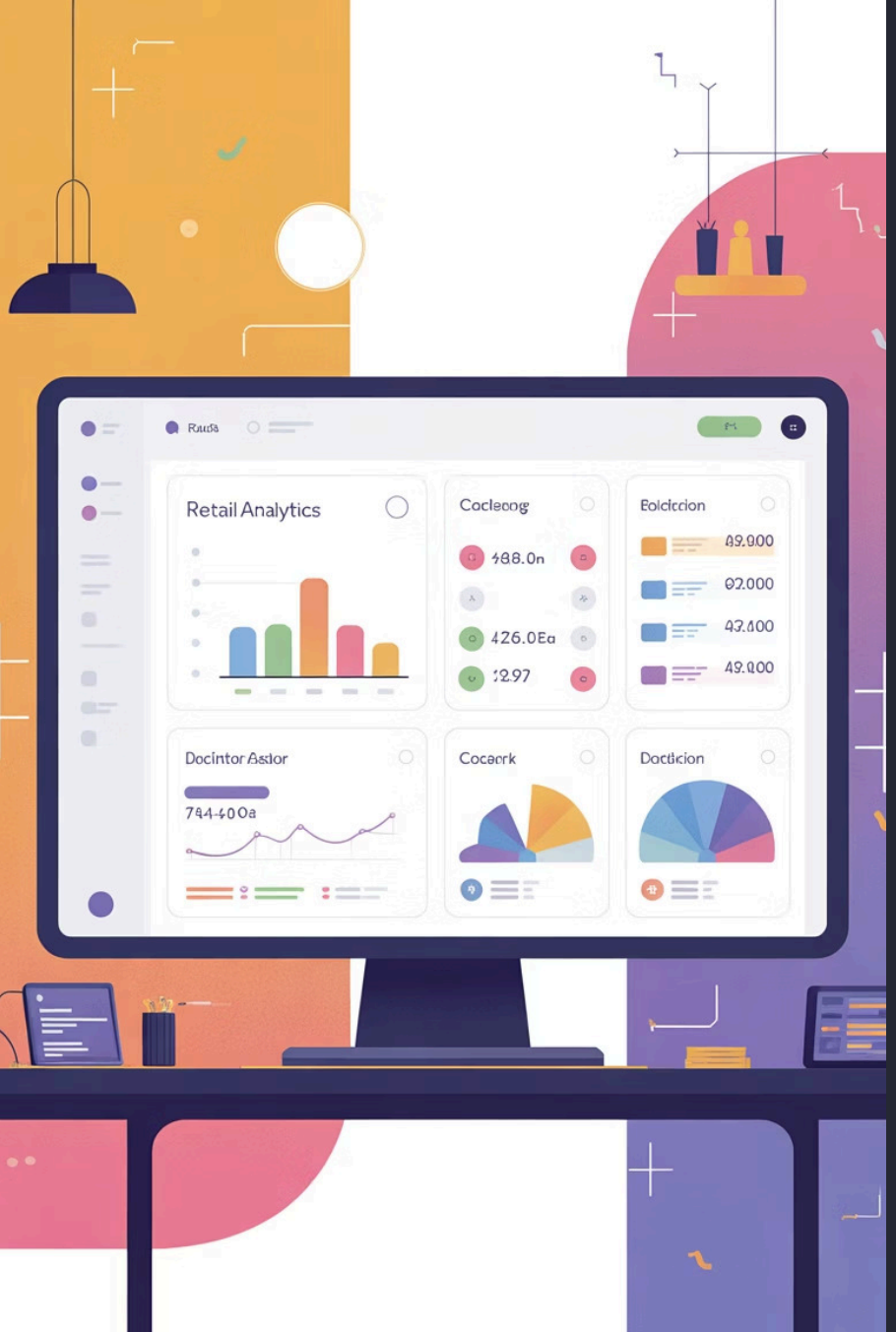


🏪 Retail Sales & Inventory Intelligence System

A comprehensive data analytics solution integrating Excel, SQL, and Power BI to transform retail performance analysis. This project demonstrates end-to-end data workflows—from raw data preprocessing to interactive business intelligence dashboards—delivering actionable insights for multi-store retail operations.

🎯 Project Objectives

End-to-End Analysis

Design a complete analytical workflow that processes retail data from initial collection through final visualization, enabling comprehensive business intelligence.

Actionable Insights

Extract meaningful patterns from sales transactions, inventory levels, store performance metrics, and staff productivity to drive strategic decisions.

Interactive Dashboards

Create dynamic Power BI visualizations that enable stakeholders to explore data, identify trends, and make informed decisions in real-time.

This data-driven solution empowers retail managers and analysts to optimize operations across multiple dimensions—from inventory management to sales team performance—using a unified analytical framework.

🧩 Project Domain & Scope

Domain Focus

Retail, Sales & Inventory Analytics

Comprehensive analysis of multi-store retail operations specializing in mobile phones and laptops, covering the complete sales cycle and inventory lifecycle.

Technical Stack

- **Excel:** Data preprocessing and exploratory analysis
- **SQL:** Database management and complex queries
- **Power BI:** Interactive dashboard creation

5000+

Transactions Analyzed

Comprehensive dataset covering multiple years of retail operations

9

Data Tables

Integrated sales and production domains with relational integrity

3

Store Locations

Multi-location analysis across Baldwin, Santa Cruz, and Rowlett

⚙️ Phase 1: Data Preprocessing in Excel

The foundation of any robust analytics project begins with meticulous data preparation. In this critical first phase, we transformed raw retail transaction data into a clean, analysis-ready format using Excel's powerful data management capabilities.

01

Data Import & Review

Imported raw retail sales data and conducted initial assessment of data quality, structure, and completeness across all transaction records.

02

Data Cleaning

Systematically addressed null values, standardized date formatting, removed duplicate entries, and normalized product names and category fields.

03

Exploratory Analysis

Created pivot tables and summary sheets to identify preliminary patterns in sales trends, stock movements, and category performance.

04

Export for SQL

Prepared and validated cleaned dataset for seamless database import, ensuring data integrity and consistency.

Key Output: A thoroughly cleaned Excel workbook with normalized data fields, validated relationships, and preliminary insights that established the foundation for advanced SQL analysis and Power BI visualization.

Phase 2: SQL Analysis for Business Intelligence

Database Architecture

We imported the cleaned data into SQL Workbench and constructed a robust relational schema with comprehensive foreign key integrity checks, ensuring data consistency across all tables.

The database design emphasized scalability and query performance, enabling complex analytical operations across the entire retail dataset.

Business Use Cases Addressed

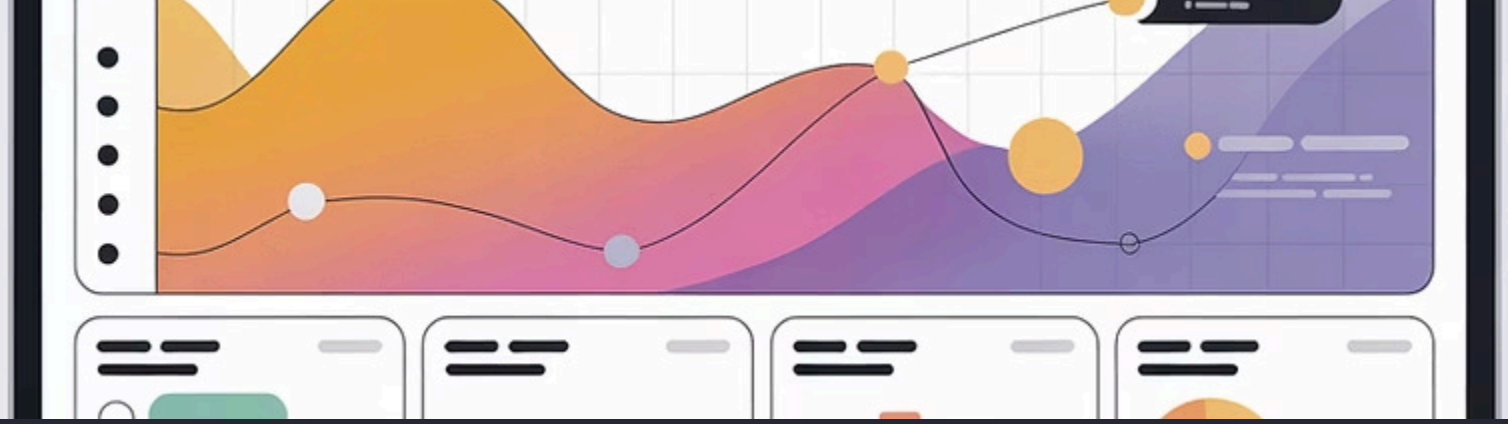
- Top-selling brands by region and store location
- Staff performance evaluation based on sales metrics
- Customer order tracking and fulfillment analysis
- Stock level monitoring and product performance
- Revenue patterns and discount impact assessment

SQL Scripts Library

Comprehensive collection of optimized queries solving specific business challenges, from sales attribution to inventory forecasting.

Reusable SQL Views

Created strategic database views for recurring analyses, streamlining Power BI integration and enabling real-time dashboard updates.



Phase 3: Power BI Dashboard Development

The culmination of our analytical workflow involves transforming SQL query results into compelling visual narratives. We developed two comprehensive Power BI dashboards featuring a professional purple theme, intuitive KPI displays, and interactive filtering capabilities.

Sales Summary Dashboard

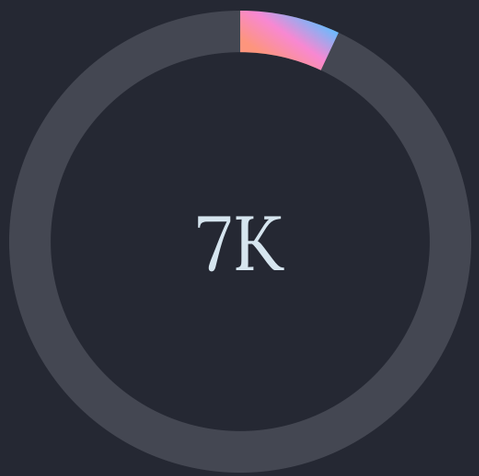
Provides executive-level visibility into revenue performance, brand success, customer behavior, and staff productivity across all retail locations.

Inventory Management Dashboard

Enables real-time monitoring of stock levels, product distribution, and store-wise inventory balance to optimize restocking decisions.

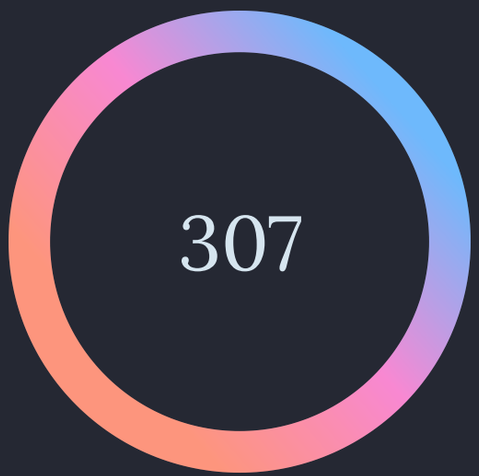
Both dashboards leverage advanced Power BI features including drill-through navigation, cross-filtering, and dynamic measures to deliver a sophisticated user experience. The consistent design language and intuitive layout ensure stakeholders can quickly extract insights without extensive training.

🟣 Inventory Management Dashboard



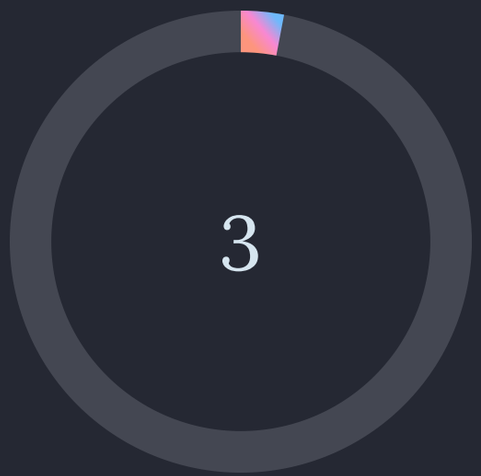
Total Stock Units

Aggregate inventory across all locations



Unique Products

Distinct SKUs in active inventory



Store Locations

Multi-site inventory tracking

Dashboard Capabilities

The inventory dashboard provides comprehensive visibility into stock distribution and product availability. Key visualizations include:

- Category-level inventory comparison (Cruisers Bikes, Mountain Bikes, etc.)
- Store-wise stock allocation with Baldwin Bikes showing highest volume
- Detailed product inventory table with real-time quantities
- Summary tables for strategic stock balancing decisions

Business Value

This dashboard enables operations managers to:

- Identify low-stock products requiring urgent replenishment
- Balance inventory across store locations
- Optimize warehouse allocation
- Prevent stockouts and overstock situations

Interactive Filters: Store, Category, and Product-level filtering enables granular analysis and targeted inventory management decisions.

🧠 Business Use Cases Solved

This analytics system addresses critical retail management challenges through data-driven insights. Each use case translates complex data into actionable intelligence for strategic decision-making.

1 Brand Performance Analysis

Identify top-selling brands segmented by geographic region and individual store location to inform purchasing and marketing strategies.

2 Staff Productivity Evaluation

Measure individual sales representative performance based on total sales volume, enabling fair commission calculations and training identification.

3 Order Fulfillment Tracking

Monitor customer orders from placement through delivery, identifying bottlenecks and improving customer satisfaction metrics.

4 Category Profitability Analysis

Determine which product categories generate the highest margins and revenue contribution across the portfolio.

5 Inventory Optimization

Analyze stock levels and movement patterns to optimize restocking schedules and reduce carrying costs.

6 Temporal Trend Analysis

Understand purchasing patterns across daily, weekly, and monthly cycles to align staffing and inventory with demand.

Project Results & Impact

Data Foundation

Cleaned and structured relational dataset with validated integrity, ready for advanced analytics and machine learning applications.

SQL Intelligence

Comprehensive query library providing instant answers to critical business questions with optimized performance.

Visual Insights

Two professional dashboards summarizing KPIs and enabling self-service analytics for business stakeholders.

Operational Benefits

- Enhanced visibility into multi-dimensional performance metrics
- Real-time monitoring of sales and inventory status
- Data-driven decision making across all management levels
- Reduced time from question to insight
- Standardized reporting framework

Future Readiness

- Scalable architecture supporting additional stores and products
- Foundation for predictive modeling implementation
- Ready for machine learning integration
- Extensible to customer segmentation analysis
- Prepared for demand forecasting capabilities

🚀 Strategic Recommendations

Leveraging the comprehensive insights from the analytics system, these strategic recommendations are designed to drive efficiency, enhance performance, and unlock new growth avenues for the retail business.

1 Optimize Inventory & Supply Chain

Implement dynamic reorder points and automate inter-store stock transfers, especially balancing inventory from high-volume stores like Baldwin to prevent stockouts and optimize carrying costs across all locations.

2 Enhance Sales Performance

Utilize temporal sales trends and detailed brand/category profitability analysis to tailor marketing campaigns, refine product assortment, and focus promotional efforts on high-margin opportunities.

3 Elevate Staff Productivity

Establish a data-driven performance framework for sales representatives, identifying top performers for best practice sharing and pinpointing areas for targeted training and incentive programs based on individual sales contributions.

4 Pursue Strategic Growth Opportunities

Leverage brand performance and category profitability insights to explore potential market expansions, new product line introductions, or strategic partnerships that align with identified growth segments and consumer demand patterns.