Project 1: Sales Data Analysis and Dashboard (Excel/Power BI)

Problems and Background

The retail industry thrives on data, yet many organizations fail to fully leverage it for decision-making. Our company's historical sales data presents an opportunity to uncover insights that can improve revenue growth, cost management, and customer retention.

Key challenges observed:

- **Lack of Visibility**: Sales performance across categories, segments, and regions is scattered, making it hard to align strategies.
- **Profitability Concerns**: Discounts, returns, and shipping inefficiencies reduce margins despite steady sales.
- **Customer Behavior Gaps**: Heavy reliance on a small set of customers creates risk, while repeat purchase behavior is not well understood.
- **Operational Inefficiency**: Delivery durations and high shipping costs in certain states highlight logistics challenges.
- **Data Fragmentation**: Without a unified dashboard, stakeholders rely on siloed reports, slowing decision-making.

The problem is not just analyzing sales figures, but transforming them into **actionable insights** that guide leadership, sales managers, finance teams, and marketing toward smarter, data-driven strategies.

Solution

- Collect and clean sales, returns, and shipping data for accuracy.
- Define key KPIs: Total Sales, Gross Profit, Return Rate, Average Delivery Duration, Average Order Value, Customer Lifetime Value (CLV).

- Create interactive dashboards in **Excel and Power BI** with slicers, drill-downs, and comparative visuals.
- Analyze sales trends, category performance, return behavior, and logistics costs.
- Apply business concepts such as the **Pareto Principle (80/20)**, **customer segmentation**, and **profitability analysis**.
- Provide stakeholders with **narrative insights and recommendations** for profitability, retention, and operational efficiency.

Project Scope

Objective

- To analyze historical sales data and design a **retail dashboard** that identifies revenue drivers, profitability risks, and customer insights.

Process

1. Data collection & preprocessing.
2. KPI selection and metric design.
3. Dashboard development (Excel → Power BI).
4. Insight generation and storytelling.
5. Documentation and final presentation.

Timeline

Week 1

- Collect and clean sample sales data. (*https://www.kaggle.com/datasets/kunalmalviya06/retail-sales-returns-and-shipping-dataset*)
- Perform preprocessing (handle missing data, date formats, categories).
- Explore data using PivotTables in Excel.

Week 2

- Identify KPIs: Total Sales, Sales by Category, Monthly Trends.
- Build Excel visualizations (charts, slicers).
- Begin Power BI basics: import data, create simple reports.

Week 3

- Build interactive dashboards in Power BI.
- Add slicers and drill-down features.
- Focus on data storytelling and usability.

Week 4

- Finalize dashboard design.
- Document key findings and recommendations.
- Prepare final report and presentation.

Stakeholders

- Executives (CXOs) → strategic alignment.
- Sales Managers → product and regional performance.
- Finance → profitability, discounts, returns.
- Logistics → shipping cost & delivery duration.
- Marketing → customer segmentation and retention insights.

Methodology

- **Data Modeling**: Integration of Orders, Returns, and Shipping datasets.
- **Data Cleaning**: Removal of duplicates, handling null values, and standardizing date formats.
- **Analytics**: Created calculated fields (DAX/Excel formulas) for KPIs.
- **Visualization**: Used Power BI and Excel to design interactive visuals (bar charts, matrices, trend lines, Pareto analysis).
- **Iterative Review**: Weekly reviews ensured alignment with stakeholder needs.

Goals and KPIs

- **Revenue Growth** → Total Sales ($2.3M).
- **Profitability** → Gross Profit ($286.4K),
- **Efficiency** → Average Delivery Duration (3.96 days), Avg. Shipping Cost per Order ($45.05).
- **Returns Management** → Return Rate (15.97%), Sales Lost to Returns ($180.5K).
- **Customer Value** → CLV (if calculable), Sales by Segment & Region, Top 20% Customer Contribution.

Technical Processes

- Tools: Excel, Power BI, DAX, PivotTables.
- Features: Drill-down reports, dynamic slicers, KPI cards, trend analysis.
- Datasets: Orders, Returns, Shipping Cost.
- Outputs: 5-page dashboard covering Overview, Sales Analytics, Return Analytics, Shipping Efficiency, and Customer Insights.

Business Concepts Used

- **Pareto Analysis (80/20 Rule)** → Top 20% customers contribute the majority of sales.
- **Customer Segmentation** → Consumer, Corporate, and Home Office are analyzed separately.
- **Return Analysis** → Linking categories/products with profitability erosion.
- **Discount Analysis** → Impact of discounts on margin and revenue leakage.
- **Operational Efficiency** → Shipping cost and delivery time optimization.

Recommended Analysis

- **Sales**: Technology ($836K) leads sales, but Furniture and Office Supplies are close contributors. Balanced strategy needed.

- **Returns**: 800 total returns, concentrated in California & New York, with furniture driving losses. Targeted return-reduction required.

- **Shipping**: California incurred $54K shipping costs, mostly Standard Class. Opportunity to renegotiate logistics contracts.

- **Customers**: Top 20% customers drive >70% sales. Repeat purchases are low, requiring loyalty campaigns.

- **Profitability**: Aggressive discounting and high returns dilute profit margins; focus should shift from volume to margin optimization.

Conclusion

This project demonstrates how sales data, when structured into a unified dashboard, can transform **raw transactions into an actionable strategy**. Key challenges such as **returns, discounting, and shipping costs** must be tackled to protect margins. Customer retention emerges as a critical growth lever, as dependence on a small customer base creates risk.

By equipping stakeholders with interactive dashboards and clear insights, the business is better positioned to make **data-driven decisions that enhance profitability, improve customer experience, and streamline operations**.

Live dashboard -
https://app.powerbi.com/view?r=eyJrIjoiYjhmOTc1MTQtNTFjZC00ZjEzLTg0MDItZmQwYmEwMTkwNWQ3IiwidCI6IjU5NTk0MTdlLTBlOTEtNDdkMi1iYmNiLTkyZjdjZDEwNmNiYyJ9&pageName=ad03817960aa16440e03

Project Owner

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