Project Title: **"Driving Business Growth Through Data: A Comprehensive Sales & Profitability Analysis"**

Problem:

“How can the business optimize its sales and profitability by identifying key patterns in customer behavior, product performance, discount effectiveness, and time-based sales trends?”

Target Audience:

* **Business Executives & Decision-Makers**
* **Marketing & Sales Teams**
* **Product & Category Managers**
* **Operations & Supply Chain Teams**
* **Data Analytics Hiring Managers & Recruiters**

Dataset:

* Source: Kaggle (<https://www.kaggle.com/datasets/vivek468/superstore-dataset-final>)
* Size: 9,995 rows (including headers), 21 columns
* Jan. 2014 – Dec. 2017

Process:

* Inspected the raw csv
* Corrected the header names, removed spaces from it.
* Checked for blank/null values
* Checked for data format for data validation
* Removed product names to avoid format errors since it will not be used.
* Corrected the format to be sql ready
* Imported the csv to MySQL workbench
* Wrote SQL scripts for analysis
  + Customer Segmentation & Behavior.sql
  + Sales & Profit Performance Over Time.sql
  + Sub-Category Sales and Profitability Analysis.sql
  + Discount vs Profit.sql
  + KPI's.sql
* Exported csvs for each scripts
* Imported each to Tableau to discover patterns

Insights Found:

**1. Customer Behavior Patterns**

* **SQL Used**: Customer Segmentation & Behavior.sql
* **Insight Unlocked**: Identify high-value customers and segments based on frequency and monetary contribution.
  + **Consumer Segment** – Top 1 segment based on sales with $1,161,401.34 total sales (51% of overall sales).
* **Business Action**: Prioritize top segments/customers with loyalty programs, targeted campaigns, or account-based marketing.

**2. Product Performance Insights**

* **SQL Used**: Sub-Category Sales and Profitability Analysis.sql
* **Insight Unlocked**: Phones Sub-Category Sales is top 1 with $330,007.10 sales, over the span of 4 years. The least is Fasteners with just $3,024.25 sales. Moreover, the sub-category that has the highest profit margin is Labels (44% - but has 2nd to the least total sales next to fasteners) and the lowest margin is Tables with negative nine percent margin (-9%).
* **Business Action**: Promote or bundle high-margin products, reconsider poor-performing categories, manage inventory efficiently.

**3. Pricing & Discount Effectiveness**

* **SQL Used**: Discount vs Profit.sql
* **Insight Unlocked**: Understand at what discount rates profitability starts to deteriorate.
  + Discount rates higher than 20% produces negative profit. (e.g. 30%-80% Discounts)
* **Business Action**: Redesign discount tiers; offer smaller, targeted discounts to retain margin.

**4. Sales vs Profit Trends Over Time**

* **SQL Used**: Sales & Profit Performance Over Time.sql
* **Insight Unlocked**: Spot seasonality, peaks, or slowdowns.
  + Profit reached its highest point in March 2017 at $18,127.85, but sharply declined the following month to a loss of $5,890.04—an alarming drop that suggests something significant occurred and needs investigation. Meanwhile, sales peaked later in November 2017 at $89,306.23, yet this did not coincide with a profit peak, indicating possible issues with high costs, heavy discounts, or low-margin sales. Overall, while sales generally trended upward, profit remained inconsistent, highlighting the importance of analyzing operational efficiency, pricing strategy, and cost control.
* **Business Action**: Align marketing and supply chain efforts with high-demand periods.

**5. KPI’s Summary**

* **SQL Used**: KPI’s.sql
* **Insight Unlocked**: Provides a high-level snapshot of sales performance, profitability, efficiency, and customer spending behavior in one compact output.
  + **Total Sales**: $2,297,201.07
  + **Total Profit:** $286,397.79
  + **Overall Profit Margin:** 12%
* **Business Action**: Use this summary to benchmark overall health, compare across time periods, and quickly identify if deeper analysis is needed in sales, profit margins, or customer order patterns.

Tools Used:

* MySQL Workbench
* SQL
* MS Excel (for inspecting and cleaning data)
* Python (for date formatting in csv)
* Tableau

Recommendations:

1. Customer Segmentation & Behavior

Insight: The Consumer segment contributes 51% of total sales.

Recommendations:

* Loyalty Program Enhancement : Develop a tiered loyalty program targeting high-value consumer customers to increase retention and repeat purchases.
* Personalized Marketing Campaigns : Use behavioral data to send targeted promotions based on purchase frequency and product preferences.
* Account-Based Marketing (ABM) : Assign dedicated account managers for top-performing consumer segments to provide personalized service and upsell opportunities.
* Segment Retention Strategy : Analyze churn risk in other segments and create win-back campaigns where applicable.

2. Product Performance Insights

Insights:

* Phones sub-category drives $330k+ in sales.
* Fasteners have very low sales ($3k).
* Labels have the highest profit margin (44%) but low sales volume.
* Tables show negative margins (-9%).

Recommendations:

* Bundle High-Margin Products : Combine Labels with higher-demand items like Phones to boost visibility and sales.
* Reassess Low-Performing Categories : Consider discontinuing or repositioning Fasteners and Tables; analyze root causes of poor performance (cost, demand, competition).
* Inventory Optimization : Focus inventory investment on high-performing categories like Phones while minimizing stock for underperformers like tables.
* Promotional Strategy for Labels : Leverage the high-margin potential of Labels with strategic cross-selling and marketing push.

3. Pricing & Discount Effectiveness

Insight: Discounts over 20% lead to negative profits.

Recommendations:

* Restructure Discount Tiers : Limit discounts to <20% unless offset by volume or bundled purchases.
* Targeted Promotions : Offer limited-time discounts only to inactive or low-frequency customers to re-engage them without eroding overall margins.
* Dynamic Pricing Pilot : Explore dynamic pricing models that adjust based on demand, inventory levels, and customer segmentation.
* Track Discount ROI : Monitor profitability per discount campaign and avoid blanket markdowns during peak seasons.

4. Sales vs Profit Trends Over Time

Insights:

* Sharp profit drop after March 2017.
* Sales peaked in November 2017, but not aligned with profit peak.

Recommendations:

* Root Cause Analysis : Investigate March–April 2017 period for operational issues (e.g., returns, supply chain costs, one-off expenses).
* Cost Control Measures : Align procurement, logistics, and promotional spending with high-sales periods to protect margins.
* Seasonal Planning : Coordinate marketing campaigns and inventory restocking with historical high-performance months (e.g., November).
* Profitability Dashboard : Create monthly reports tracking both sales and profit trends side-by-side to identify early warning signs.

5. KPI Summary Overview

Insights:

* Total Sales: $2.3M
* Total Profit: $286K
* Overall Margin: 12%

Recommendations:

* Benchmarking : Compare these KPIs across quarters and years to assess growth trajectory.
* Performance Alerts : Set up alerts when key metrics fall below thresholds (e.g., margin <10%, sales decline >10% MoM).
* Cross-Departmental Alignment : Share KPIs across departments (sales, marketing, finance) to ensure alignment toward common goals.
* Drill-Down Triggers : If any metric shows abnormal behavior, initiate deeper analysis using supporting dashboards or SQL queries.

Dashboard or GitHub Link (optional): I have these to follow