Project Summary

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This project analyzes Walmart transaction data to uncover insights on sales trends, customer behavior, and performance across different branches, payment methods, product categories, and time shifts. SQL queries were used to aggregate data, and visualizations were created using Python to reveal trends and patterns.

# Key Insights:

1. Sales and Payment Methods: Identified popular payment methods and product categories contributing to revenue.  
2. Busiest Days: Pinpointed the busiest days per branch to optimize staffing and inventory.  
3. Ratings Analysis: Calculated average, minimum, and maximum ratings per category and city.  
4. Revenue Comparison: Compared year-over-year revenue to find branches with significant revenue drops.  
5. Transaction Shifts: Analyzed transactions across morning, afternoon, and evening shifts.  
6. Payment Preferences: Identified the most frequent payment methods per branch.

# Visualizations:

Bar charts for sales, line charts for trends, and pie charts for payment method distribution.  
Heatmaps to explore correlations and scatter plots to analyze relationships between variables.

# Actionable Insights:

1. Focus on improving underperforming branches.  
2. Optimize payment infrastructure based on popular methods.  
3. Plan resources around peak sales times.

# Challenges:

1. Missing data like cost price limited certain analyses.  
2. Performance optimizations needed for large datasets.

# Conclusion:

The project provides valuable insights into sales trends, transaction behaviors, and branch performance, helping optimize operations, inventory, and customer engagement strategies.