

# Walmart Sales Analysis

## Business Problems & Solutions

### Project Overview

**Author:** Sachin

**Database:** MySQL

**Domain:** Retail Analytics

**Dataset:** Walmart Sales Transactions

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## Business Problems Addressed

### 1. Data Inventory Management

**Problem Statement:** The management needs to understand the complete scope of available sales data to plan further analysis and reporting strategies.

**Business Impact:** Provides foundation for all subsequent analyses and helps identify data completeness.

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### 2. Transaction Volume Analysis

**Problem Statement:** How many total transactions has Walmart processed? Understanding transaction volume is critical for capacity planning and performance benchmarking.

**Business Impact:** Helps determine system load, staffing requirements, and overall business scale.

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### 3. Payment Method Preference Analysis

**Problem Statement:** Which payment methods are customers using most frequently? This affects partnership decisions with payment processors and checkout infrastructure planning.

**Business Impact:**

- Optimize payment gateway costs
- Reduce transaction fees
- Improve checkout experience
- Plan for future payment integrations

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## 4. Branch Network Assessment

**Problem Statement:** How many unique branches are operating? This is essential for understanding the geographic footprint and resource allocation.

**Business Impact:** Strategic planning for expansion, consolidation, or resource reallocation across branches.

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## 5. Minimum Order Quantity Analysis

**Problem Statement:** What is the smallest quantity purchased in a single transaction? This helps understand customer buying patterns and potential areas for minimum order policies.

**Business Impact:** Informs inventory packaging, promotional strategies, and operational efficiency improvements.

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## 6. Payment Method Performance Metrics

**Problem Statement:** Beyond transaction count, what is the total volume of products sold through each payment method? This reveals the true business value of each payment channel.

**Business Impact:**

- Identify high-value payment channels
  - Negotiate better rates with payment processors
  - Prioritize payment method support and maintenance
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## 7. Category Performance by Branch

**Problem Statement:** Which product category receives the highest customer satisfaction (ratings) at each branch? This identifies local market preferences and successful category management.

**Business Impact:**

- Optimize product mix per branch
- Reward high-performing category managers
- Replicate success strategies across branches
- Localize inventory decisions

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## 8. Peak Traffic Day Identification

**Problem Statement:** Which day of the week generates the most transactions at each branch? Critical for staffing optimization and promotional planning.

**Business Impact:**

- Optimize staff scheduling
  - Plan targeted promotions on slower days
  - Improve customer service during peak times
  - Reduce labor costs on quieter days
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## 9. Sales Volume by Payment Method

**Problem Statement:** What is the total quantity of products sold through each payment method? Complements transaction count analysis.

**Business Impact:** Validates payment method importance and helps forecast inventory needs based on payment trends.

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## 10. City-Category Rating Analysis

**Problem Statement:** How do product categories perform across different cities in terms of customer satisfaction? Identifies geographic variations in product quality perception.

**Business Impact:**

- Identify quality control issues by location
  - Tailor product offerings to city preferences
  - Address supply chain issues affecting specific locations
  - Benchmark performance across markets
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## 11. Profitability Analysis by Category

**Problem Statement:** Which product categories generate the most profit? Essential for strategic decisions on category expansion, marketing investment, and shelf space allocation.

**Business Impact:**

- Prioritize high-profit categories
  - Identify underperforming categories for improvement or elimination
  - Guide marketing budget allocation
  - Optimize store layout and shelf space
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**12. Branch-Level Payment Preference**

**Problem Statement:** What is the most preferred payment method at each branch? Helps understand local market characteristics and payment infrastructure needs.

**Business Impact:**

- Ensure adequate payment infrastructure at each location
  - Tailor promotional offers based on preferred payment methods
  - Reduce transaction failures
  - Improve customer experience
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**13. Sales Shift Pattern Analysis**

**Problem Statement:** When during the day (Morning/Afternoon/Evening) do branches receive the most transactions? Critical for operational planning.

**Business Impact:**

- Optimize shift scheduling
  - Plan break times strategically
  - Schedule maintenance during low-traffic periods
  - Adjust store hours based on demand
  - Improve energy efficiency
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**14. Revenue Decline Investigation**

**Problem Statement:** Which branches experienced the largest revenue decline from 2022 to 2023? Requires immediate management attention to understand and address underlying issues.

**Business Impact:**

- Identify struggling locations
  - Investigate root causes (competition, local economy, operational issues)
  - Develop turnaround strategies
  - Make informed decisions about branch viability
  - Prevent further revenue erosion
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**15. Top-Selling Products by Category**

**Problem Statement:** What are the top 3 revenue-generating transactions within each category? Identifies star products driving category success.

**Business Impact:**

- Focus inventory on bestsellers
  - Design promotions around popular items
  - Ensure stock availability of top products
  - Understand customer preferences
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**16. Peak Revenue Month by Branch**

**Problem Statement:** Which month generates the highest revenue for each branch? Helps understand seasonal patterns and plan accordingly.

**Business Impact:**

- Optimize inventory for peak months
  - Plan staffing for high-revenue periods
  - Design seasonal promotions
  - Manage cash flow effectively
  - Set realistic monthly targets
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## 17. Transaction Size Segmentation

**Problem Statement:** How are transactions distributed across Small, Medium, and Large sizes at each branch? Understanding basket size patterns.

**Business Impact:**

- Design targeted promotions (bulk discounts, small-item bundles)
  - Optimize checkout process for different transaction sizes
  - Forecast demand more accurately
  - Tailor marketing messages
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## 18. Profit Estimation with Missing Data

**Problem Statement:** Calculate estimated profit per transaction even when profit margin data is incomplete. Ensures comprehensive financial analysis.

**Business Impact:**

- Complete financial picture despite data gaps
  - Identify high-profit transactions
  - Improve data collection processes
  - Support accurate financial reporting
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## 19. Branch-Category Revenue Matrix

**Problem Statement:** What is the revenue contribution of each category-branch combination? Identifies the most valuable branch-category pairs.

**Business Impact:**

- Optimize category allocation per branch
  - Identify expansion opportunities
  - Recognize top-performing combinations
  - Guide localized merchandising strategies
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## 20. Pricing Strategy Analysis

**Problem Statement:** What are the minimum and maximum price points for products in each category? Helps understand pricing ranges and potential gaps.

**Business Impact:**

- Identify pricing opportunities
  - Ensure competitive pricing
  - Plan product assortment across price points
  - Guide procurement decisions
  - Detect pricing anomalies
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## 21. Reusable Payment Analysis System

**Problem Statement:** Create a flexible, reusable system to quickly query preferred payment methods for any branch. Supports agile decision-making.

**Business Impact:**

- Enable rapid branch-specific insights
  - Support operational decisions
  - Facilitate branch manager reporting
  - Improve response time to payment-related issues
  - Standardize analysis methodology
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*Document prepared for: Walmart Sales Analysis Project*

*Technical Implementation: MySQL Database*

*Analysis Type: Retail Business Intelligence*