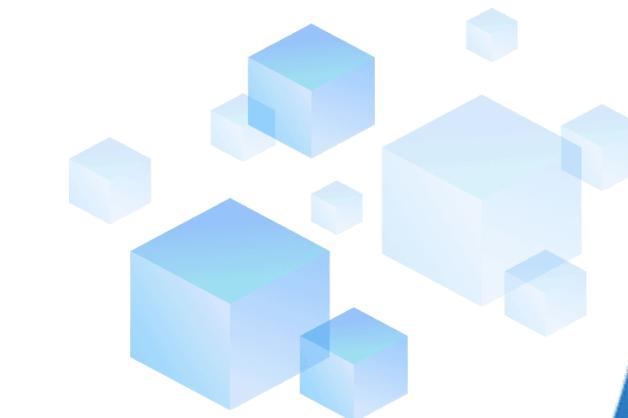# MarketEdge Retail Analytics

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2025/03/23

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01

Profit Crisis

Margin Erosion Despite Sales Growth

Sales Growth

Our retail business has experienced a 9% increase in sales over the past three years, indicating a positive trend in market engagement and customer transactions.

Margin Decline

Despite the sales growth, our gross margin has eroded by 2.1 percentage points, highlighting a critical issue in our operational and pricing strategies.

Root Causes

The decline is attributed to fragmented promotions and misaligned inventory management, which have led to inefficiencies and lost profitability.
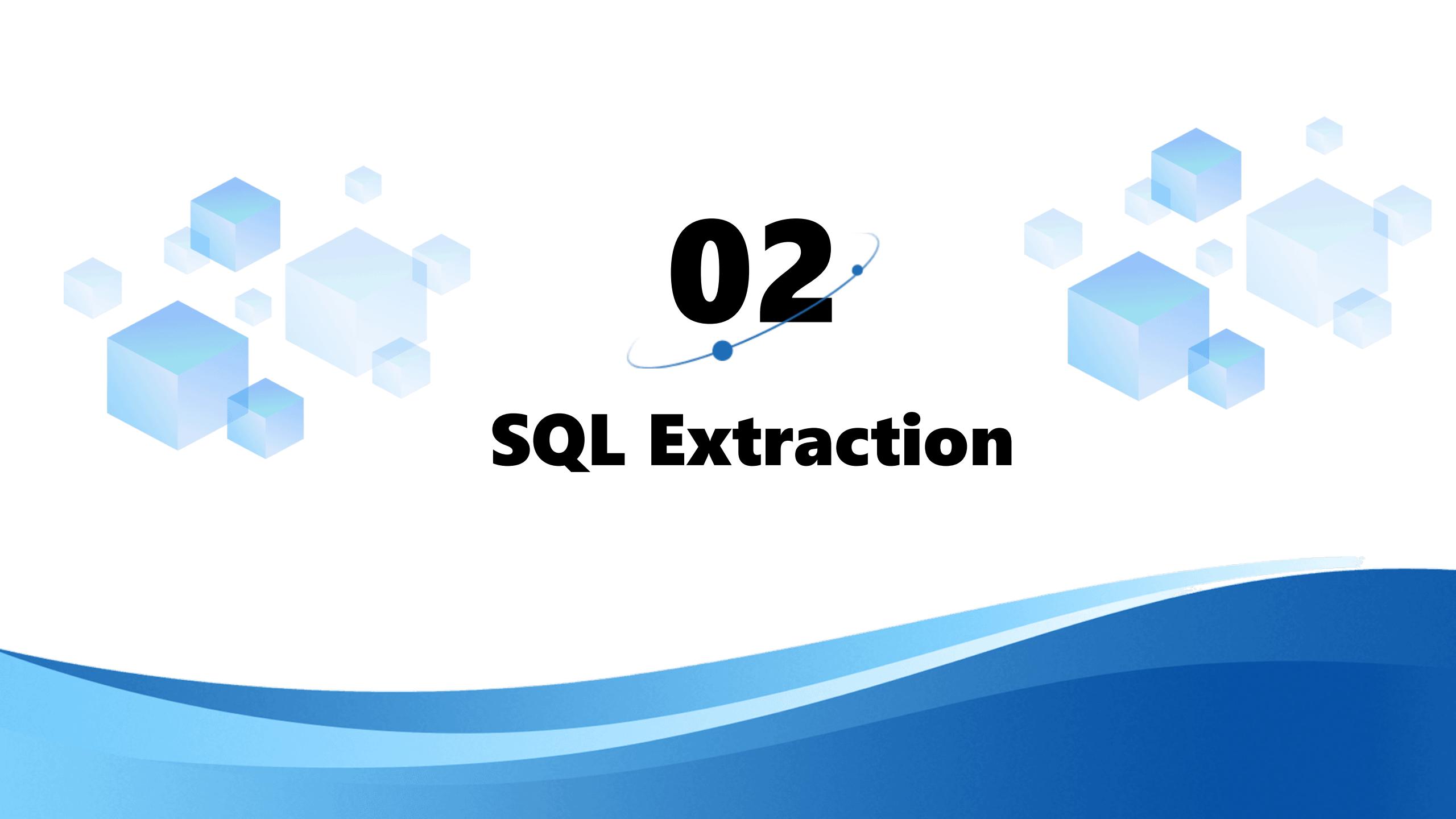
Strategic Cost of Insight Gaps

Annual Leakage

We are losing $4.5 million annually due to stock-outs, overstock, and mispriced promotions, which severely impacts our bottom line.

Competitive Disadvantage

Competitors are leveraging data analytics for agile pricing and operational efficiency, giving them a significant edge in the market.

02

SQL Extraction

Source Schema & Join Logic

Data Sources

Data is extracted from OLTP sales, inventory, customer, and promo tables, which form the core of our transactional data.

Key Fields

Key fields include store_id, sku, qty, net_sales, cost, and discount_rate, which are essential for margin decomposition and analysis.

SQL Query

The SQL query joins sales, item, and promo tables to aggregate data, filtering records from the past 36 months to focus on recent trends.

Example Query

SELECT s.store_id, s.sku, s.qty, s.net_sales, s.cost, p.discount_rate FROM sales s JOIN item i ON s.sku=i.sku LEFT JOIN promo p ON s.promo_id=p.id WHERE s.order_date >= DATEADD(month,-36,GETDATE())

Window Functions for KPIs

KPI Calculation

Window functions are used to calculate YTD sales, running inventory turns, and percentile ranks, providing dynamic and aggregated metrics for real-time analysis.

03

SQL Library

Complete SQL Query Reference

01

Margin CTE

A Common Table Expression (CTE) is used to calculate margin by store and SKU, enabling detailed profitability analysis.

02

Inventory ABC-XYZ

SQL scripts classify inventory using ABC-XYZ analysis, helping to optimize stock levels and reduce carrying costs.

03

RFM Segmentation

RFM segmentation queries identify high-value customers, enabling targeted marketing and personalized customer experiences.

04

Pipeline & Cleansing

Cleaning & Validation Steps

Data Cleaning

Python pandas is used to remove duplicate keys, harmonize currencies, and flag returns exceeding $500, ensuring data integrity.

Validation

Excel checksums validate joins, and Tableau Prep schedules nightly publishing to Hyper files, maintaining a single source of truth.

User-Centric Design Choices

Role-Based Landing Pages

Role-based landing pages are designed for CFOs, Store Ops, and Marketing teams, ensuring tailored insights for each user group.

Three-Panel UI

The dashboard features a three-panel UI with a KPI ribbon, filter shelf, and dynamic tiles, providing an intuitive and interactive user experience.

Accessibility

The design adheres to WCAG standards, ensuring accessibility and inclusivity for all users.

Mobile Responsiveness

The dashboard is mobile-responsive, allowing field teams to access critical insights on the go.

06

Key Findings

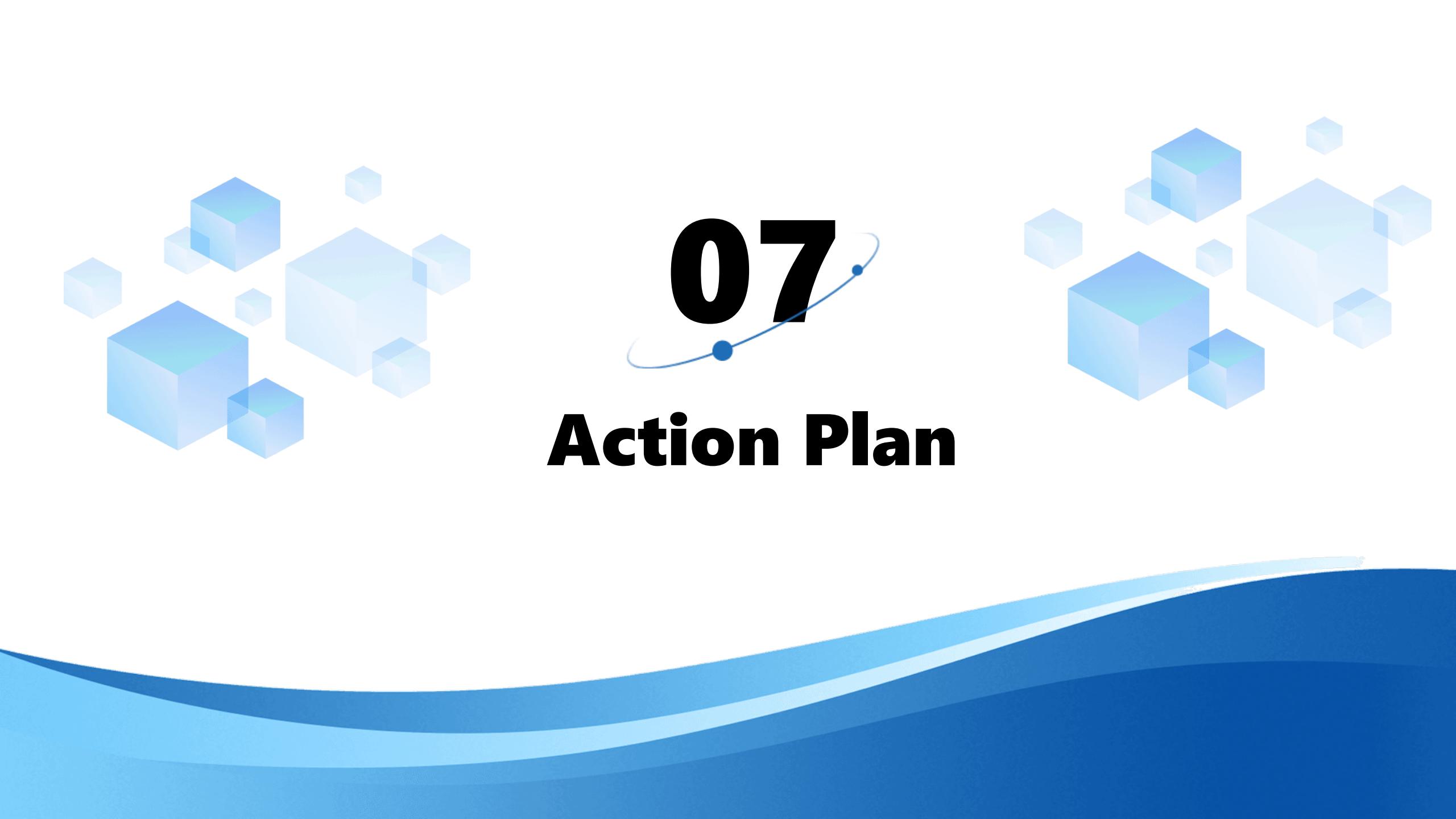# Margin Recovery Levers Isolated

Category Insights

Electronics show a 4 ppt margin compression in November-December, while home office maintains a steady 8% margin, indicating seasonal and category-specific challenges.

Customer Segmentation

Champions, representing 7% of customers, generate 41% of profit, highlighting the value of high-tier customer segments.

07
Action Plan

Prioritized Strategic Moves

01
Supplier Negotiation

Renegotiate contracts with top 10 suppliers using discount-impact CTEs to optimize costs and improve margins.
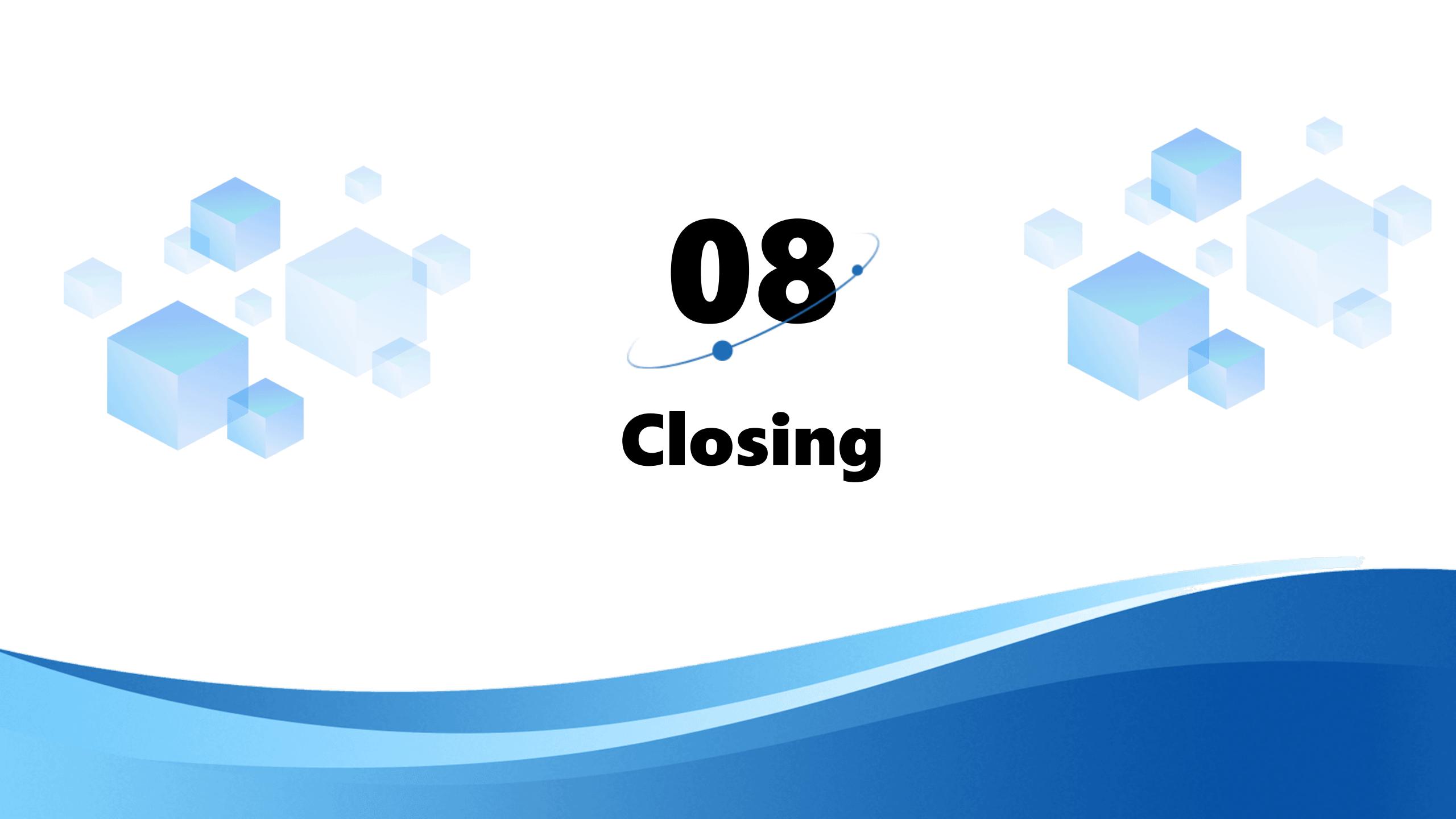
02
Marketing Reallocation

Shift 15% of ad spend to target Champions, maximizing ROI and customer retention.

03
Inventory Optimization

Pilot urban micro-fulfillment centers and raise the private-label mix by 5% to streamline inventory and boost profitability.

08

Closing

Connect for Collaboration

Next Steps

Thank You — Let's Connect

Key SQL + Tableau insights revealed the main drivers of sales, profit, and inventory trends.

Open to questions and discussions about my approach and findings.

Scan the QR code to connect with me on LinkedIn.

Ready to apply these scalable analytics solutions to real-world retail and e-commerce challenges.