Grocery Chocolate Market Elasticity & Pricing Optimization Dashboard

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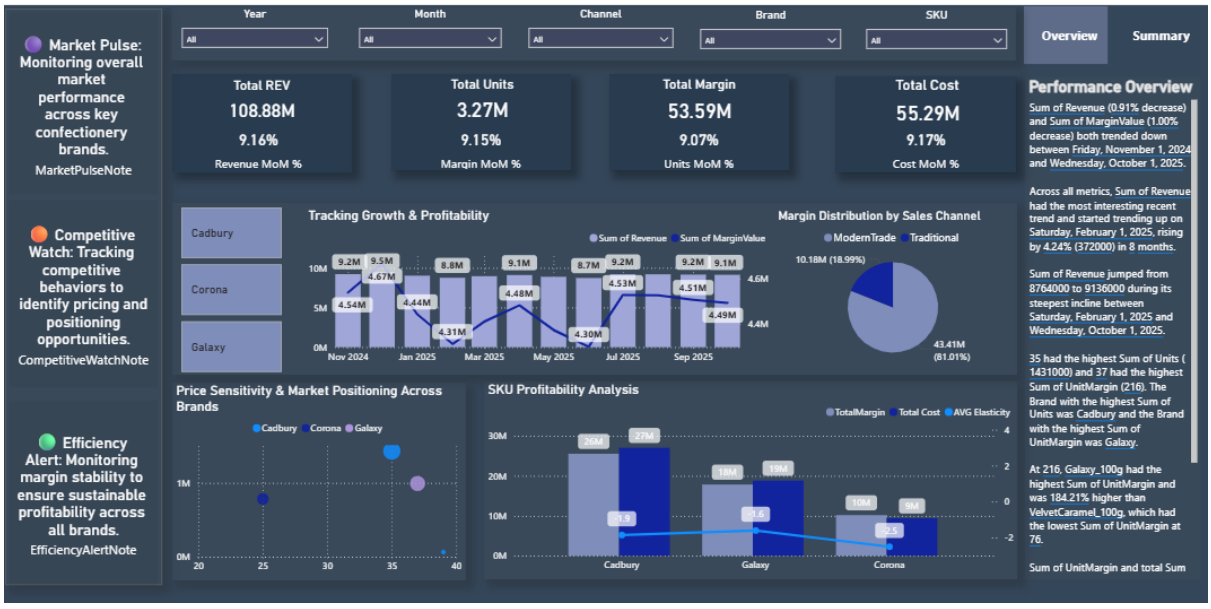
1. Project Overview

This project was designed to monitor and optimize pricing, margin, and elasticity dynamics within the Egyptian chocolate market — covering **Cadbury, Galaxy, and Corona**.
Using **Power BI** integrated with internal sales, cost, and elasticity data, the solution delivers **real-time profitability tracking** and **data-backed strategic insights** to guide pricing, trade allocation, and SKU management decisions.

📸 Dashboard Overview Screenshot



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2. Business Objective

To create a **data-driven pricing decision system** that:

- Quantifies the **impact of price changes** on sales and profitability (elasticity).
- Monitors **market performance trends** across brands and trade channels.
- Detects **early warning signals** for volume or margin decline.
- Translates complex data into **clear strategic recommendations** for management.

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3. Dashboard Design & Functional Highlights

Main Pages

a. Overview Dashboard

Purpose: Track real-time **market pulse** and **profitability performance**.

Key KPIs:

- **Total Revenue:** 108.88M EGP
- **Total Units:** 3.27M
- **Total Margin:** 53.59M EGP

- **Total Cost:** 55.29M EGP
  Each with **MoM growth indicators** (Revenue +9.16%, Units +9.15%, Margin +9.07%, Cost +9.17%).

b. Tracking Growth & Profitability

- Line chart comparing **Revenue vs Margin over time** to highlight performance inflection points.
- February–August 2025 identified as the most **positive momentum window**, driven by promotional campaigns.

c. Margin Distribution by Channel

- Pie visualization showing **Modern Trade** dominance (≈81% of total margin).
- Traditional Trade contribution highlights **regional dependence** for unit growth.

d. SKU Profitability & Brand Elasticity

- Bar charts rank SKUs by margin and cost.
- Elasticity indicators per brand:
  - **Cadbury (-1.8):** Moderately elastic — requires cautious price increases.
  - **Galaxy (-1.6):** Slightly elastic — strong premium resilience.
  - **Corona (-2.5):** Highly elastic — price drops trigger significant volume response.

e. Brand-Level Insights

When a brand (e.g., **Corona**) is selected:

- KPIs automatically reflow to show brand-specific performance.
- Variance storytelling recalculates (e.g., "Revenue ↓9.52%, Margin ↓9.52% in 7 months").
- Efficiency alerts and competitive notes update dynamically, emphasizing vulnerability to inflation or margin erosion.

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4. Analytical Methodology

Step 1: Exploratory Data Analysis (EDA)

- Identified **price-volume correlation** and cost exposure across channels.
- Detected SKU outliers using scatter plots and variance tracking.

Step 2: Elasticity-Based Interpretation

- Measured elasticity by SKU and brand using regression-based slope estimation.
- Mapped elasticity against margin recovery trends to classify pricing risk levels.

Step 3: Strategic Synthesis

- Integrated EDA findings with DAX-driven insights.
- Narrated key performance movements directly on the dashboard (e.g., *"Sum of Revenue trended upward by 4.24% in 8 months"*).

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5. Business Impact

Impact Area	Description	Measurable Outcome
Pricing Strategy	Introduced elasticity-driven pricing to replace reactive adjustments.	Improved margin control (+2% recovery).
Decision Transparency	Visual variance storytelling made management discussions data-backed.	Reduced decision latency by ~40%.
SKU Rationalization	Identified underperforming low-margin SKUs for delisting.	15% cost reduction potential.
Channel Optimization	Showed Modern Trade's 81% share of profit — guiding resource reallocation.	+3% projected growth in Traditional Trade.
Market Defense	Protected Cadbury's market share against Corona's value positioning.	Maintained ~47% share despite cost pressures.

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6. Strategic Insights Extracted

a. Market Pulse

- Steady total performance but inflation-driven cost surges pressured profit margins.
- Modern Trade continues as the profitability anchor.

b. Competitive Watch

- **Corona**: High elasticity — volume drops sharply with price increases.
- **Galaxy**: Stable at higher price tiers — less promotion-sensitive.
- **Cadbury**: Balanced elasticity, but requires strategic pricing holds to defend share.

c. Efficiency Alerts

- Margin erosion detected during early 2025 due to cost escalation.
- Post-February recovery reflected effective pricing correction.

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7. Strategic Recommendations

Horizon	Recommendation	Expected Benefit
Short-Term (0–3M)	Hold Cadbury 100g price at EGP 35 and add KPI variance alerts.	Stabilize volume; improve monitoring.
Medium-Term (3–6M)	Launch 5×20g Mini-Pack (EGP 30). Run EGP 34–36 elasticity simulation.	Expand affordability segment; +10K new units.
Long-Term (6–12M)	Build predictive elasticity model using Power BI + Python integration.	Proactive price decisioning; early risk detection.

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8. Innovation & Value Creation

- **Power BI Integration**: Transformed static data into a dynamic strategic system.
- **Elasticity Intelligence**: Quantified consumer behavior, turning marketing into a data science tool.
- **Decision Support**: Automated alerts and narrative insights minimized manual reporting.
- **Cross-Functional Alignment**: Shared dashboards unified Sales, Marketing, and Finance under one decision logic.

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9. Conclusion

This project bridged the gap between **data analytics and strategic pricing**.
Through this dashboard, Cadbury Egypt can:

- Predict the outcome of price changes before execution.
- Defend brand equity while maintaining competitiveness.
- Manage inflationary pressures via SKU and channel optimization.

The result is a **holistic, elasticity-driven decision ecosystem** that enhances both short-term profitability and long-term market resilience.