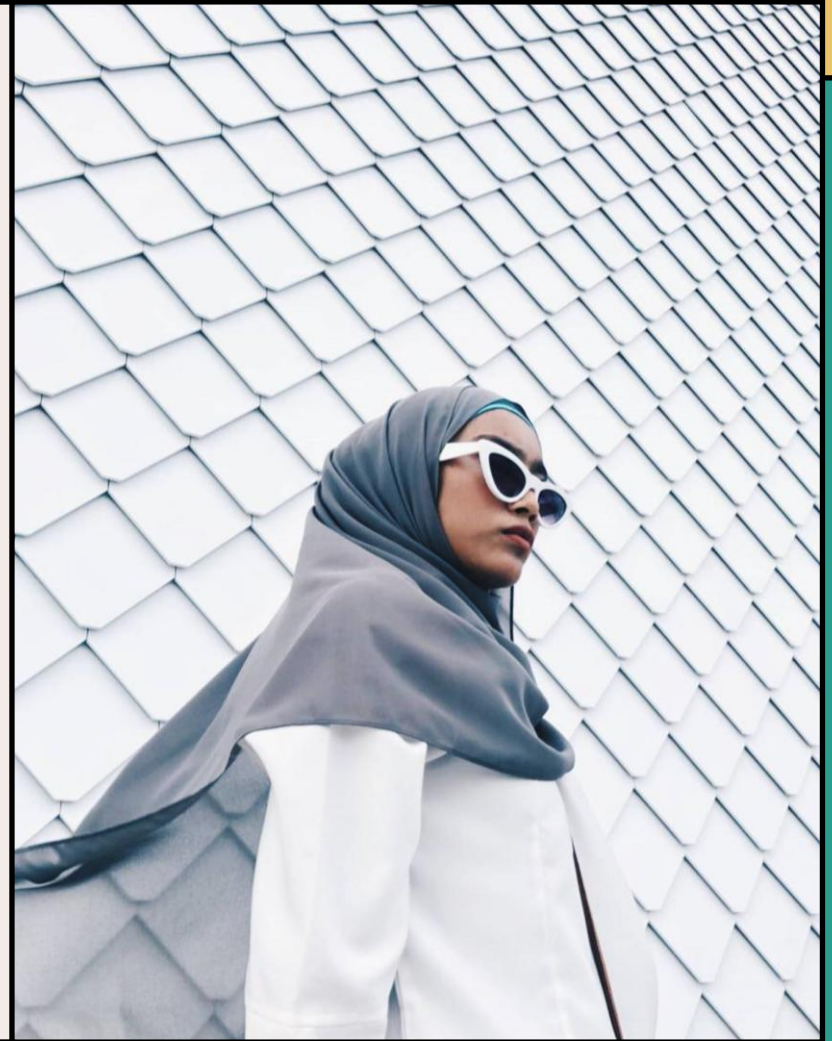


# Retail Sales Analysis

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# Agenda



Objective



Timeline



Key  
Performance  
Indicators



Price Elasticity  
of Demand



Summary

# Objective

Given the daily trading information for a large retail store, aggregated for the day of one of the products sold at this store. Our task is to:

- ✓ **Compute Key Metrics**

Calculate price per unit, gross profit percentage, and gross profit per unit percentage to measure sales performance.

- ✓ **Analyze Promotional Periods**

Evaluate sales trends during promotions to understand their impact on revenue and customer behaviour.

- ✓ **Calculate Price Elasticity**

Measure consumer responsiveness to price changes by calculating price elasticity of demand.

- ✓ **Generate Actionable Insights**

Use data trends and correlations to create recommendations supported by visualizations.



# Timeline

12 Nov 2025

**Data Preparation and Planning:** review data, metric calculations, handle missing values or duplicates

16 Nov 2025

**Visualization & Insights:** Export results from Snowflake to Excel  
Used Pivot tables for graphing and Create charts for trends

23 Nov 2025

**Presentation Preparation:** Build 20-min deck with insights, recommendations, and roadmap

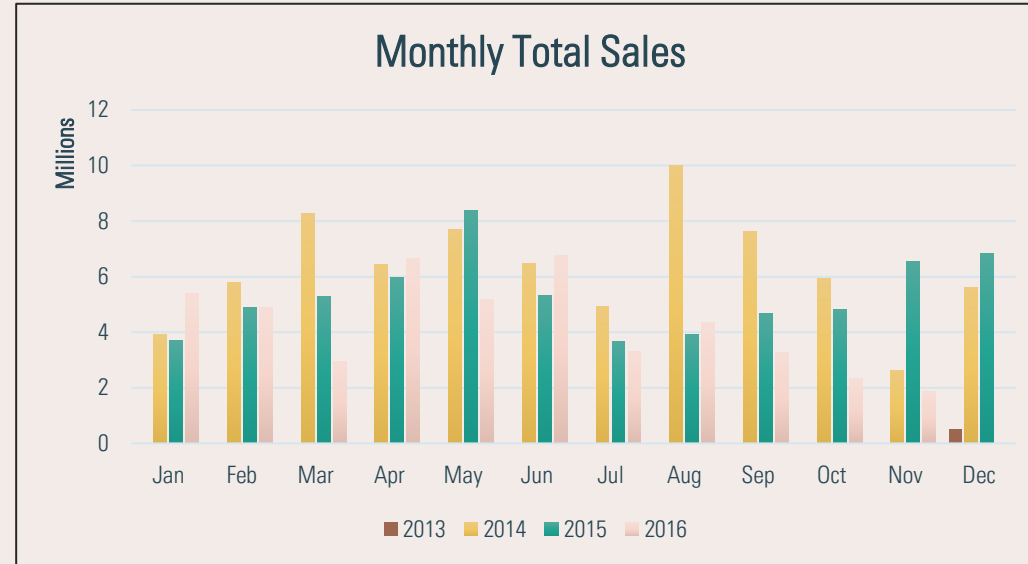
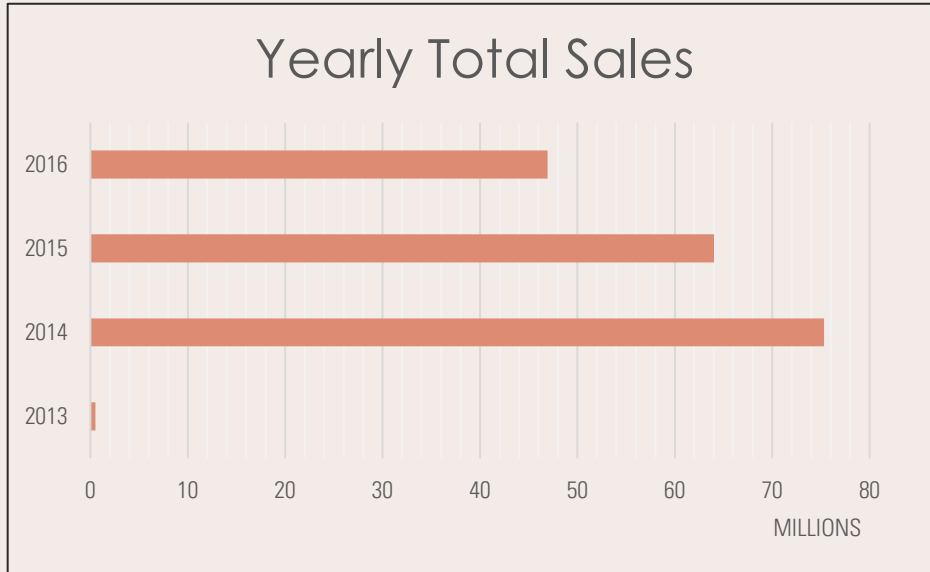
13 Nov 2025

**Exploratory Data Analysis:** Create a database, Schema and Import both csv files to snowflake before coding can start

20 Nov 2025

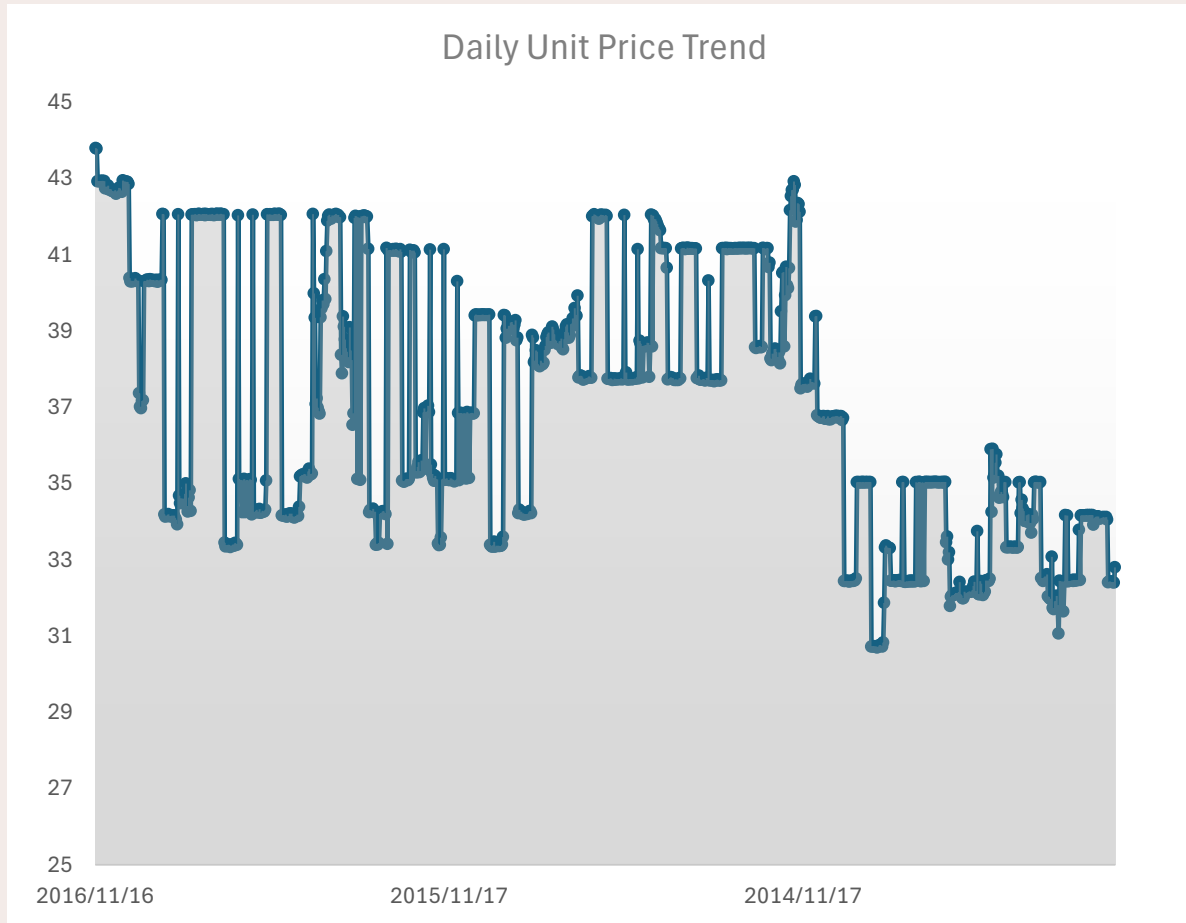
**Dashboard Design:**  
Used Google Looker to Define KPIs, layout, and mock-up

# Sales performance



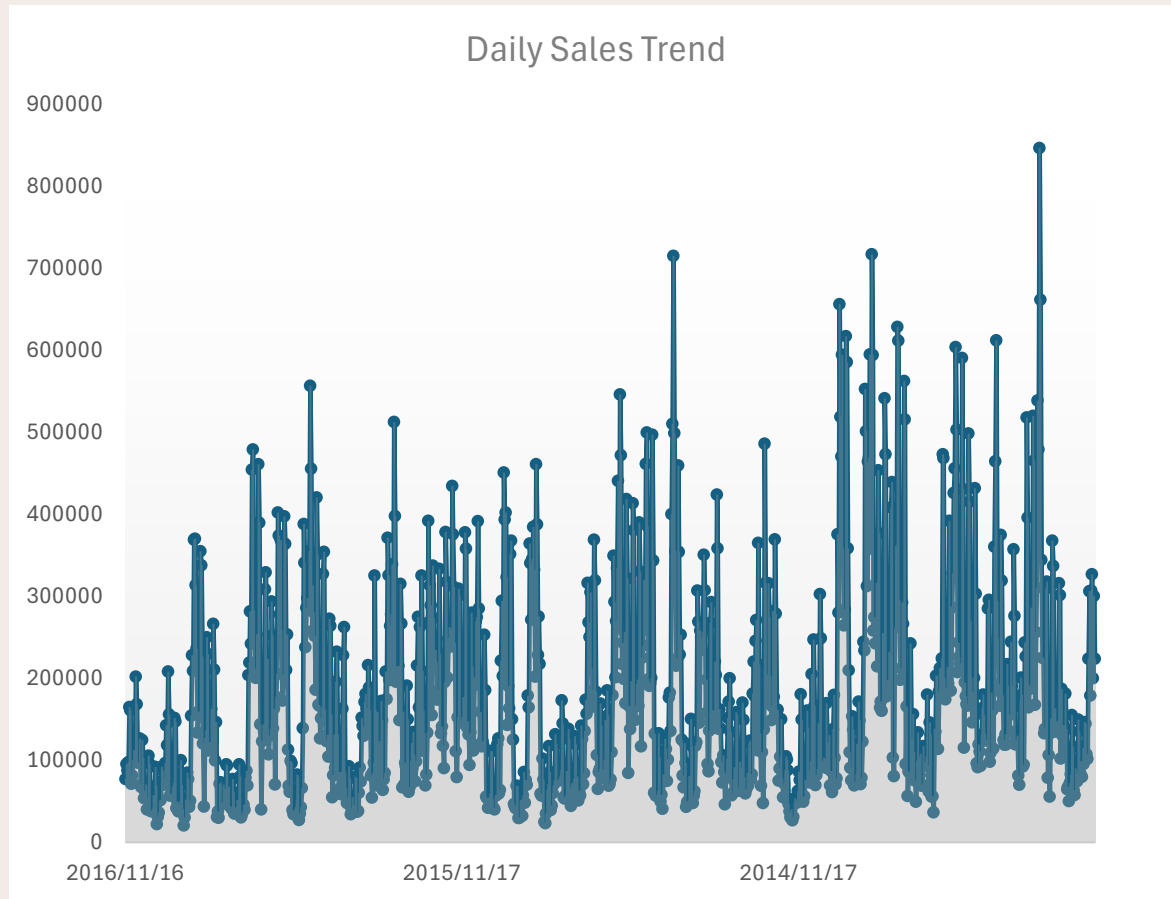
- ❖ Total sales reached approximately **R186.9 million**, reflecting overall revenue generated from product sales
- ❖ A total of **5,279,872** units were sold, highlighting product demand over the analysed period
- ❖ Yearly performance show sales peaked in 2014, then softened in 2015–2016 (2013 appears as a partial year).
- ❖ May and August stand out as peak months (esp. Aug 2014 looks like the single biggest spike).
- ❖ December is consistently strong (holiday period), with May and June also performing well across years.
- ❖ Overall, 2014 delivers the highest monthly peaks overall, while 2015 holds up well in May and December and 2016 shows steadier, mid-range months without extreme highs—useful for more predictable supply planning.

# Daily Unit Price Trend



- ❖ The average price per unit was R35.40, indicating pricing strategy and market positioning (in a trend fluctuating between R43 (high) and R30 (low) over time)
- ❖ An average of R35.50 places the product toward the lower-middle of the historical range, confirming a shift from premium pricing (R40+) to mid-value pricing.
- ❖ 2014: Prices were mostly above R38–R42, indicating premium positioning.
- ❖ 2015: Prices started to decline, clustering around R36–R39.
- ❖ 2016: Prices dropped further, often below R35, aligning with the current average of R35.50.
- ❖ This trend suggests strategic price reductions to maintain competitiveness or stimulate demand
- ❖ Frequent sharp dips and recoveries indicate promotional pricing cycles.
- ❖ These dips likely coincide with sales spikes, confirming price elasticity—lower prices drive higher volumes

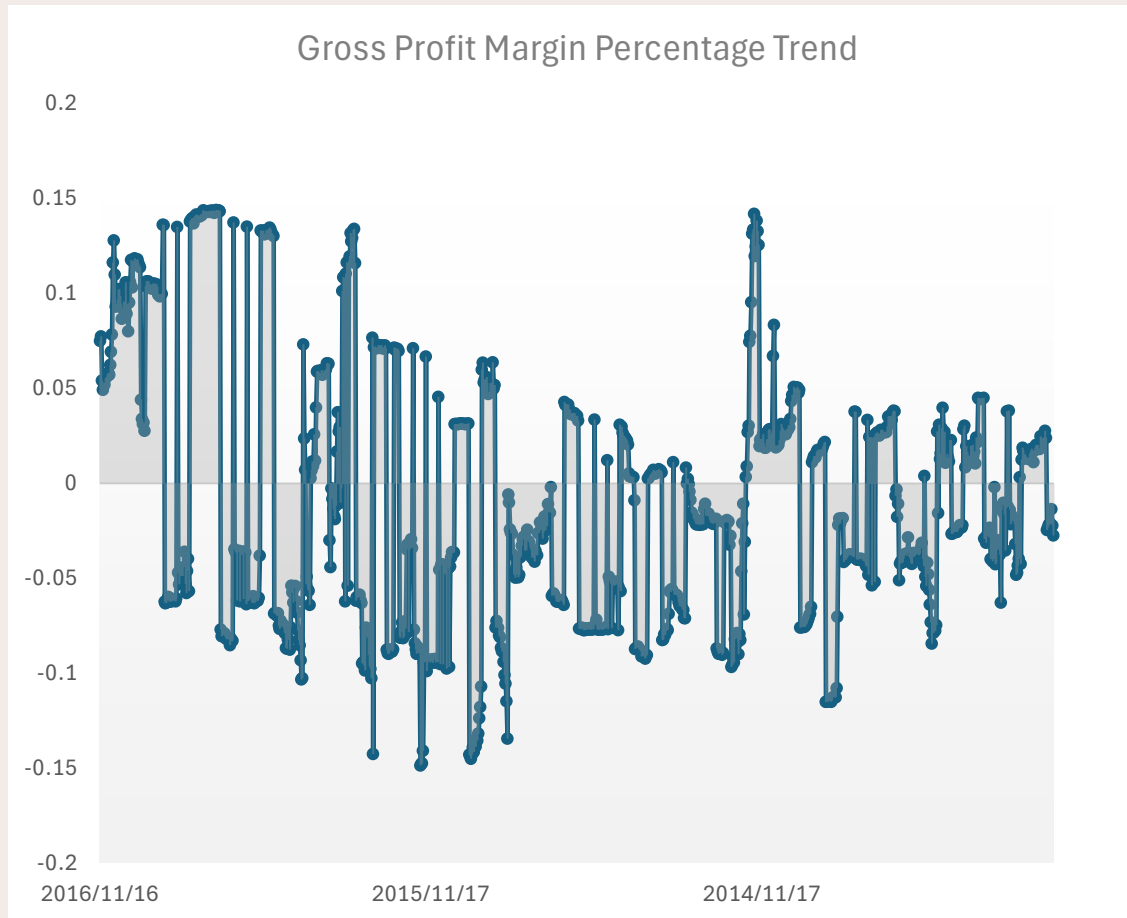
# Daily Sales Trend



- ❖ High volatility in daily sales:
  - ❖ Sales fluctuate significantly day-to-day, with frequent spikes above 500K–900K units in value.
  - ❖ Indicates strong dependency on promotions or events rather than steady baseline demand.
- ❖ Seasonal peaks visible
  - ❖ Noticeable clusters of high spikes around similar calendar periods each year (likely festive seasons or major retail events).
  - ❖ Suggests seasonality and event-driven demand.
- ❖ Trend over years
  - ❖ 2014 shows the highest concentration of large spikes (up to ~900K), aligning with earlier insights that 2014 was the strongest year.
  - ❖ 2015 and 2016 have fewer extreme peaks, indicating either reduced promotional intensity or market saturation.
- ❖ Baseline sales remain low
  - ❖ Outside of spikes, daily sales hover around 50K–150K, meaning the product relies heavily on promotional uplift for revenue.



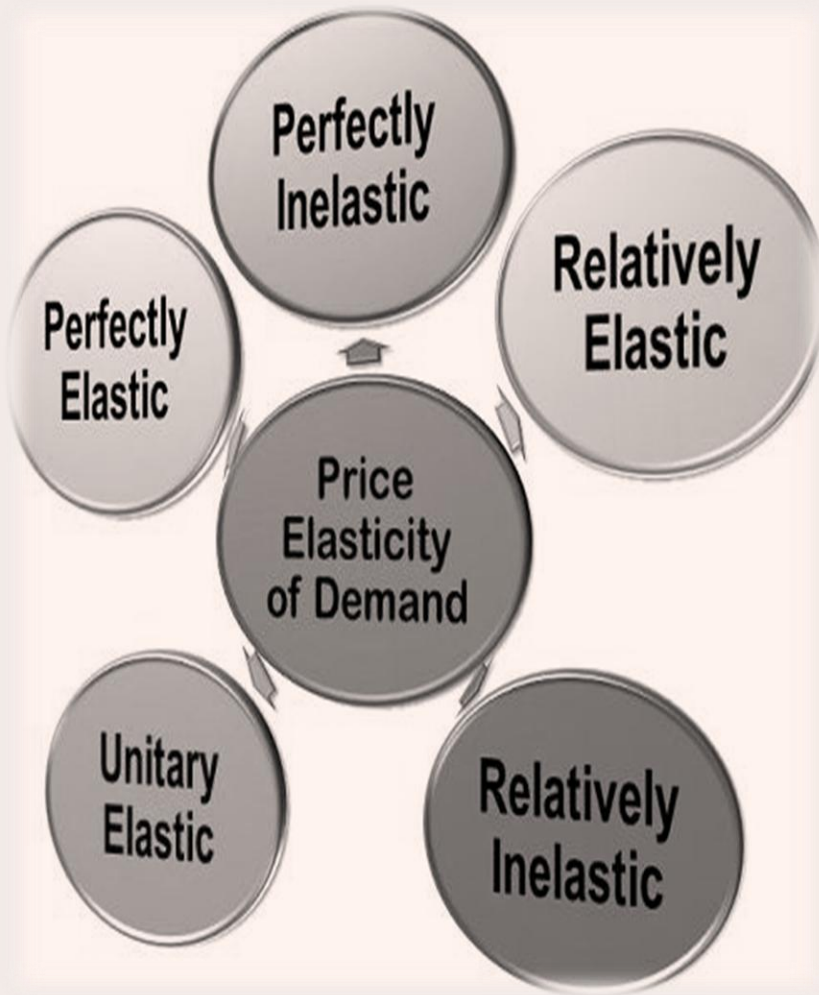
# Gross Profit Margin



- ❖ The trend oscillates between positive ( $\sim +15\%$ ) and negative ( $\sim -15\%$ ), indicating inconsistent profitability.
- ❖ Frequent dips below zero suggest that on many days, cost of sales exceeded revenue, resulting in losses
- ❖ 2014 shows relatively more stability with some positive margin peaks.
- ❖ 2015 and 2016 exhibit sharper swings and more frequent negative margins, possibly due to aggressive discounting or rising costs.
- ❖ Large negative spikes likely coincide with deep price cuts during promotions, which boost volume but erode margin.
- ❖ Positive spikes may align with periods of price recovery or cost optimization.
- ❖ Overall, margins appear to decline slightly over time, suggesting increasing cost pressure or competitive pricing strategies.



# Price Elasticity of Demand



Price elasticity of demand was calculated for three promotional periods identified by spikes in quantity sold

❖ **High Price Responsiveness (2.90) : 2014-03-01 vs 2014-08-30**

- ❖ A 1% price decrease led to roughly a 2.9% increase in quantity sold.
- ❖ This indicates that during March–August, promotions were highly effective, driving significant volume growth.
- ❖ For the product, this means price cuts strongly boosted sales, but likely at the cost of margin

❖ **Inverse Elasticity Observation (-1.39): 2014-02-28 vs 2014-10-04**

- ❖ Negative elasticity suggests that quantity moved opposite to price changes, possibly due to external factors (seasonality, stock issues, or competing products).
- ❖ For performance, this means price strategy alone didn't explain demand shifts—other drivers were at play.

❖ **Minimal Price Responsiveness (0.02) :2014-08-02 vs 2014-09-01**

- ❖ A near-zero elasticity means price changes had almost no effect on quantity sold.
- ❖ For the product, this implies that during August–September, demand was stable or saturated, so discounts didn't generate extra volume.



# Summary

## Targeted Promotional Efforts

- ✓ Focus promotions during high elasticity periods to maximize marketing impact and sales growth.
- ✓ Avoid over-discounting in low elasticity periods to protect margin
- ✓ Align inventory with seasonal spikes (e.g., festive periods and high elasticity months) to avoid stockouts during promos.

## Pricing Strategy

- ✓ Track daily and monthly trends to identify margin leakage early
- ✓ Set price floors to ensure unit price never drops below a level that guarantees a positive gross margin
- ✓ Optimize promo depth by using short, sharp discounts during high elasticity periods to maximize volume without eroding profitability.
- ✓ Maintain everyday pricing around R34–R36 and promo pricing around R31–R33.50 for best balance of volume and margin.

# Thank you

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