

Retail Sales Analysis

Boitumelo Ramogayane



Agenda

1

Objective

2

Timeline

3

Key
Performance
Indicators

4

Price Elasticity
of Demand

5

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

13 Nov 2025

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

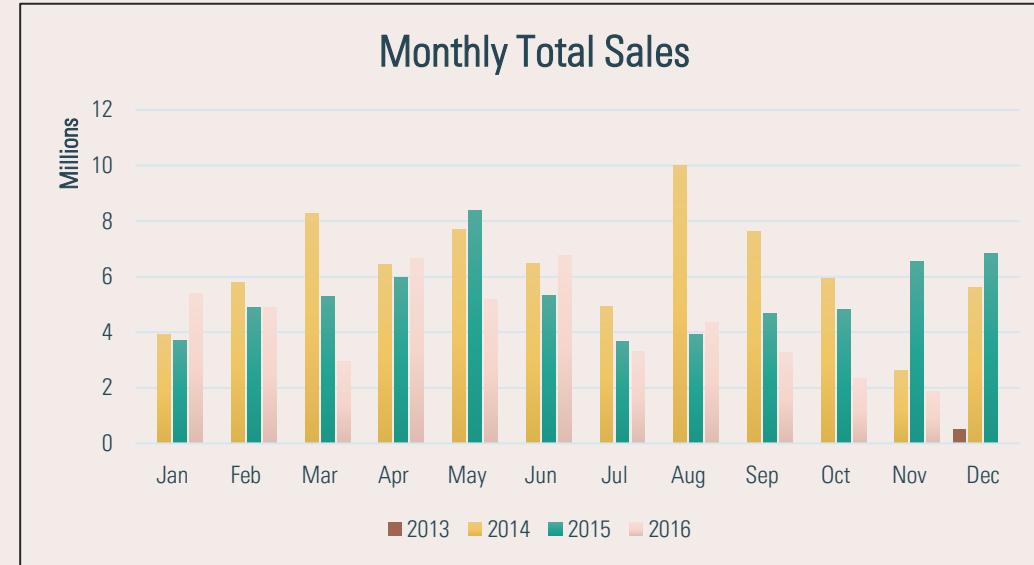
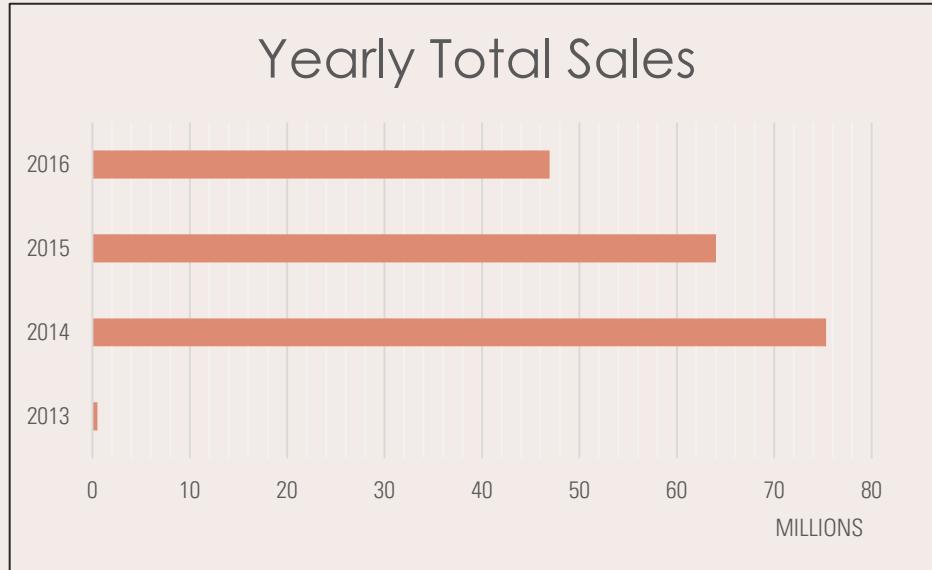
20 Nov 2025

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

23 Nov 2025

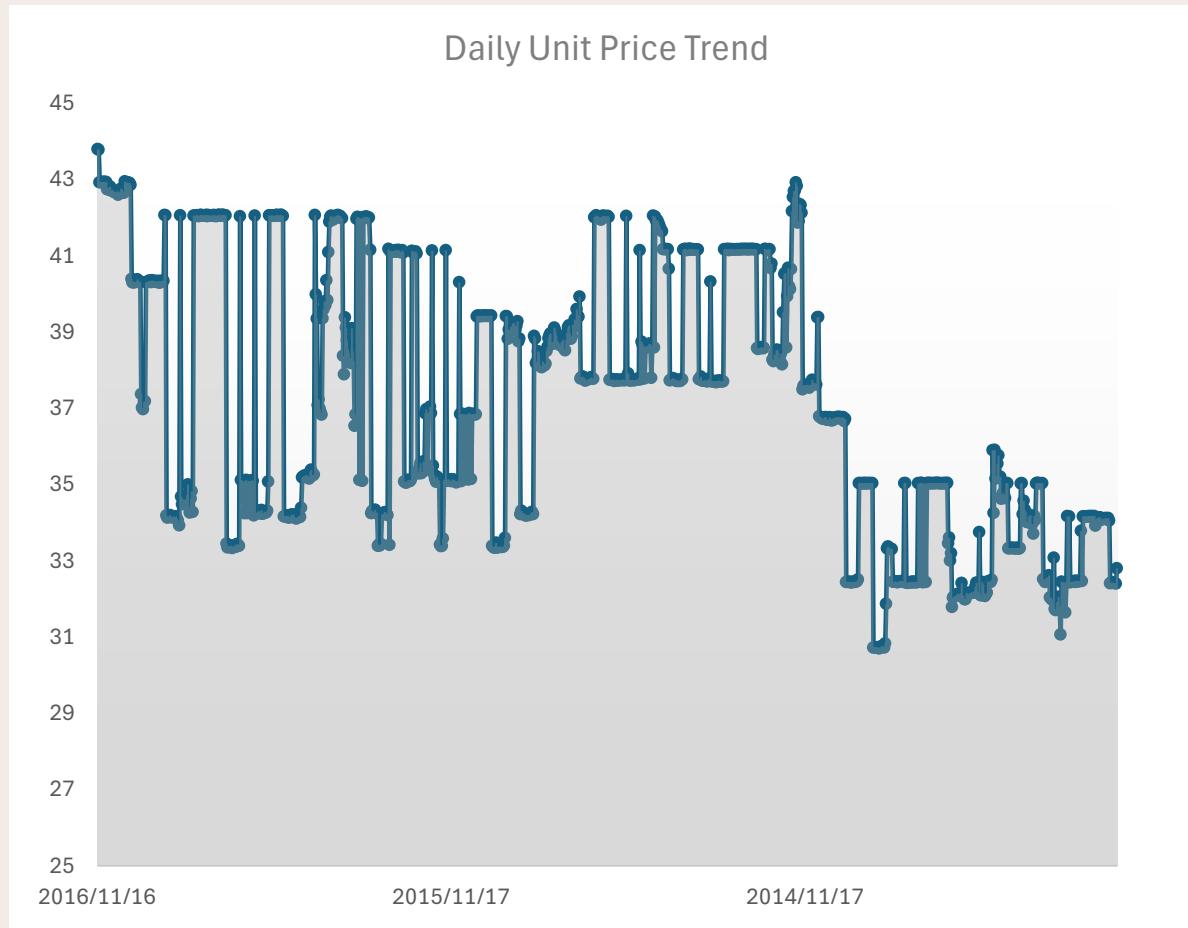
Presentation Preparation: Build 20-min deck with insights, recommendations, and roadmap

Sales performance



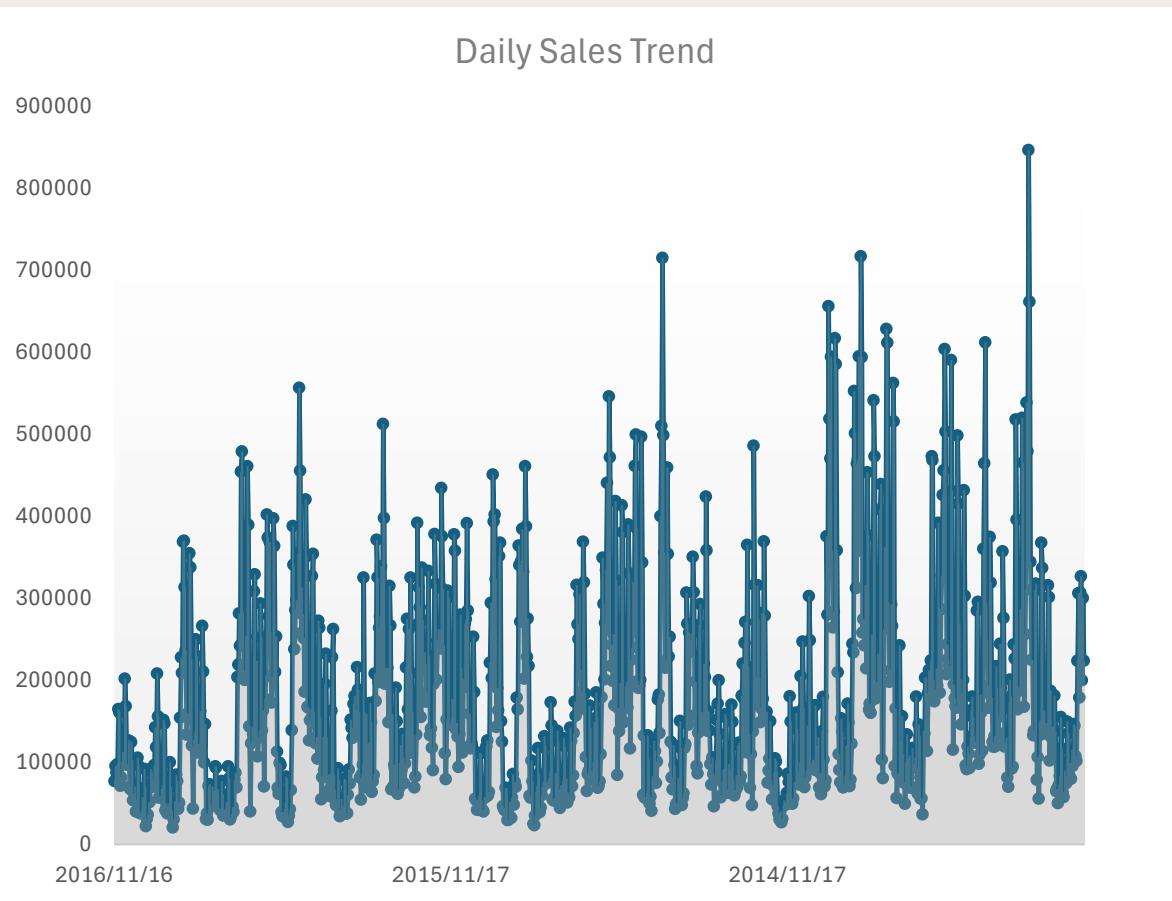
- ❖ Total sales reached approximately **R186.9 million**, reflecting overall revenue generated from product sales
- ❖ A total of **5,279,872** units were sold, highlighting product demand over the analysed period
- ❖ Yearly performance shows sales peaked in 2014, then softened in 2015–2016 (2013 appears 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



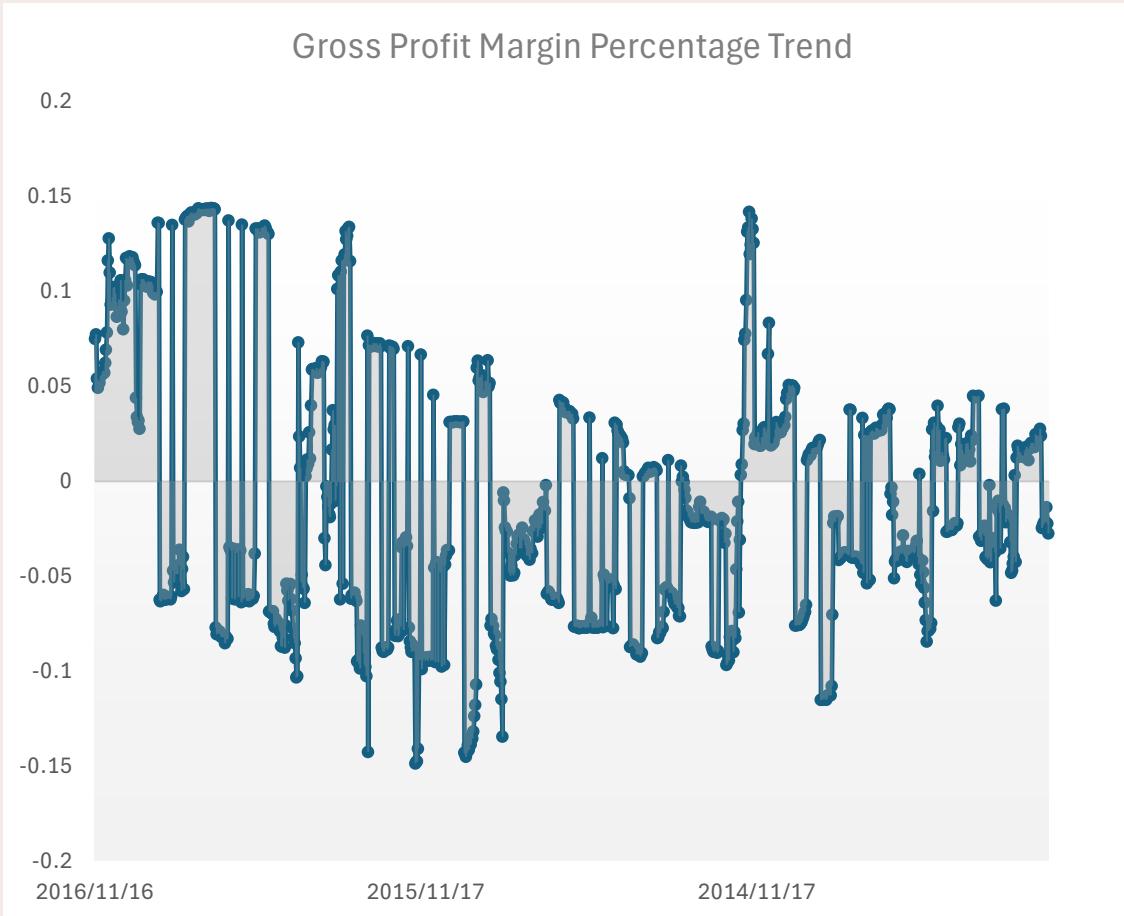
- ❖ The average price per unit was R35.40, indicating pricing strategy and market positioning (in a trend fluctuating between R43 (high) and R30 (low) over time)
- ❖ An average of R35.50 places the product toward the lower-middle of the historical range, confirming a shift from premium pricing (R40+) 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 (~+15%) and negative (~-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

Boitumelo Ramogayane

bkramogayane@gmail.com

