Project Documentation

Retail Budget, Sales and Profit Forecasting Model

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Developed as a professional portfolio project to demonstrate practical data analytics skills to recruiters and hiring managers.

An Excel 2019 analysis of sales, gross profitability, modelled budget performance, inventory valuation and scenario forecasts for a fictional Mexican toy-store chain.

Project overview

The workbook brings six CSV sources together through Power Query. A Power Pivot Data Model supports historical reporting, while a 105-row monthly category table feeds worksheet-based budget and forecast calculations. The Dashboard combines nine KPI cards, six charts and four slicers.

Scope	Coverage
Historical reporting	1 Jan 2022 to 30 Sep 2023
Sales data	829,262 transaction lines; 1,090,565 units
Dimensions	35 products; 50 stores; 638 calendar dates
Inventory	1,593 store-product snapshot records
Budget	Jan-Sep 2023; 45 month-category rows
Forecast	Oct-Dec 2023; 15 month-category rows

Business questions

How do sales compare with modelled targets? Which categories, products and stores generate the most gross profit? How do margins vary despite revenue growth? What sales and gross profit could the next quarter produce under different growth and cost assumptions? Where is inventory value concentrated?

Evidence: supplied completed XLSX workbook, 16 project screenshots and project-work conversation history. Source attribution: Mexico Toy Sales, Maven Analytics (https://mavenanalytics.io/data-playground). Dollar symbols follow the supplied workbook and source price formatting; this documentation does not independently establish a currency code.

Historical results

Metric	Unfiltered historical result
Sales	$14,444,572.35
Product cost	$10,430,543.35
Gross profit	$4,014,029.00
Gross margin	27.79%
Inventory cost value	$300,209.58

Category comparison

Category	Sales	Gross profit	Margin
Toys	$5,093,241.00	$1,079,527.00	21.20%
Electronics	$2,246,771.25	$1,001,437.00	44.57%
Art & Crafts	$2,705,364.26	$753,354.00	27.85%
Games	$2,226,836.27	$673,993.00	30.27%
Sports & Outdoors	$2,172,359.57	$505,718.00	23.28%

Toys generated the largest sales total, $5,093,241.00, but its 21.20% gross margin was below the business margin. Electronics achieved the highest category margin, 44.57%, and contributed $1,001,437.00 in gross profit despite a smaller sales base.

Colorbuds was the leading product by gross profit ($834,944.00). Maven Toys Ciudad de Mexico 2 was the leading store by gross profit ($169,856.00). March 2023 was the highest-sales month in the observed period ($883,515.64). These are descriptive results and do not establish the causes of performance differences.

Budget findings: Jan-Sep 2023

Metric	Result
Actual sales	$6,962,074.27
Modelled sales budget	$5,745,725.12
Sales variance	$1,216,349.15 favourable
Sales variance percentage	21.17%
Actual gross profit	$1,824,242.00
Modelled gross profit target	$1,723,717.54

Every month exceeded its total modelled sales budget. Category results differed: Electronics produced $806,312.06 sales against $1,206,875.95 budget, a 33.19% shortfall. Art & Crafts exceeded its modelled target by approximately $1,246,685.41. Its large increase warrants investigation of product mix and baseline comparability before attributing the change to a specific business action.

The Jan-Sep actual gross margin was approximately 26.20%, below the 30% target margin. Total actual gross profit still exceeded the modelled profit budget because higher sales offset the margin gap. Toys exceeded its category sales budget but missed its gross profit budget, showing why revenue and profitability should be reviewed together.

Scenario results: Oct-Dec 2023

Scenario	Growth	Cost change	Sales	Gross profit	Margin
Best Case	12%	-1%	$2,421,868.10	$709,179.88	29.28%
Expected Case	7%	2%	$2,313,748.99	$627,937.37	27.14%
Worst Case	-3%	6%	$2,097,510.76	$509,319.90	24.28%

Best Case and Worst Case results agree with the supplied Dashboard screenshots at displayed precision. Expected Case results above were independently calculated from the saved baselines and assumptions; an Expected Case screenshot was not supplied.

Implementation and data flow

Six preserved raw queries feed five referenced clean queries. Sales_Clean remains at transaction-line level. Monthly_Category_Actuals is the separate aggregation query, loaded as tblMonthlyActuals on Clean Data. It contains 21 months x 5 categories = 105 rows.

Layer	Implementation
Sources	Sales_Raw, Products_Raw, Stores_Raw, Inventory_Raw, Calendar_Raw, DataDictionary_Raw
Transformation	Trim/Clean product text, numeric/date typing, product merges, revenue/cost/profit columns and calendar attributes
Data Model	Sales and inventory facts share Products_Clean and Stores_Clean. Calendar_Clean relates to sales only.
Worksheet models	SUMIFS selects comparable periods/categories; INDEX/MATCH selects targets and scenario drivers.
Presentation	Historical Data Model PivotTables; separate budget/forecast PivotTables; GETPIVOTDATA and worksheet links supply KPI cards.

The supplied model screenshot shows five one-to-many relationships: Calendar to Sales, Products to Sales, Stores to Sales, Products to Inventory, and Stores to Inventory. No direct sales-to-inventory relationship is used.

Dashboard interpretation

Historical sales cards follow connected slicers and can cover the full 2022-Sep 2023 period. Budget cards and the Actual Sales vs Budget chart cover Jan-Sep 2023. Forecast cards and the forecast chart cover Oct-Dec 2023. The historical sales card is therefore not the numerator of the fixed-period budget variance.

Year filters sales, not inventory. Product Category and Store Location filter connected sales and inventory reports. Other slicers affect only the PivotTables checked in Report Connections. Changing Assumptions!B3 recalculates forecast formulas and KPI links; the forecast chart requires a refresh of its supporting PivotTable at Analysis!X55.

Review evidence and limitations

The documentation review compared saved worksheet values and formulas, inspected all 16 screenshots, reconciled the monthly table to headline KPIs, checked budget and forecast row arithmetic, and independently evaluated the three scenarios. No saved cell-error values were found in the initial workbook XML scan. This is not a live Excel refresh test, a re-execution of deleted audit queries, or a verification of every native slicer connection.

The author reported zero issues for field checks, duplicate keys, calendar continuity and cross-table matching. Temporary check queries were deleted after recording the outcomes. The current Raw Data note lists only part of that audit history. The cleaning log therefore separates author-reported historical checks from checks independently performed on the supplied workbook.

The budget is a modelled target, not an official company budget. Forecasts are assumption-based estimates using one prior-year seasonal baseline, not a fitted statistical model or a measured prediction-accuracy result. Profit means gross profit before operating expenses, tax and financing. Product master prices and costs are applied to historical units; transaction-specific price changes and discounts are not separately modelled. Inventory is a snapshot without a time relationship and its potential profit is not realised sales profit.

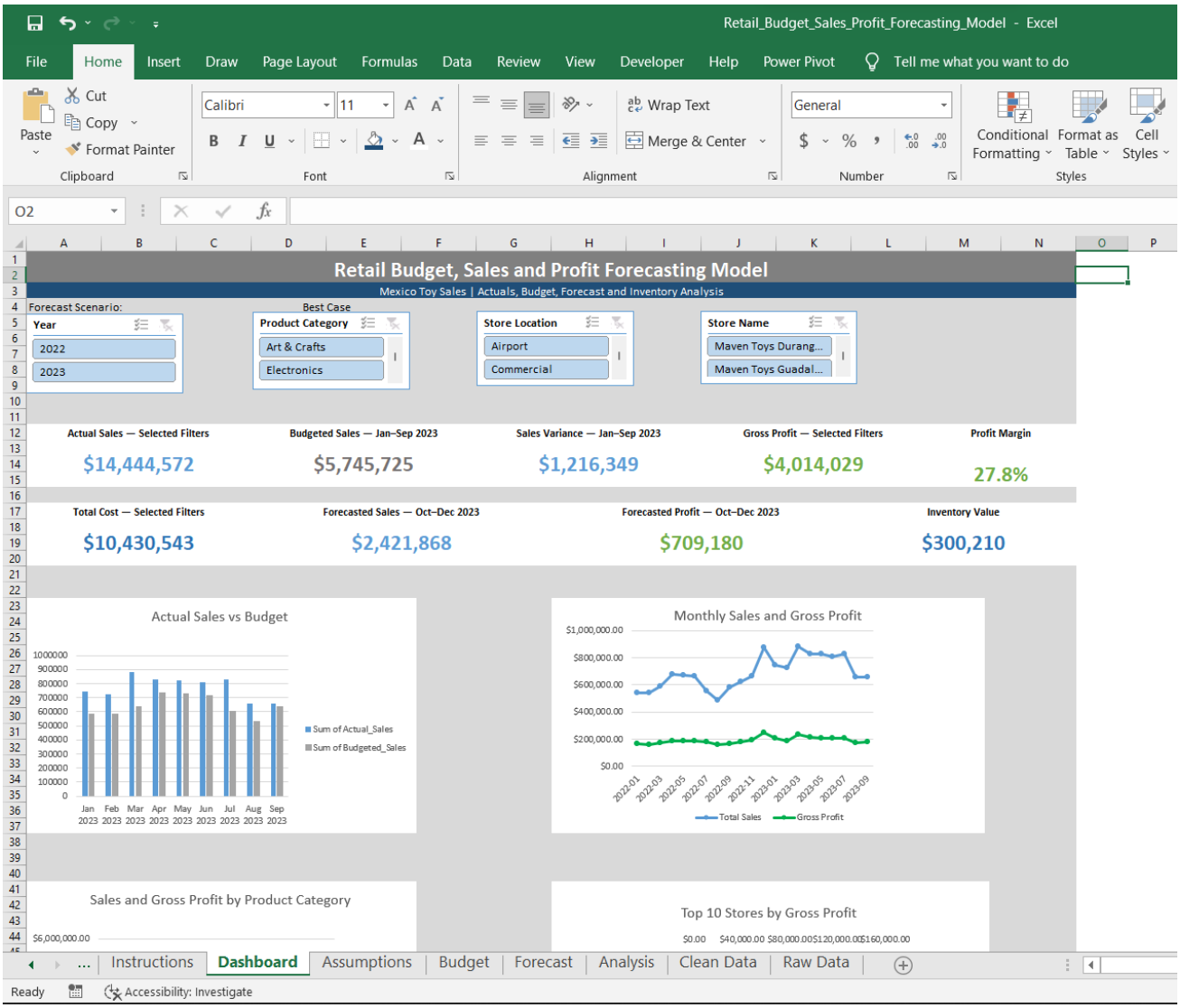
Recommendations

1. Investigate Electronics demand and category targets because high margin did not translate into meeting the modelled sales budget. 2. Review Toys product mix and cost structure to improve margin alongside sales volume. 3. Use category-specific targets rather than assuming the same 8% growth and 30% margin suit every category. 4. Recreate and rerun audit queries when source files change. 5. Treat inventory value as capital tied up in stock; a single snapshot cannot establish turnover or ageing.

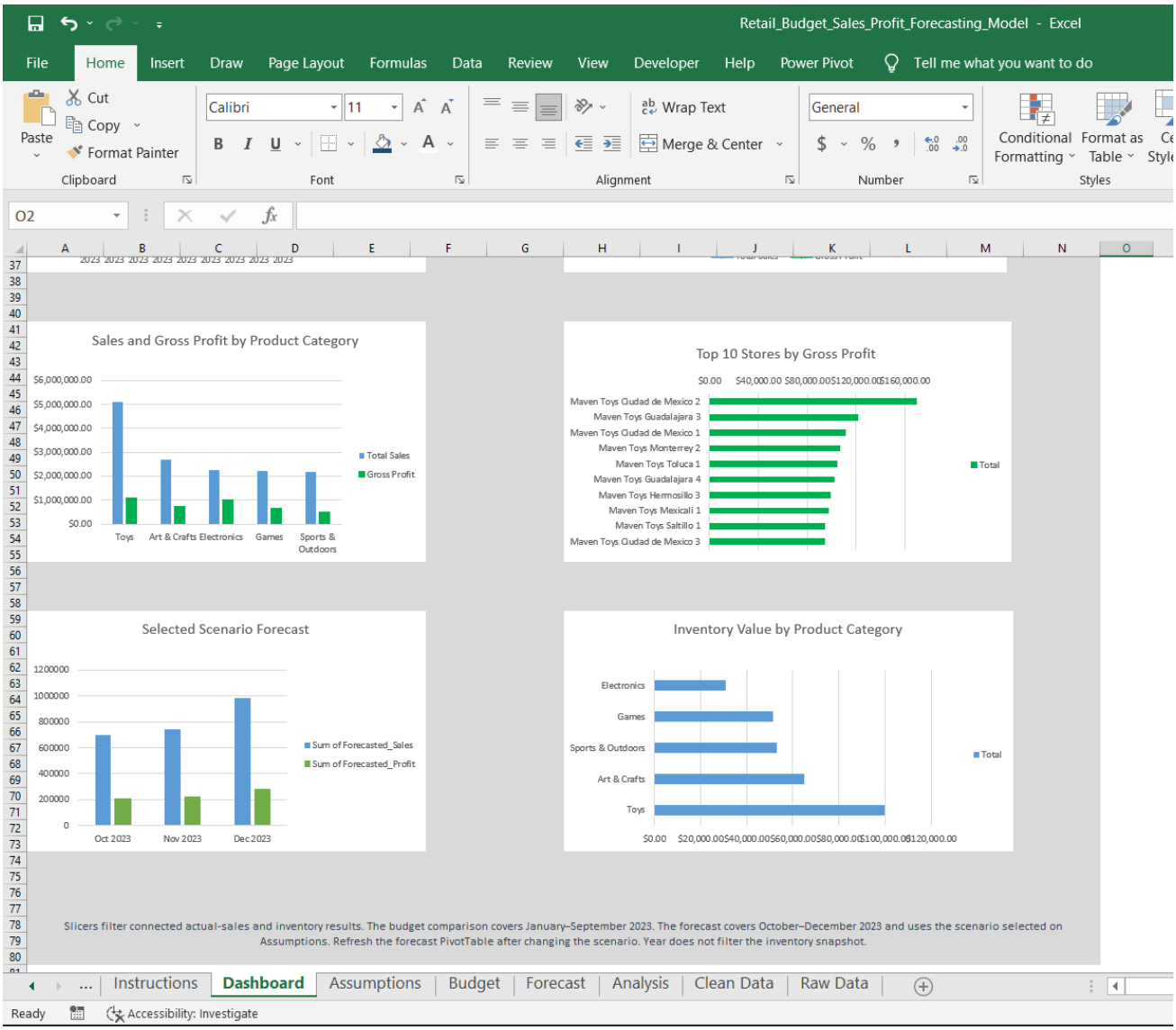
Reproduction and refresh

Open in Excel 2019 with Power Query and a compatible Power Pivot/Data Model installation. Download the six source CSVs from Maven Analytics and change each raw query Source path to the local CSV location. Refresh queries, allow them to finish, then refresh the reporting PivotTables. Select a scenario in Assumptions!B3 and refresh the forecast PivotTable at Analysis!X55. The supplied workbook is saved in Best Case.

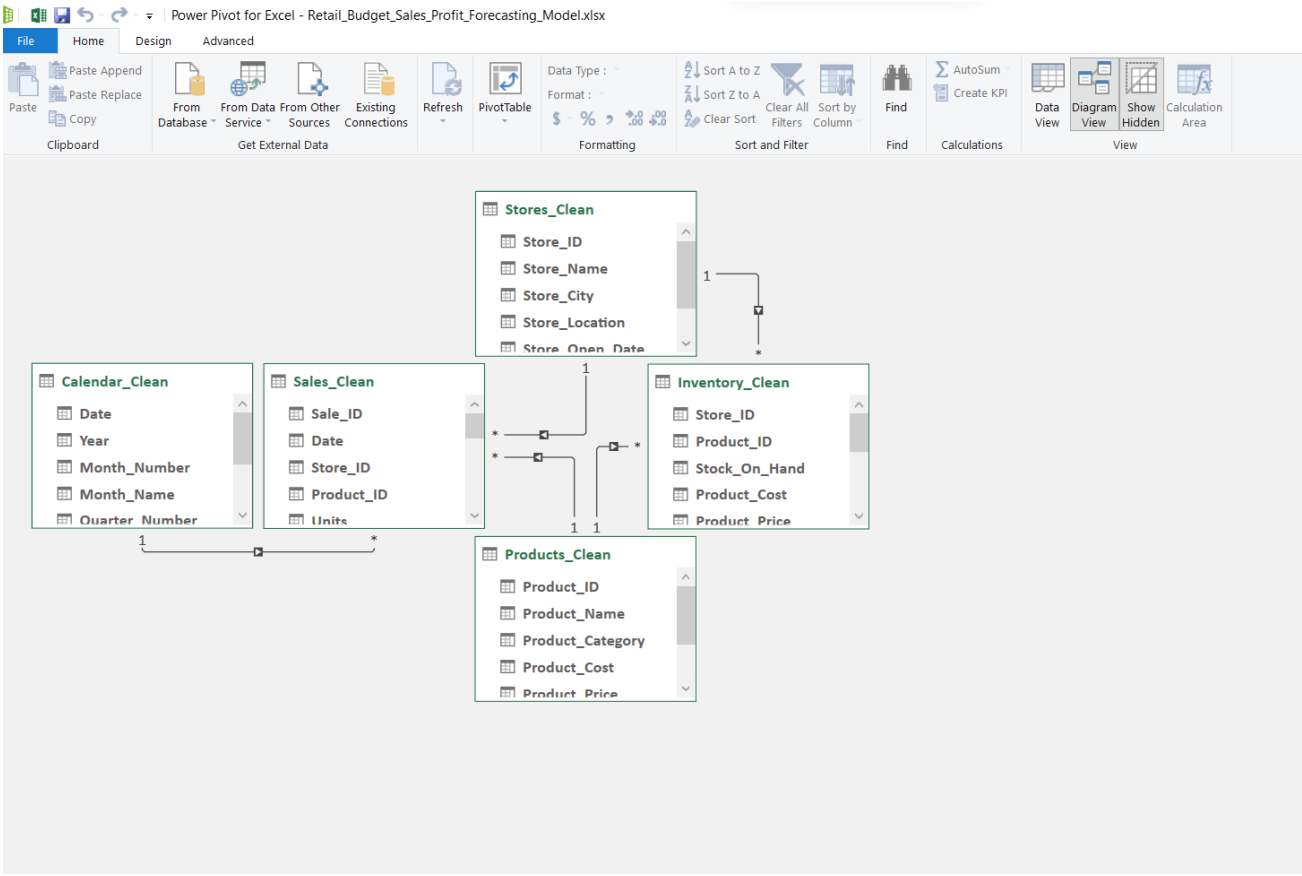
Dashboard evidence: upper section



Dashboard evidence: lower section



Data Model evidence



The screenshot records the implemented relationships and table roles. The accompanying cleaning and formula documents explain their supporting calculations.