



Tecnológico de Monterrey

Streamlit Project Dashboard

Data Analytics and Artificial Intelligence Tools 2 (Gpo 101)

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Dataset Snapshot and Schema (Expandable Section)

Location: Top of Page 1

Purpose: Provide transparency into the raw data used to power the insights and predictions.

What it shows

- First 15 rows of the dataset
- Variable data types (int, float, object, datetime, etc.)
- Summary information:
 - Total date range available.
 - Number of Trade Partners.
 - Number of SKUs.

Why it matters

This section helps users:

- Validate that the uploaded dataset is the correct one.
- Understand what variables exist and how they are interpreted.
- Identify the temporal coverage.

Whirlpool – Historical Insights & Prediction Console (Prototype)

Dataset snapshot & schema

TP_GROUP	SKU	DATE	QTY	INV	VPC	WTY	VAR_FW	VAR_SGA	FEM	POLICY	EXCHANGE_RATE	TEMPORALIDAD	TIER_TEMP	PRICE_LIST_DA	PRICE_FINAL_DA	YEAR	MONTH_TS	REVENUE	
0	HOME DEPOT	WFR3200D	2023-01-09 00:00:00	111	2.6489	169.06	0.72	0	0	-15	17.18	21	GENERAL	TIER3	11749	8299	2023	2023-01-01 00:00:00	921189
1	CHEDRAUI	WM1807D	2023-01-09 00:00:00	325	2.4816	33.8	0.3271	9.5175	1.9153	-12.5	13	21	GENERAL	TIER3	2395	2395	2023	2023-01-01 00:00:00	778375
2	LIVERPOOL	MF8000S	2023-01-09 00:00:00	5	0.1667	290.3214	0.73	6.7914	9.7386	-16.5	5.5	21	GENERAL	TIER3	32399	22031.3203	2023	2023-01-01 00:00:00	110156.6016
3	ELEKTRA	WM1514D	2023-01-09 00:00:00	135	2.237	47.9	0.3298	19.1134	0.3882	-26	3.56	21	GENERAL	TIER3	4999	3599	2023	2023-01-01 00:00:00	485965
4	LIVERPOOL	7MMWW7230LW	2023-01-09 00:00:00	9	1.0909	376.6241	7.0996	42.5881	10.2382	-16.5	5.5	21	GENERAL	TIER3	33899	24492.0293	2023	2023-01-01 00:00:00	220428.2637
5	HOME DEPOT	WFR7200S	2023-01-09 00:00:00	18	1.8659	251.4872	0.728	7.9688	25.2334	-15	17.18	21	GENERAL	TIER3	18299	13899	2023	2023-01-01 00:00:00	250182
6	LIVERPOOL	WHW9500S	2023-01-09 00:00:00	0	0.7143	54.6	3.0685	106.2008	3.6569	-16.5	5.5	21	GENERAL	TIER3	9799	7079.7798	2023	2023-01-01 00:00:00	0
7	SEARS	WWR5000S	2023-01-09 00:00:00	23	33	131.7142	0.73	3.9638	3.7762	-13.2	7	21	GENERAL	TIER3	12099	7799	2023	2023-01-01 00:00:00	179377
8	LIVERPOOL	MD7816S	2023-01-09 00:00:00	-1	0.4	703.6877	5.8138	39.4977	15.9938	-16.5	5.5	21	GENERAL	TIER3	52999	36039.3203	2023	2023-01-01 00:00:00	-36039.3203
9	HOME DEPOT	WFR5100S	2023-01-09 00:00:00	53	3.8095	201.5214	0.74	7.7222	24.0538	-15	17.18	21	GENERAL	TIER3	16099	11699	2023	2023-01-01 00:00:00	620047

TP_GROUP object

SKU object

DATE datetime64[ns]

QTY int64

INV float64

VPC float64

WTY float64

VAR_FW float64

VAR_SGA float64

FEM float64

POLICY float64

EXCHANGE_RATE float64

TEMPORALIDAD object

TIER_TEMP object

PRICE_LIST_DA float64

PRICE_FINAL_DA float64

YEAR int32

MONTH_TS datetime64[ns]

REVENUE float64

Date range: 2023-01-09 00:00:00 → 2025-07-28 00:00:00

Partners (#): 8

SKUs (#): 395

Sidebar Navigation and Filters

Location: Left panel

Purpose: Allow the user to switch between Page 1 (Historical Overview) and Page 2 (Predictions & Scenarios); the filters affect everything on Page 1, including KPIs and charts. They do not affect Page 2.

Pages:

- Historical Overview: Visualization and exploratory analysis of past performance
- Predictions & Scenarios: ML-driven forecasts for hypothetical scenarios

Filter: Trade Partner Selector

- Users can select one or multiple Trade Partners.
- Only data belonging to those partners remains visible.

Filter: SKU Input System

Instead of selecting from a long list, the user manually enters SKU codes.

Workflow:

1. Type SKU code -> press Add SKU
2. SKU is validated:
 - If exists, added to selection
 - If not, warning appears
3. The selected SKUs appear below and can be removed manually
4. If no SKUs selected -> dashboard shows data for all SKUs

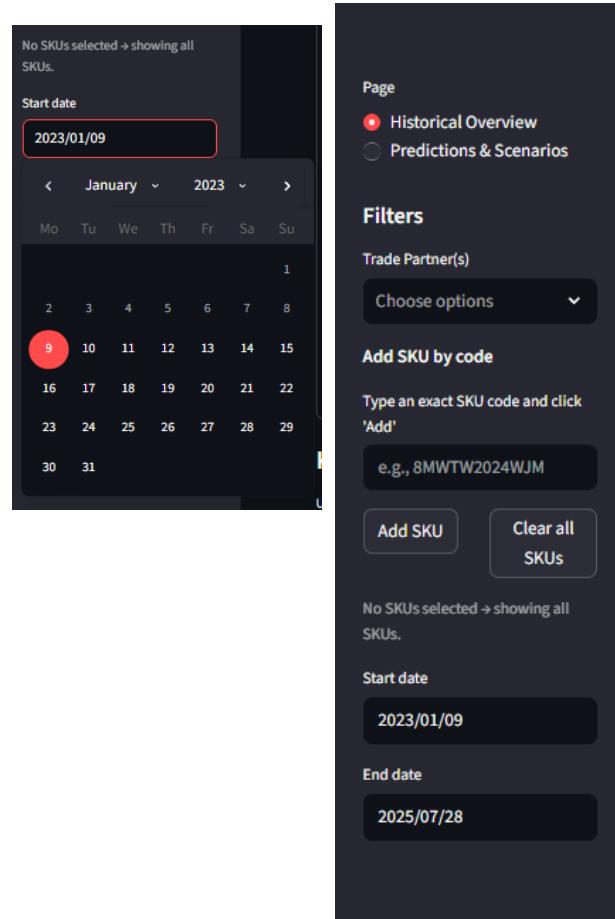
Why this design

- Manual input prevents long dropdowns with hundreds of SKUs
- Reduces noise in KPIs and charts

Filter: Date Range Selector

Shows two calendars:

- Start Date
- End Date



KPIs (Page 1)

Summarizes performance after applying user filters.

Displayed Metrics

1. Total Units Sold (QTY)
2. Average Final Price
3. Average Inventory

Interpretation

These KPIs allow the user to quickly:

- Identify volume drivers
- Compare pricing behavior across partners or SKUs
- Understand overall filtered performance

Note: These KPIs do not react to chart-only settings (granularity, top-N SKUs, week windows).

The screenshot shows a dark-themed dashboard titled "Whirlpool - Historical Insights & Prediction Console (Prototype)". At the top, there's a red button labeled "Dataset snapshot & schema" and a "Deploy" button with a gear icon. Below the title, there's a small circular icon with a red dot. The main area displays three KPIs in a grid:

KPIs		
Units	Avg Final Price	Avg Inventory
2,360,370	\$15,023.43	56

Overview Section (Charts on Page 1)

Visual insights into the historical behavior of the selected TP(s) and SKU(s).

Chart Controls (affect only the charts):

Granularity

- Month
- Quarter
- Week

Usage:

- Month and Quarter give a smoothed, higher-level view
- Week shows the closest resemblance to the day-to-day sales cycle

Top-N SKUs

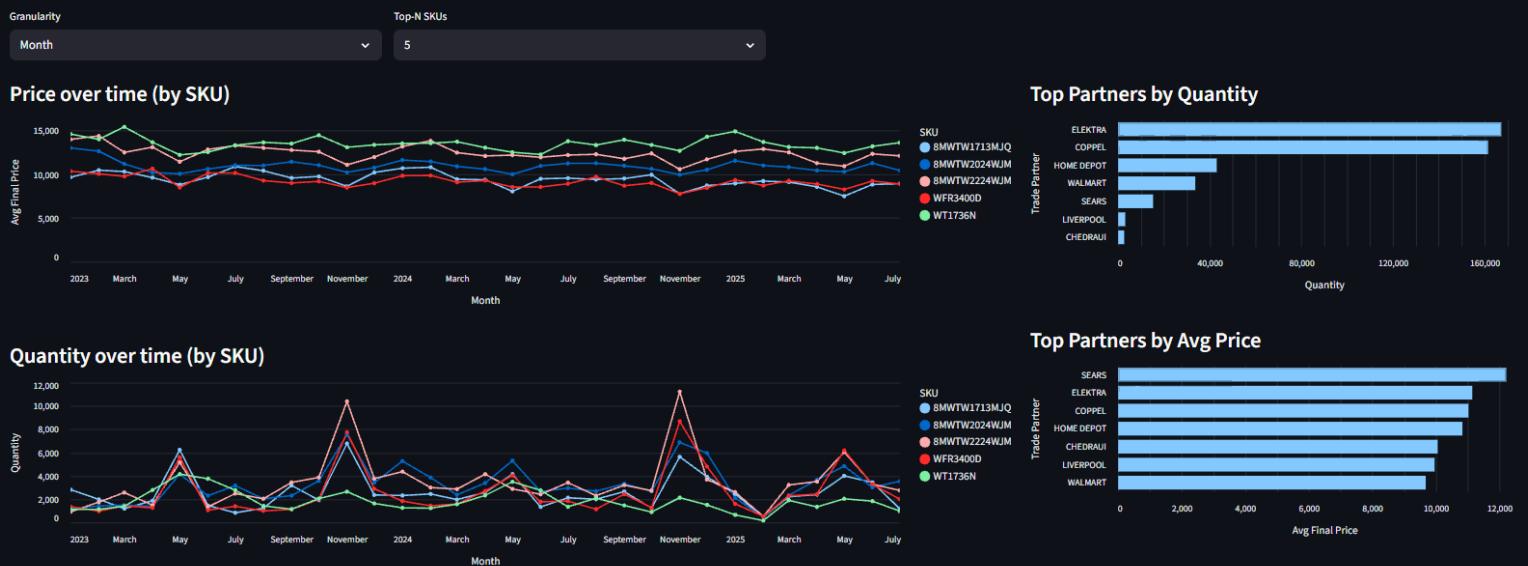
- Helps limit noise
- Selects top SKUs based on **revenue proxy**

If no SKU is typed in sidebar -> dashboard automatically shows Top 5 SKUs.

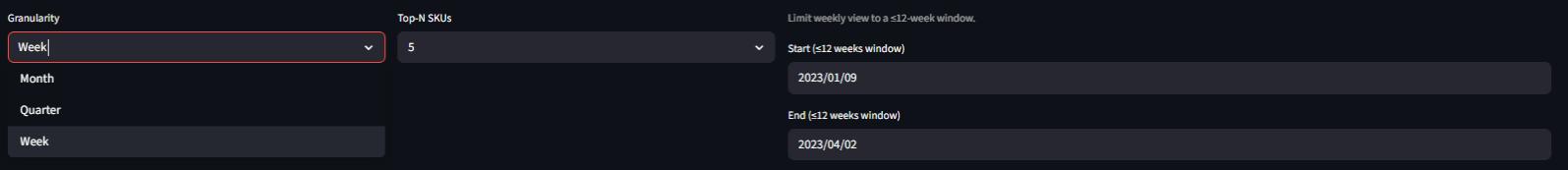
12-Week Window (when Week granularity selected)

- User can select a date window of up to 12 weeks
- Used for short-term weekly analysis
- The dashboard protects against longer selections automatically

Overview



Overview



Page 2 – Predictions & Scenario Builder

This page uses the XGBoost models trained in Colab to forecast:

- Final Price (weekly)
- Quantity Sold (weekly)

What drives the predictions

Models use only features that demonstrated predictive power:

- Seasonal patterns (sin/cos of week-of-year)
- TP and SKU encoded IDs
- Discount percentage
- Historical lagged behaviors (stored in base row)

The screenshot shows a dark-themed web application interface for 'Whirlpool – Historical Insights & Prediction Console (Prototype)'. On the left, there's a sidebar with navigation links like 'Page', 'Historical Overview', and 'Predictions & Scenarios'. It also contains 'Filters' sections for 'Trade Partner(s)' and 'SKU code', along with date range inputs for 'Start date' (2023/01/09) and 'End date' (2025/07/28). The main content area has a header 'Predictions & Scenario Builder (ML)' and a note about using the same trained XGBoost models. It includes fields for 'Trade Partner' (set to 'CHEDRAUI') and 'SKU code' (e.g., '8MWTW2024WJM'). A large blue button at the bottom says 'Enter a valid SKU code to configure and run a scenario.'

Input Controls (Page 2)

Trade Partner Selector

- Dropdown with all TP codes.

SKU Manual Input

- User inputs a SKU code.
- Must exist in database and have records with the selected TP.
- Model loads historical patterns for this SKU and TP.

Discount Slider

- 0% to 80%

Week of Year Slider

1 to 52

- Represents the scenario week in 2026
- Model predicts for that hypothetical future week
- Dashboard calculates what month that week corresponds to

Predictions & Scenario Builder (ML)

This page uses the same trained XGBoost FastShallow models and encoders you exported from Colab. Final price and weekly quantity are both predicted.

Trade Partner

CHEDRAUI

SKU code (must exist in the database)

WM1807d

Valid SKU for this Trade Partner.

Scenario Controls

Discount % (required)

0.00

Week of Year (required)

26

This represents the promotional intensity for the scenario week.

Scenario prediction date: Week 26, June 2026

Predict final price & weekly quantity

Prediction Results and Historical vs Scenario Charts (Page 2)

Final Price Prediction

Displayed in MXN (after inverse log transform)

Quantity Prediction

Weekly quantity estimate (inverse log transform)

Interpretation

Predictions reflect:

- Seasonality
- SKU x TP historical behavior
- Discount impact

These two charts compare:

- Last 1.5 years of historical performance for the SKU x TP
- The future predicted point in 2026

What users see

- A line showing real historical values
- A gap (where 2025 data ends)
- A predictive point in 2026 (orange dot)

Purpose

- Highlight how price/quantity evolved historically
- Show where the prediction sits relative to past behavior
- Allow an intuitive comparison between “what normally happens” and the scenario

