# **Problem Statement**

ENGINEERING

- Lack of Interactive Dashboard: No existing dashboard for demand forecasting and comparison.
- Absence of user-friendly manual: No manual to guide new users in using the forecasting code and dashboard.
- **Overall Impact:** These issues hinder nontechnical users from making well-informed decisions in supply chain management and demand planning.

#### **Project Deliverables**

- **Dynamic Dashboard:** Create methodology to follow for supply chain optimization.
- Forecast Model: Establish monthly-updated demand scenarios over two-year planning horizon.
- User Manual & Training: Create a clear manual to guide nontechnical users in understanding and using the dashboard.

### **Project Benefits**

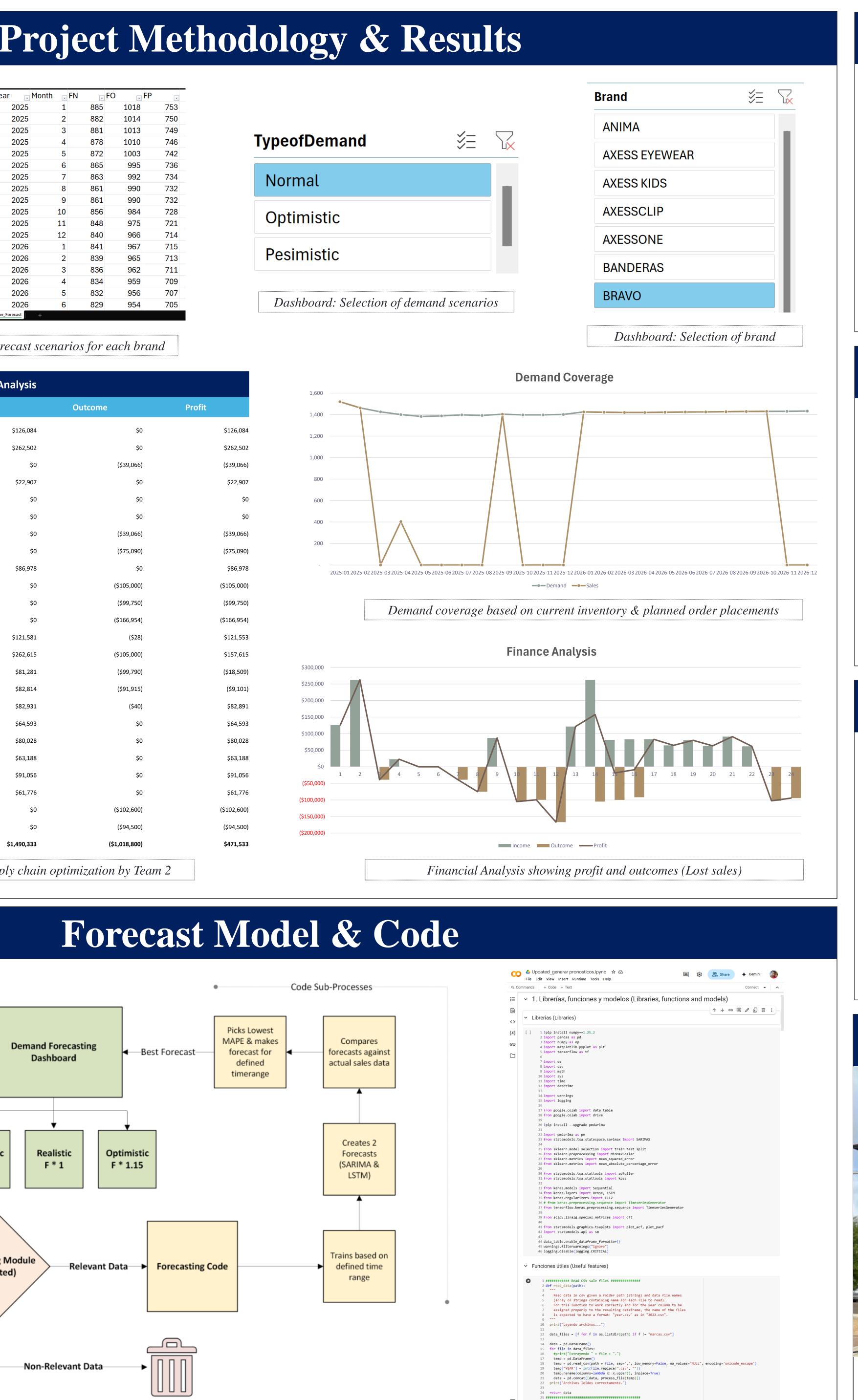
- Better Decisions: The dashboard and model help all users, even nontechnical ones, make timely, data-driven supply chain choices.
- Easy to Use: Manuals and training make the tools accessible for users of any background.
- Smarter Planning: Two-year forecasts help prevent stockouts or overstocking and improve supply chain flow.

# Methodology Cycle

Prepare Data			
I. Filter Sales Data (Team 1)	Demand Scenarios	Review Plan	
2. Inventory, pending orders, sales, costs	1. Pessimistic		Next Month Planning
(Team 2)	<ol> <li>Realistic</li> <li>Optimistic</li> </ol>	1. Propose next 24 months to stakeholder	
		2. Review adjusted proposal	1. Update plan based on feedback
			(Team 1)
			2. Optimize plan supply chain metrics
			(Team 2)
			1

# **I2.01 – Demand Planning / Forecasting**

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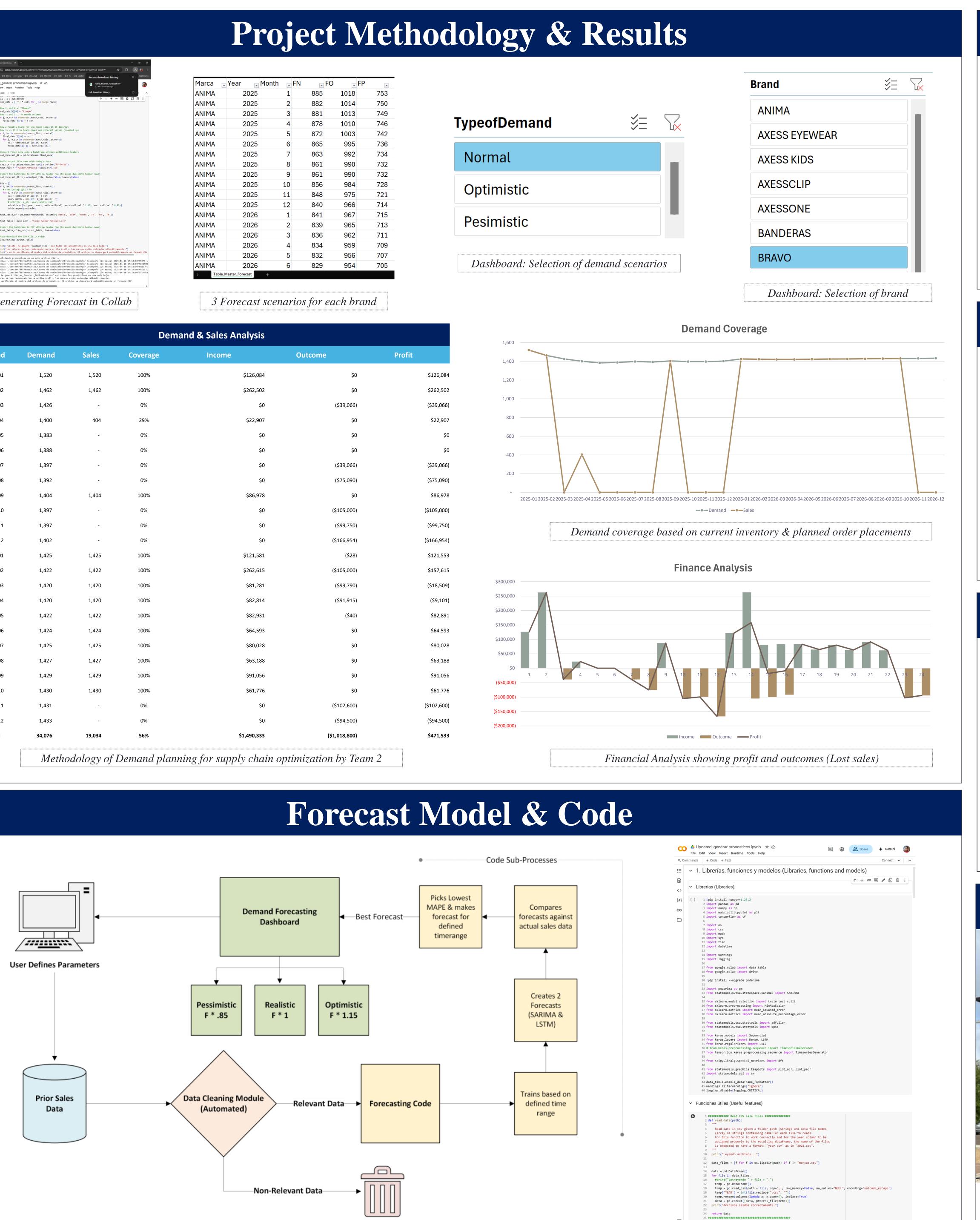
File	Edit View Insert Runtime Tools Help	Table_Master_Forecast.csv 7.2 K8 • 5 minutes ago	
Commands	s + Code + Text	Full download history	
м D	97 cols = 1 + num_months 98 final data = [[""] * cols for in range(rows)]	↑ ↓ ♦ @ ■ \$ 10 :	
	99		
	100 # Row 1, col 0 => "Tiempo" 101 final data[0][0] = "Tiempo"		
	102 # Row 1, col 1 => month columns		
	<pre>103 for j, m_str in enumerate(month_cols, start=1): 104 final data[0][j] = m str</pre>		
	105		
	106 # Row 2 remains blank (or you could label it if desired) 107 # Row 3+ => fill in brand names and forecast values (rounded up)		
	108 for i, br in enumerate(brands_list, start=2):		
	<pre>109 final_data[i][0] = br 110 for j, m_str in enumerate(month_cols, start=1):</pre>		
	<pre>111 val = combined_df.loc[br, m_str]</pre>		
	<pre>112 final_data[i][j] = math.ceil(val) 113</pre>		
	114 # Convert final_data into a DataFrame without additional headers		
	<pre>115 final_forecast_df = pd.DataFrame(final_data) 116</pre>		
	117 # Build output file name with today's date		
	<pre>118 today_str = datetime.datetime.now().strftime("%Y-%m-%d") 119 output file = f"Master Forecast {today str}.csv"</pre>		
	120		
	121 # Export the DataFrame to CSV with no header row (to avoid duplicate 122 final_forecast_df.to_csv(output_file, index=False, header=False)	neader rows)	
	123		
	124 table = [] 125 for i, br in enumerate(brands list, start=2):		
	126 # final_data[i][0] = br		
	<pre>127 for j, m_str in enumerate(month_cols, start=1): 128 val = combined_df.loc[br, m_str]</pre>		
	<pre>128 val = complete_dl.icc[br, m_str] 129 year, month = map(int, m_str.split('-'))</pre>		
	130 # print(br, m_str, year, month, val) 131 subtable = [br, year, month, math.ceil(val), math.ceil(val *		
	<pre>131 subtable = [br, year, month, math.ceil(val), math.ceil(val * 132 table.append(subtable)</pre>	(.15), math.cell(Val ~ 0.85)]	
	133		
	<pre>134 output_Table_df = pd.DataFrame(table, columns=['Marca', 'Year', 'Mont 135</pre>	1, FN, FO, FP])	
	136 output_Table = main_path + "Table_Master_Forecast.csv"		
	137 138 # Export the DataFrame to CSV with no header row (to avoid duplicate	neader rows)	
	<pre>139 output_Table_df.to_csv(output_Table, index=False) 140</pre>		
	140 141 # Auto-download the CSV file in Colab		
	142 files.download(output_Table)		
	<pre>143 144 print(f";Listo! Se generó '{output_file}' con todos los pronósticos e</pre>	n una sola hoja.")	
	145 print("Los valores se han redondeado hacia arriba (ceil), las marcas	están ordenadas alfabéticamente,")	
	146 print("y se ha verificado el nombre del archivo de pronóstico. El arc	nivo se descargará automáticamente en formato CSV	
∋*	#5. Consolidando pronósticos en un solo archivo CSV	Decempeño (24 meser) 2025 04 15 17:14:00/ANTHA L	
	Advertencia: '/content/drive/MyDrive/Cadena de suministro/Pronosticos/Mejor Advertencia: '/content/drive/MyDrive/Cadena de suministro/Pronosticos/Mejor	Desempeño (24 meses) 2025-04-16 17:14:00/AXESSON	
	Advertencia: '/content/drive/MyDrive/Cadena de suministro/Pronosticos/Mejor	Desempeño (24 meses) 2025-04-16 17:14:00/NANO VI	
	Advertencia: '/content/drive/MyDrive/Cadena de suministro/Pronosticos/Mejor Advertencia: '/content/drive/MyDrive/Cadena de suministro/Pronosticos/Mejor	Desempeño (24 meses) 2025-04-16 17:14:00/STEPPER	
	¡Listo! Se generó 'Master_Forecast_2025-04-16.csv' con todos los pronóstico Los valores se han redondeado hacia arriba (ceil), las marcas están ordenac	s en una sola hoja.	
		as arravericamente,	

Generating Forecast in Collab

Marca	•	Year	Month	FN 🗸	FO	FP
ANIMA		2025	1	885	1018	
ANIMA		2025	2	882	1014	
ANIMA		2025	3	881	1013	
ANIMA		2025	4	878	1010	
ANIMA		2025	5	872	1003	
ANIMA		2025	6	865	995	
ANIMA		2025	7	863	992	
ANIMA		2025	8	861	990	
ANIMA		2025	9	861	990	
ANIMA		2025	10	856	984	
ANIMA		2025	11	848	975	
ANIMA		2025	12	840	966	
ANIMA		2026	1	841	967	
ANIMA		2026	2	839	965	
ANIMA		2026	3	836	962	
ANIMA		2026	4	834	959	
ANIMA		2026	5	832	956	
ANIMA		2026	6	829	954	
> Tal	ble_N	laster_Forecast	+			

*3 Forecast scenarios for each brand* 

Demand & Sales Analysis						
Profit	Outcome	Income	Coverage	Sales	Demand	Period
\$126,084	\$0	\$126,084	100%	1,520	1,520	2025-01
\$262,502	\$0	\$262,502	100%	1,462	1,462	2025-02
(\$39,066)	(\$39,066)	\$0	0%	-	1,426	2025-03
\$22,907	\$0	\$22,907	29%	404	1,400	2025-04
\$0	\$0	\$0	0%	-	1,383	2025-05
\$0	\$0	\$0	0%	-	1,388	2025-06
(\$39,066	(\$39,066)	\$0	0%	-	1,397	2025-07
(\$75,090	(\$75,090)	\$0	0%	-	1,392	2025-08
\$86,978	\$0	\$86,978	100%	1,404	1,404	2025-09
(\$105,000	(\$105,000)	\$0	0%	-	1,397	2025-10
(\$99,750	(\$99,750)	\$0	0%	-	1,397	2025-11
(\$166,954	(\$166,954)	\$0	0%	-	1,402	2025-12
\$121,553	(\$28)	\$121,581	100%	1,425	1,425	2026-01
\$157,61	(\$105,000)	\$262,615	100%	1,422	1,422	2026-02
(\$18,509	(\$99,790)	\$81,281	100%	1,420	1,420	2026-03
(\$9,101	(\$91,915)	\$82,814	100%	1,420	1,420	2026-04
\$82,891	(\$40)	\$82,931	100%	1,422	1,422	2026-05
\$64,593	\$0	\$64,593	100%	1,424	1,424	2026-06
\$80,028	\$0	\$80,028	100%	1,425	1,425	2026-07
\$63,188	\$0	\$63,188	100%	1,427	1,427	2026-08
\$91,050	\$0	\$91,056	100%	1,429	1,429	2026-09
\$61,770	\$0	\$61,776	100%	1,430	1,430	2026-10
(\$102,600	(\$102,600)	\$0	0%	-	1,431	2026-11
(\$94,500	(\$94,500)	\$0	0%	-	1,433	2026-12
\$471,533	(\$1,018,800)	\$1,490,333	56%	19,034	34,076	Total







#### Human Factors

Visual Clarity: Clean design with clear fonts, good contrast, minimal clutter, and consistent colors for readability.

Interactive Navigation: Slicers, dropdowns, and buttons for filtering with clear labels, tooltips and frozen rows/columns for easy exploration.

**User Manual:** Provide clear, accessible instructions that enhance usability and reduce user errors.

#### **Improvement Method**

#### PLAN

**Filters Sales Data** 

#### DO

Forecast 3 demand scenarios

#### CHECK

Share forecast results with stakeholders and gather feedback ACT

Update the forecast quantity and send it to Team 2 for supply chain optimization

#### **Future Works**

**Improve Data Integration:** Automate data extraction and integration with other supply chain systems.

**Expand Training & Support:** Develop video tutorials or

interactive training modules alongside the user manual.

**User Feedback Integration:** Establish feedback loop to

gather input from users for continuous improvement.



