

Pricing Strategy & Data-Driven Decision Framework

Executive Summary

This research proposes a data-driven pricing architecture designed to replace reactive pricing judgements. Scalable, understandable, and lucrative price decisions are made possible by the framework's integration of pricing, sales, inventory, advertising, returns, and competition data at the SKU level. Using consistent rule-based reasoning, the goal is to strike a balance between growth, margin protection, inventory health, and advertising efficiency.

Pricing Strategy Explanation

Pricing decisions are influenced by five primary signals: margin protection, demand strength, inventory health, advertising efficiency, and competitive positioning. Rather than reacting to short-term swings, prices are modified within clearly defined boundaries. This provides consistency throughout the catalogue and enables each price change to be explained using measurable business metrics.

Data & Methodology

Multiple datasets were combined at the SKU level, including Pricing Data, Historical Sales, Inventory Health, Advertising Performance, Returns Data, and Competitor Pricing. The data was cleaned and standardized to ensure uniformity in the pricing, cost, and performance areas.

KPI Framework

Key KPIs such as Gross Margin%, Sales Velocity, Inventory Signals, ACOS, ROAS, and Return Rate were developed to transform raw data into meaningful price signals. The methodology focused on spotting patterns across numerous KPIs, rather than depending on isolated measures, to ensure decisions were balanced and operationally practical.

Key Analysis & Findings

The analysis revealed several structural issues in the existing pricing approach. A significant number of SKUs were operating below the minimum acceptable margin threshold, indicating margin leakage despite steady demand.

Advertising analysis showed that high ACOS values frequently coincided with low margins, suggesting that advertising spend was compensating for weak pricing rather than driving

profitable growth.

Inventory analysis identified overstocked SKUs with weak sales velocity as well as fast-moving SKUs approaching stockout. Competitive analysis further highlighted price drift relative to market benchmarks without clear demand justification.

Profitability Analysis

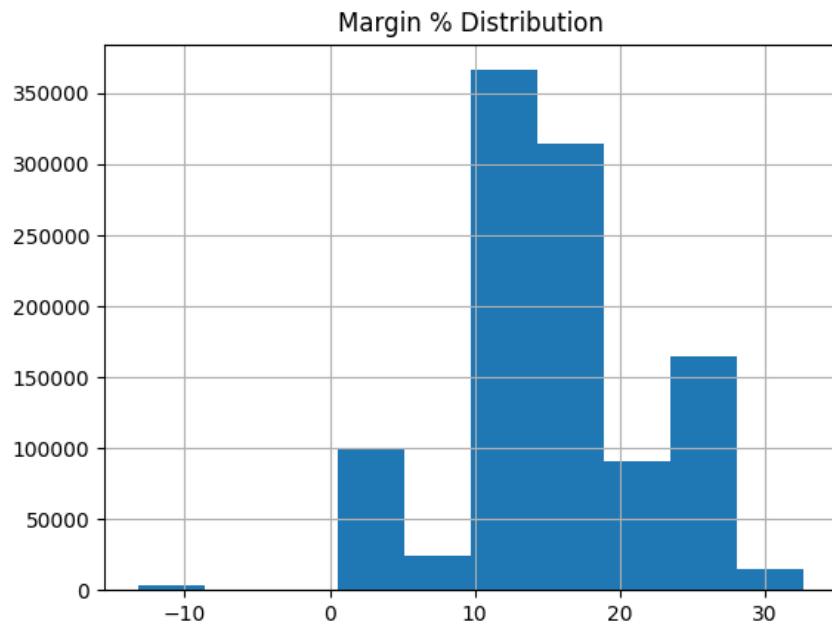


Figure 1: Margin % Distribution highlighting SKUs operating below acceptable margin thresholds. **The margin distribution reveals a significant number of SKUs operating below the minimum acceptable margin threshold, indicating immediate opportunities for price optimization.**

Advertising Performance Analysis

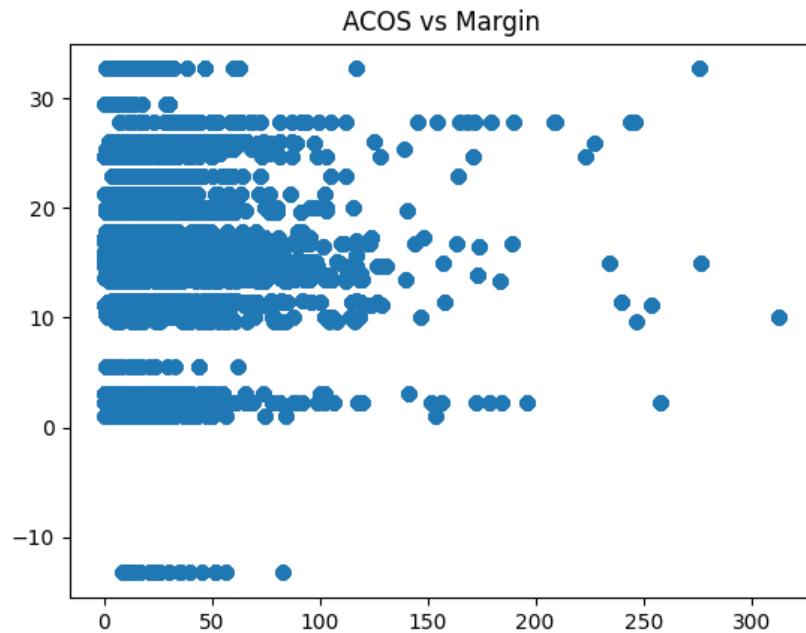


Figure 2: ACOS vs Margin illustrating inefficiencies in advertising spend. - **The inverse relationship between ACOS and margin highlights how inefficient advertising spend erodes profitability, supporting ad-aware pricing decisions.**

Inventory Risk Analysis

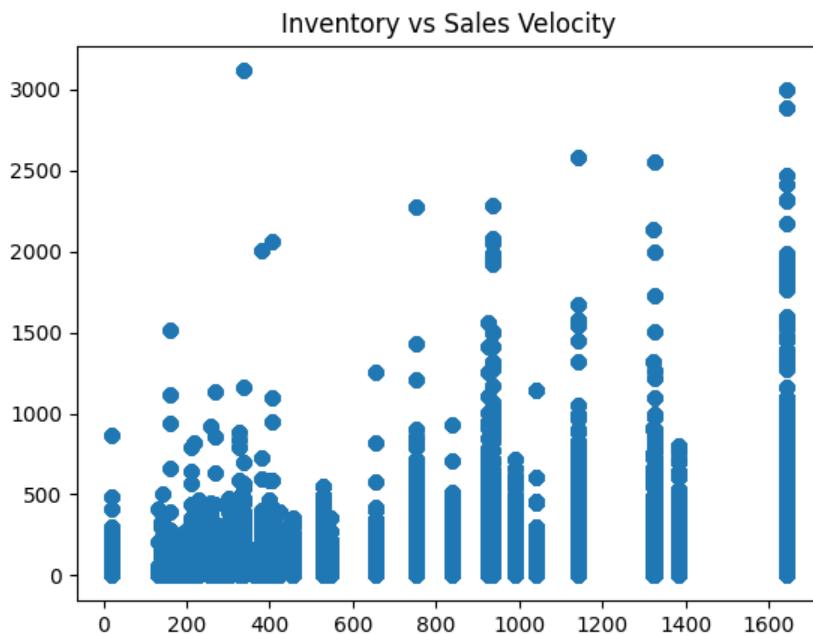


Figure 3: Inventory Levels vs Sales Velocity identifying overstock and stockout risk scenarios. - **This analysis identifies overstocked SKUs with weak demand and fast-moving SKUs at risk of stockout, justifying inventory-led price adjustments.**

Final Pricing Recommendations

Condition	Pricing Action
Margin < 20%	Increase price by ~7%
Low sales velocity	Reduce price by ~7%
Overstocked SKUs	Reduce price by 7-10%
Stockout risk SKUs	Increase price by ~5%
High ACOS	Optimize ads before discounting

Sample Pricing Output

SKU	Current Price (\$)	Recommended Price (\$)
MN-01	38.9	36.18
MN-02	33.9	31.53
MN-03	34.9	37.34
MN-04	29.9	31.99
MN-05	21.9	23.43
MN-06	14.95	16
MN-07	34.9	37.34
MN-08	29.9	31.99
MN-09	14.9	15.94
MN-10	19.9	21.29

Pricing Strategy & Recommendations

Based on the analysis, a rule-based pricing framework was designed to replace reactive decision-making. A minimum acceptable margin of 20% was established as a hard pricing floor to prevent value leakage. SKUs below this threshold were assigned price increases of approximately 7% to restore baseline profitability.

Inventory health was incorporated as a core pricing lever. Overstocked SKUs with weak demand were assigned controlled price reductions of 7–10% to improve sell-through and reduce carrying costs. Conversely, fast-moving SKUs with low inventory received modest price increases to manage demand and protect availability.

Competitive pricing was governed using a defined price band to avoid unjustified price drift, while advertising efficiency and return rates were used as validation signals to ensure pricing issues were not masked by ad spend.

Business Impact & Conclusion

The proposed pricing framework improves margin discipline by enforcing clear guardrails and eliminating reactive pricing behavior. Inventory-led pricing enhances working capital efficiency by accelerating sell-through of slow-moving items and reducing stockout risk for high-demand products.

Ad-aware pricing ensures that advertising spend supports profitable growth rather than masking underlying pricing or product issues. Most importantly, the framework is scalable and repeatable, enabling pricing decisions to be consistently explained using measurable business signals and supporting future automation.

The following GitHub contains all the files associated with the projects

GitHub: <https://github.com/SreeKS99/Karmic-Seed-Assesment3>