

Artificial Intelligence and Machine Learning

In retail and CPG, AI and ML have permeated the entire business planning process.

Artificial intelligence (AI) has already made a huge impact on our world, often in ways we don't even realize. Along with machine learning (ML) and deep learning, AI drives online advertising, Amazon "suggestions" and "recommendations," sponsorship messages when you're innocently looking at baby pictures and food photos on social media, and so much more. Artificial intelligence is around us all the time, and it's affecting how we work, shop and play, whether or not we realize it.



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In retail and CPG, AI needs to play a role in the entire business planning process in order to fully understand, engage with and activate consumers today. AI capabilities are already entrenched within demand identification, product development and in-market execution, as well as marketing. However, there is a larger revolution happening here, encompassing big data, technology and AI, and organizations that want to win in the future must embrace it.

To win, retailers and CPGs alike must use AI as the catalyst for three powerful aspects:

1 Speed-to-Insights: The CPG world is changing at an amazingly fast pace and CPGs need to keep pace with change — across all elements and trends, assessing their importance and reacting appropriately and quickly.

2 Scalability and Smart Decisions: There is a ton of data that needs to be synthesized and interpreted. Then, best-practice recommendations need to be granular at markets and retail stores, and consumer segments/individual consumer level.

3 Managing Complexity: Faced with a difficult and time-consuming process, especially on squeezed budgets, AI and ML can expedite the process and minimize time and expertise investment required to get it right. This saves money and helps to boost margin.

To harness ML and AI for disruptive improvements across a number of sales and marketing business decision areas and to win with speed-to-insights, scalability and smart decisions, and managing complexity, it's imperative to focus on:

- Spotting trends
- Sizing up opportunities
- Managing revenue across price and trade promotion levers
- Assortment planning
- Developing effective marketing programs

TREND SPOTTING

The speed of production, marketing and activation, as well as the evolution of alternate channels and unpredictable

DEMAND FORECASTING: Fully Automated Process to Select the Optimal Forecast from Thousands of Machine Learning-generated Models



Source: IRI Consumer Network™

consumer buying patterns, have presented a more challenging environment to interpret than ever before. CPG companies and retailers now have to balance unprecedented large data streams with the need to make decisions faster than ever, and increasingly fluid consumer buying trends make speed-to-insights imperative.

Traditional models don't keep up, but artificial intelligence and machine learning can contribute greatly to the speed at which CPGs and retailers can identify and act upon trends. They can take advantage of high computation frameworks, advanced storage and the power of machine learning.

These technologies can analyze multidimensional historical data to identify trends and anomalies for products and attributes, and interpret their impact on growth and market share. Further, an entire company's portfolio could be analyzed to identify risk factors to the entire business, or intelligence could be applied to a retailer's total store across categories and pricing in order to identify misses and potential opportunities against other retailers. Speed and scalability allow for more impactful business strategies, and smart decisions are made and powered by deep analytics, benchmarking and solution automation.

DEMAND FORECASTING

Artificial intelligence possesses the power to finally put accurate demand forecasting within reach for CPGs and retailers. Demand forecasting plays an integral role in operations, finance and sales, however, the demand for high-quality forecasts often outstrips the pace at which they are produced. Fully automated forecasting at scale can select optimal models and provide forecasts from thousands of machine-generated models.

With the use of automation and learning algorithms, the need for human discretion is eliminated and thus so is human error. Processes — and actionable insights — are faster, and the complexity is minimized.

PRICING, ASSORTMENT PLANNING, MARKETING

By examining pricing trends, deep learning algorithms can establish limitations and automatically set the right boundaries for pricing. This also allows for an easier understanding of growth opportunities and the ability to have good price intelligence to monitor weekly price changes and performance assessment at a granular level.

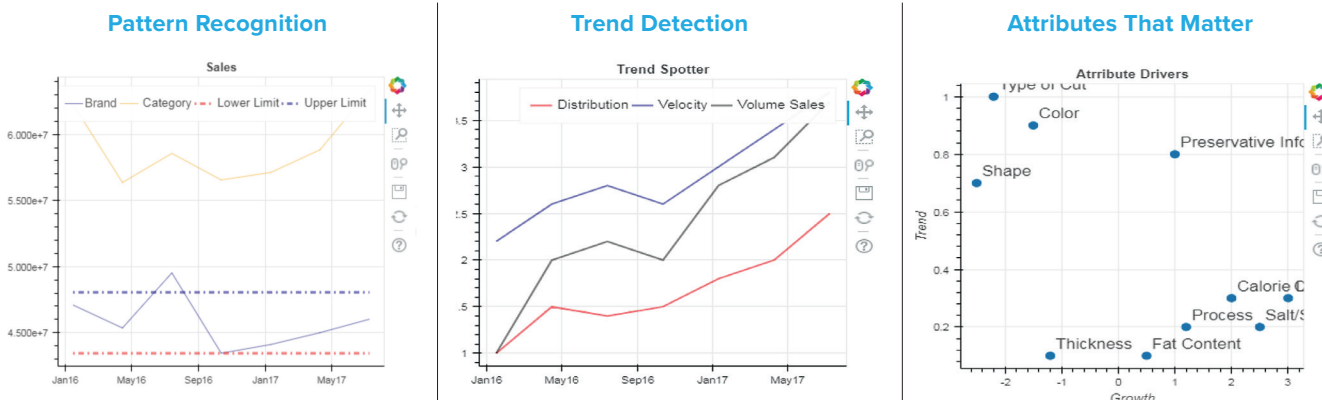
By using AI technology to study pricing and react to changes in the marketplace, pricing becomes more predictive than prescriptive, and much of the tedium of the process is eliminated. The realistic price combinations allow for CPGs and retailers to have a real and accurate assessment, saving time, energy, resources and driving growth and profit — minimizing complexity and maximizing results.

Similarly, artificial intelligence can help pinpoint the right assortment, helping retailers best utilize the highly valuable space within their walls. The next generation of assortment solutions is able to leverage machine learning algorithms to create prescriptive insights. This traverses all retailers, items and key product attributes to discover the opportunities that produce the most growth, by store.

Another way that machine learning contributes to this new wave of prescriptive insights is to identify the groups of attributes that consumers naturally consider as comparable or unique by discovering demand-based patterns. This shopper-centric approach means retailers will better connect with their specific markets.

In order to compete in an increasingly high-tech space, assortment planning must be more scalable and focused on the future. Artificial intelligence has changed — and will continue to change — the way retailers approach pricing, assortment and marketing. Speed to insights and action, scalability and managing complexity are daily challenges, all of which are alleviated with state-of-the-art technology that will take this industry and so many others into the future with great opportunities and growth. **RL**

TREND SPOTTING: A Dynamic and Real-time Algorithm to Spot Trends and Anomalies



Source: IRI Consumer Network™