



5 Critical Demand Forecasting Strategies You Can't Afford to Ignore

How to generate a forecast that accounts for uncertainty so your supply chain is ready for anything

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Take Heart: It Is Possible to Forecast Today's Uncertain Demand

In a world that rarely plays by the rules, predicting demand for your products even a few months in advance has become as complicated as launching a rocket into space. However, you can use supply chain complexity and volatility to your advantage—especially when it comes to nailing your demand forecast.

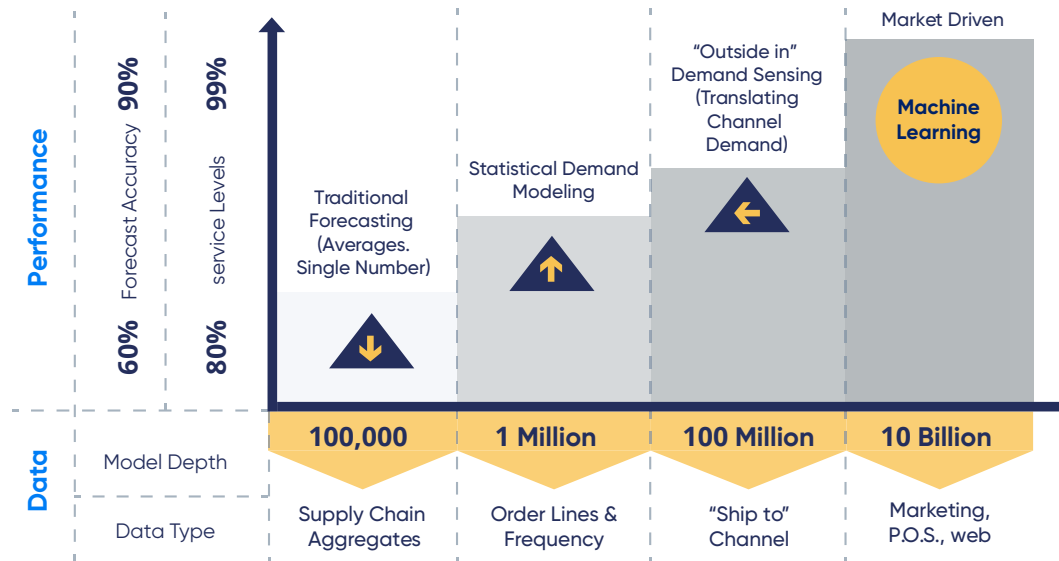
So how do you build a forecast that can take on the real world? This ebook is a compilation of our best demand forecasting strategies based on decades of experience helping companies who have been where you are: facing high demand and supply volatility along with product line and distribution complexity.



1 Benchmark Your Forecasting Maturity

Conventional forecasting methods were created for a simpler time, and are no match for today's uncertain environment. Business complexity is growing exponentially, not to mention customer demands and buying patterns. Make that complexity work for you by embracing next generation forecasting. Which stage are you in?

The Four Stages of Forecasting





// Traditional Forecasting

Many companies still apply a traditional 'top-down' approach to forecasting with the end goal of arriving at a single number. This approach aggregates demand to smooth out variability, making it easier to generate a high-level forecast. However, what you gain in simplicity, you more than lose in forecast quality, which should be your goal to begin with. The smoothing erodes SKU-L level forecast quality because it cuts out important demand signal details about order sizes, volatility and error. For the few simple and highly predictable businesses that sell just a few fast-moving commodity items through one channel, traditional forecasting should work. All others, not so much!

// Statistical Forecasting

In this stage, there are two interrelated approaches to cover: bottom-up forecasting and probabilistic forecasting.

- **Bottom-up Forecasting**

This approach models the unique demand pattern for each SKU-L. Rather than aggregating demand, it maintains and leverages the SKU-L demand signal (e.g., customers trending up and down, regions growing or shrinking, SKUs exhibiting unusual behavior). This strategy is valuable because the most significant information about variability and volatility lives in the granular level of detail, which can then be aggregated to any level as needed.

- **Probabilistic Forecasting**

With probabilistic forecasting, advanced algorithms crunch multiple demand variables to identify the probabilities of a range of possible outcomes. The beauty of the probabilistic

forecast is that it helps you manage the risk that comes from demand volatility. It's not just about improving average demand predictions but assessing the entire range of possible outcomes, which have the biggest impact on service levels. We'll zero in on this method in Strategy #2.

// "Outside-in" Forecasting

Outside-in forecasting builds on and leverages this granular demand data by adding downstream channel data. A "demand sensing" approach translates downstream demand into a demand signal for each upstream SKU-L, improving the reliability of the statistical forecast and reducing demand latency. Through outside-in forecasting, a company begins to use market-driven demand sensing techniques to move closer to optimal trade-offs and better business profitability and revenue outcomes.

// Forecasting Augmented with Machine Learning

The key to generating a truly responsive forecast is being able to tap into the wealth of market data and also factor in the impact of demand shapers like media, promotions, and new product introductions. Machine learning helps companies predict buyer behavior patterns to the real-time data that is likely already flowing into the organization. See Strategy #3 for more on machine learning for demand forecasting.



KIKO Milano: Accurate Forecasting in the Fast-Paced Cosmetics Industry

Achieving a reliable forecast in a highly competitive and constantly evolving market like cosmetics can be challenging. Such was the case for Italian cosmetics retailer, KIKO Milano, whose dramatic growth increased its supply chain complexity.

“In cosmetics there are many factors influencing customer behavior that are difficult to predict. Our previous systems were not able to deal with these complexities.”

Gianmarco Mangili, KIKO Milano's Planning Director

The solution needed to combine demand forecasting with automation. KIKO's forecast accuracy is much improved and pinpoints even down to daily sales of single items in each store, considering the seasonality not only of the product but also of the store, sweeping in a new customer-centric era.

[Read more of KIKO Milano's story](#)



2 Plan for Uncertainty with Probabilistic Forecasting

"Stop interpreting demand-driven as forecast-driven by changing the focus of your planning onto uncertainty rather than exclusively on the accuracy of your plans."

Tim Payne, Gartner analyst ¹

Uncertainty-driven supply chain decisions assume that you will not be accurate on every forecast you plan. However, switching from deterministic to probabilistic forecasting allows you to focus on ranges of outcomes, so your demand planning can respond better to uncertainty.

Probabilistic forecasting is a game changer for supply chains—helping companies improve their resilience during times of crisis, serve their customers more effectively and ultimately provide the highest returns to their shareholders. When you combine your probabilistic forecast with demand modeling, a fuller picture emerges, a more precise view of the various factors that influence demand such as promotions, seasonality and product lifecycle. A probabilistic forecast that takes uncertainty into account helps you manage risk. It's not just about improving average demand predictions but assessing the entire range of possible outcomes—including demand volatility.



3 Turbo-Boost Your Demand Forecasting with Machine Learning

You've probably heard that machine learning has huge business benefits and might be wondering whether it's worth a closer look or investment. According to our [ToolsGroup/CSCMP Digital Transformation in Supply Chain Planning Survey](#), machine learning is one of the top three technological investments supply chain leaders plan to make to transform their supply chains.

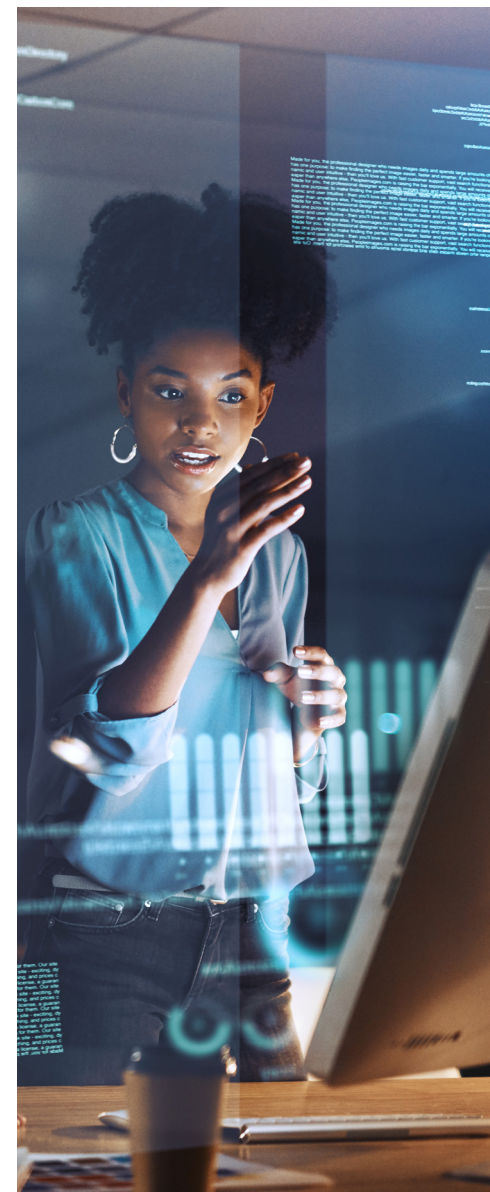
Increasing forecasting complexity and rapidly shifting consumer demand are often exacerbated by seasonality, new product introductions, promotions, and causal factors (e.g. weather, social media), making demand planning extremely complex. Today businesses are using machine learning to address these processes more than any other area of supply chain planning. Here are a few tips to get started on your machine learning journey.

// Determine your Business Objectives

Have solid goals about what you want to accomplish and why before charging down the machine learning path. Gather the necessary data to formulate an accurate comparison between previous results.

// Start Simple then Layer on Complexity

After you've established your project objectives, it's time to build a solid baseline/foundation for a successful and sustainable initiative. We've found that the best approach is to leverage both probability forecasting and machine learning technologies, which work together seamlessly and automatically, giving users the ability to forecast at the most granular level, on different time horizons





// Plan to Operationalize your Machine Learning Solution

Often businesses will build a machine learning solution to tackle a one-off business challenge, not considering long-term sustainability, or how they will adapt the solution as business challenges change. For sustainable business value, you need to operationalize your results for continued success.

44%

of organizations plan to adopt AI/machine learning to improve forecast accuracy

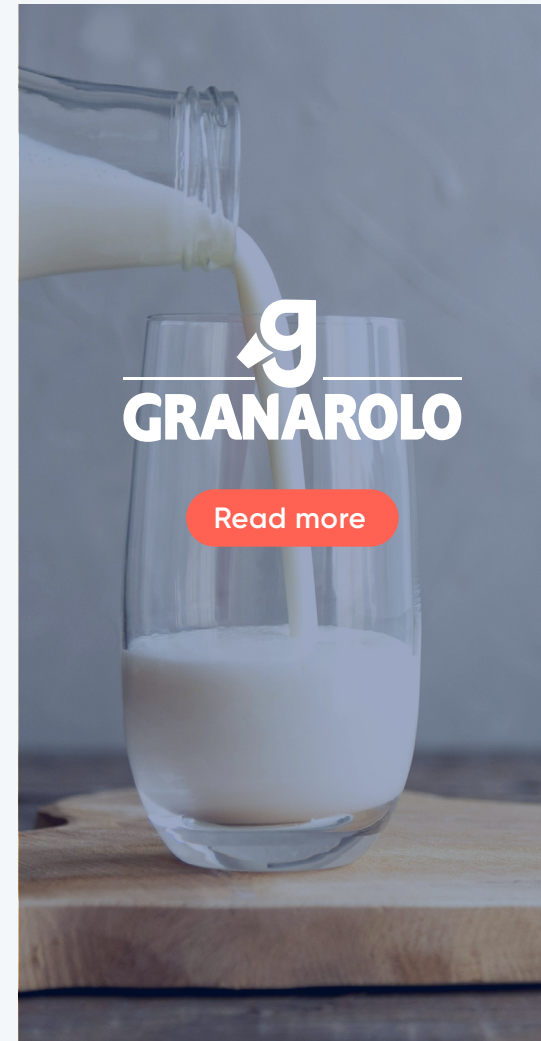
CSCMP/ToolsGroup 2021 Digital Transformation in Planning Study

Granarolo: Dairy Producer Uses Machine Learning- Powered Forecasting to Predict Promotional Performance

The dairy market is characterized by short shelf-life products and strong promotional pressures. Dairy producer Granarolo runs thousands of promotions annually, producing 34,000 item–promotion forecasting combinations, and causing demand peaks up to 30 times baseline sales.

To manage promotions and correctly estimate peak demand, Granarolo adopted supply chain planning software, which uses machine learning technology to translate historical data into reliable estimates of future promotions. Using past promotional data, the system automatically generates proposals consistent with promotional peaks. The system proposes dynamic safety stock levels that consider each product class' forecast accuracy and store replenishment frequency so Granarolo can maintain high service levels in the face of changing demand.

[Read more of Granarolo's story](#)



4 Automate Planning Decisions to Elevate Planners and Achieve Exceptional Outcomes

The role of the supply chain planner has been elevated in the face of growing supply chain complexity. The role has expanded to include an improbable mix of technical analytical skills. A recent, typical job ad for a demand planner lists technical criteria including APICS and Six Sigma certification, alongside “negotiation, communications and presentation skills”. Not surprisingly, companies are finding it increasingly difficult to recruit these polymaths.

Elements of supply chain planning are ideal tasks to outsource to machines, which can execute analytical tasks and repetitive calculations faster and more accurately than humans. Machine learning’s ability to find patterns (like seasonality and shopping behaviors) in huge data sets and also get smarter over time make it the perfect complement to human planning efforts. Don’t think of this as machines replacing people’s jobs: supply chain planning automation plugs a skills gap that humans can’t practically fulfill.

Integrating machine learning into your demand forecasting strategy frees up your planners to work where you need them most—making strategically important decisions that will enhance business performance.

43%

of organizations say they need to increase automation to focus staff on higher level activities

CSCMP/ToolsGroup 2021 Digital Transformation in Planning Study



Shamir Optical: Global Eyewear Company Automates Planning Decisions and Reduces Stockouts

Global eyewear manufacturer Shamir Optical's Nili Azura is an excellent example of a planner whose role was elevated through automation. Nili joined Shamir as an entry-level production planner at one of the company's manufacturing plants. She spent her first decade getting involved with many parts of the company, including marketing, manufacturing and IT. Through her interest and initiative she gained an understanding of the operations 'big picture' and the details of how each component worked and contributed to the whole. As such, Nili became very involved in setting up and adding her business intelligence to the new supply chain planning system, which achieved exceptional outcomes including:

- Inventory levels reduced by more than 25% overall while consistently achieving service levels exceeding 99%
- Ability to run a much larger network of 26 locations with 65,000 SKUs, across the different sites, using only three planners
- Average number of stockouts reduced from 600–700 SKU locations to fewer than 400, despite increasing the number of stocking locations from eight to 26

[Read more of Shamir Optical story](#)



5 Master Intermittent Demand While Maintaining High Service Levels

There's no escaping the fact that the "long tail" is growing. Companies are dealing with more slow-moving items with intermittent demand and unpredictable demand patterns. Classic demand and inventory models do not perform well in this environment, so how do you effectively manage the long tail?

The key to mastering intermittent demand is to accurately and reliably model demand both in the "head" and "tail". It must be done without taking convenient shortcuts which may simplify the problem but which lead to inaccurate models and output erroneous decisions.

Of course, how well you forecast intermittent demand also affects your ability to service your customers. Achieving a high service level in an intermittent demand world requires forecasting technology that can master demand behavior and probability distributions across a very wide variety of demand patterns. Look for these capabilities:

- Reliable demand modeling that automatically and seamlessly adjusts all relevant statistical parameters across a wide range of SKU behavior types; that understands all elements of demand uncertainty and considers not only forecast error, but also the "intrinsic demand variability" caused by order-line frequency and order-line size distribution.
- Advanced inventory modeling that provides highly reliable descriptions of statistical inventory behavior by eliminating the gross approximations of traditional inventory management theory.
- Logic for demand signal propagation that combines the superior capabilities of both demand modeling and inventory modeling to model the impact of replenishment policies and constraints at each echelon of the supply chain.



Is Your Demand Forecast Ready for What's Next?

Download our demand forecasting brochure for more practical advice and guidance on generating the right demand forecast to ensure your supply chain is ready for anything.



ToolsGroup Demand Planning and Forecasting

Maverick* Research: 'Demand-Driven' Is Deadly to Your Supply Chain. 21 April 2021. Tim Payne