

Better forecasting, better business

Attribute-based demand forecasting gives businesses more flexibility, higher accuracy, and sharper consumer insights — in real time

QUINTIQ



Dynamic demand forecasting opens up the path to profits

Analysts predict that the consumer class will increase to 4.2 billion consumers worldwide out of a global population of 7.9 billion within the next decade. Economic dominance will shift towards emerging markets, with annual spending in those markets rising to $30 trillion[1]. This projected milestone will mark the first time in history that the consumer class represents the majority of the world population. This opens up opportunities for businesses to break into emerging markets and make their mark ahead of the competition.

The shift towards emerging, less explored markets accentuates the need for forecasting to be a key component of every manufacturer's planning solution. When combined with an ever increasing amount of data, demand forecasting becomes a powerful tool, offering meaningful insights into market potential that can lead to tangible, positive business results. Many current solutions, however, are hampered by conventional data categorizations, which limit a user's control over how data is viewed and organized. This, in turn, limits the efficacy of forecasting efforts and subsequent actions taken based on forecast results. If you can categorize your data into custom attributes based on your company's needs — as opposed to being constrained by rigid parameters — your options become more dynamic and flexible.

In this brochure, we look at:

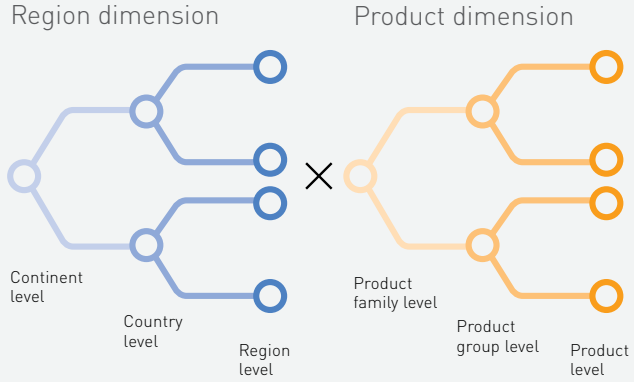
- Conventional forecasting versus attribute-based forecasting
- The advantages of attribute-based forecasting
- The single-platform approach to real-time forecasting and optimization

1 Jim Brennan, Greg Kelly, and Anne Martinez; Tough choices for consumer-goods companies (McKinsey, 2013)

Conventional versus attribute-based forecasting

The glut of data companies maintain on almost every aspect of their products is only useful if it is utilized effectively. Demand planning gives manufacturers the ability to forecast the future using data from the past. Many manufacturers have begun to harness the potential of demand planning — by forecasting future sales, for example, or developing customer lifetime value measures[2]. However, few manufacturers have fully integrated demand planning into their planning solutions, thus causing them to miss out on the untapped potential within their collected data.

A major challenge in the effective integration of demand planning into an overall planning solution is the lack of user control afforded by conventional forecasting methods. In conventional forecasting, data is organized in a strict hierarchy in traditional dimensions, such as region and product, with a fixed sequence of levels.



Examples of common conventional forecasting hierarchies. These hierarchies are fixed, limiting the way that data can be analyzed and used.

Constraining data organization in this manner limits the ways that statistical forecasting can be applied. In these examples, forecasts on demand will be limited in view to relatively broad and non-intuitive categories. This creates a forecast that is less accurate and less attuned to a manufacturer's specific needs and targets.

In attribute-based forecasting, data is grouped based on common characteristics or attributes that are dynamically set by a user. For example, in the automotive industry, attributes denoting different consumer market segments may be set. In the food industry, a user may set attributes based on the different flavors of a single product.

When data is organized along the lines of these user-set attributes, it creates unique cross-sections of data that can provide new patterns or insights that would not have been visible with conventional forecasting. This can lead to new insights, which in turn lead to improved methods of forecasting and increased accuracy, ultimately resulting in better efficiency and reduced costs.

2 Tom Davenport; A Predictive Analytics Primer (Harvard Business Review, 2014)

The advantages of attribute-based forecasting

Forecasting is a common aspect of every manufacturer's planning process. So how do you ensure that you stay ahead of the competition? With many manufacturers still relying on conventional forecasting methods, attribute-based forecasting can give your business the boost it needs to lead the pack.

The advantages of attribute-based forecasting over conventional forecasting include:

Unique insights
Contrasting with the rigid approach of conventional forecasting, attribute-based forecasting gives your analysts greater flexibility. They now have the ability to view the data any way they choose, thus enabling them to discover new patterns that would otherwise not be visible.

Unparalleled accuracy
When data is not constrained by rigid, non-intuitive categorizations, forecasts can be made to be more accurate and market-specific with localized and informed input from experienced analysts.

Better planning
With more accurate forecasts that are tailored to your company's specific requirements, your planners can execute more effective plans with greater confidence. This reduces unnecessary costs and unreliable results, while increasing the potential for maximized revenue.



Real-time forecasting and optimization on a single platform

When your company's KPIs are on the line, selecting the right planning platform is not a decision to be taken lightly. The chosen solution has to be demonstrably effective, ahead of the curve, and flexible enough to grow in tandem with your business.

Quintiq is the only platform on the market that combines analytics with world-class optimization, and the first to offer real-time attribute-based forecasting. With a proven track record in implementing attribute-based forecasting solutions for the container shipping and consumer packaged goods industries, Quintiq has the capability and experience to maximize your company's profit potential and put you in a strong position to compete in the future. Here's how:

World-class optimization
Quintiq analyzes your company's historical data and takes into account your business KPIs to move you closer to your company's revenue goals. When this data is paired with world-class optimization technology, Quintiq takes your company's forecasts to the next level. Having broken hundreds of records in the world's most studied combinatorial optimization problems, Quintiq proves that it can offer analytics at the highest, most advanced level for true long-term revenue maximization.

End-to-end visibility
With the Quintiq platform, every process is transparent across the board. This visibility enables your analysts to easily access the most up-to-date information at hand for their projected forecasts.

Real time
The more volatile the industry, the more critical agility and flexibility become. Quintiq helps you respond swiftly to market fluctuations and adjust plans rapidly in response to forecasting results. It enables you to capitalize on opportunities to increase profitability.

KPI-based
Recommendations made based on forecasts are benchmarked against your business KPIs. Analysts will be able to see not only the profitability of a single decision, but also the aggregate effects of multiple decisions on overall profitability.

100%-fit
Quintiq is configured to a 100%-fit to your company's unique requirements, rules, and constraints. Updates can be configured into the solution as your business grows, thus keeping it accurate at all times.

Integration
Quintiq can be seamlessly integrated into your company's existing framework — whether it's with other Quintiq solutions already in place or with systems from other vendors.

Clear user interface
The Quintiq user interface is easy to use and fully customizable. Users have instant access to the data they need to execute their forecasts. KPI dashboards keep users aligned with company goals at all times.



The solution in practice

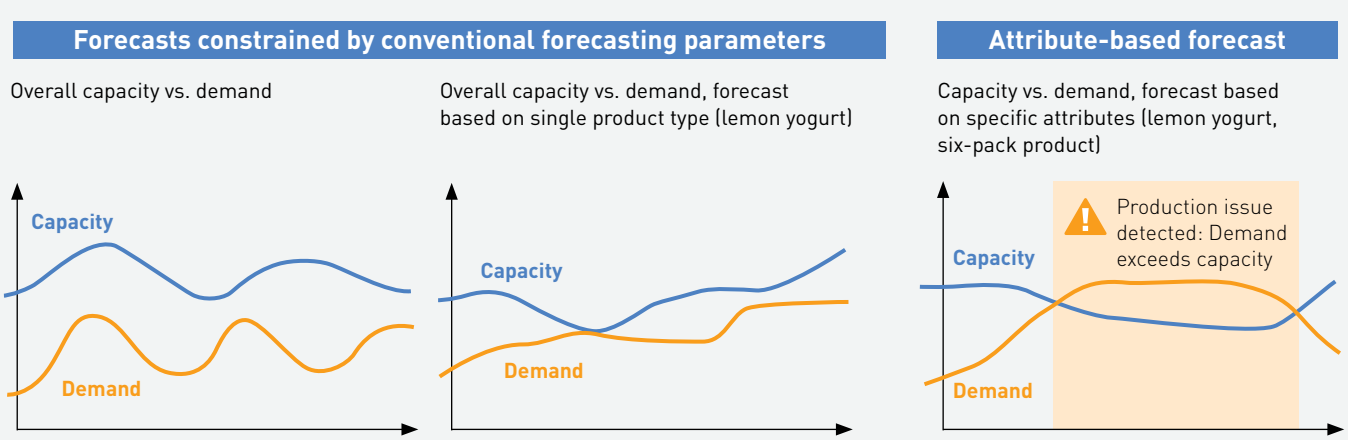
Using attribute-based forecasting to ascertain demand and capacity in the food and beverage manufacturing industry

Finding the optimal balance between demand for a product and the capacity to deliver that demand is key to maximizing your revenue. But when your business produces a wide range of varied products, how do you effectively forecast demand and capacity for each one?

This was the problem a leading food and beverage manufacturer needed to solve. With a wide range of products in the dairy foods segment and a customer reach of close to 1 billion, the manufacturer sought a demand planning solution that would enable it to forecast demand and capability based on specific product characteristics.

Because the manufacturer had a wide range of products aimed at diverse markets across the globe, it was critical that its forecasts were dynamic and highly accurate. Conventional forecasting could not give it the capability to slice and dice the sheer number of individual product characteristics, not to mention the countless combination options for them, to build demand and capacity forecasts to suit its specific needs. Conventional forecasting parameters severely limited what the manufacturer could do with its data, impaired the accuracy of its demand planning, and ultimately resulted in a loss of potential profits.

With real-time attribute-based forecasting, the planners were able to view demand and capacity based on specific characteristics for its products. For example, they could now view the demand versus the capacity of their yogurt products by performing forecasts based on any combination of product characteristics such as white mass availability, yogurt type, flavor, and packaging — a task that a conventional forecasting solution would have found impossible to perform.



These graphs show how attribute-based forecasting can assist in identifying production issues that would not be shown in forecasts constrained by conventional parameters. The first graph shows the overall capacity versus demand of the dairy products being manufactured, and the second graph shows capacity versus demand based on a single product type – lemon-flavored yogurt. In both these graphs, the production bottleneck cannot be identified. In the third graph, the capacity versus demand is forecast based on attributes of a single product configuration – a six-pack offering of their lemon-flavored yogurt. This graph clearly illustrates the existence of a production issue. For this particular forecast configuration, demand exceeds capacity. With the information from this graph, planners can make adjustments to alleviate the bottleneck.

Attribute-based forecasting enabled the manufacturer to garner insights into new and more accurate forecast patterns that it would not have been able to see with conventional forecasting. As shown in the graphs, planners could identify bottlenecks in production for products defined by a specific set of characteristics as opposed to an entire product category. This enabled them to put into place specific measures to increase capacity based on the chosen set of product characteristics.

When production capacity is planned to match the demand for products matching a specific set of characteristics as opposed to an entire product category, the manufacturer can build a more efficient production plan. This results in higher levels of fulfillment, reduced loss from wastage of low-demand products, and increased revenue and profitability.



About Quintiq

The Quintiq supply chain planning and optimization (SCP&O) platform enables enterprises to improve efficiency at every stage of the supply chain journey. It powers end-to-end planning and optimization of personnel, resources, and processes in a single planning environment, across all planning horizons. Many of the world's largest and most successful enterprises rely on Quintiq to achieve their business goals, strengthen their competitive advantage and create new revenue streams.

Established in 1997 and growing rapidly, Quintiq has a global presence with dual headquarters in the Netherlands and the USA, a global development center in Malaysia and offices around the world. Quintiq's software is used in over 80 countries worldwide.

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