Supply Chain Planning Brief

Data, Data, Everywhere….

But Most Manufacturers aren't Using it to Improve Forecasting

Manufacturers accumulate lots of data from their supply chains. We're not suggesting that they need to use ***all*** this data right away; but many are using ***very little*** of it to improve their forecasts. By taking some small first steps with their existing data, manufacturers can make some giant leaps in their forecasting.

We are confident about these giant leaps because we have seen firsthand hundreds of companies increase forecast accuracy, service levels, and inventory turns by taking small, but critical steps to mine the gold in their readily available demand data. For example, one of our global food customers recently improved product availability from 97% to 99% across its global distribution network, while shrinking inventories (measured in days of sales) by 41%.

To illustrate the concept, let's start by picturing a typical consumer goods manufacturer looking out from its Warehouses/Distribution Centers (DCs) through the retailers' supply chains to the end consumer. We see hundreds of retailer Ship-To Locations. Beyond that, thousands of Retail Outlets with consumers making millions of individual scans. Each stage represents a rich source of demand and logistical data, expanding by multiple orders of magnitude.



Each supply chain stage adds useful data

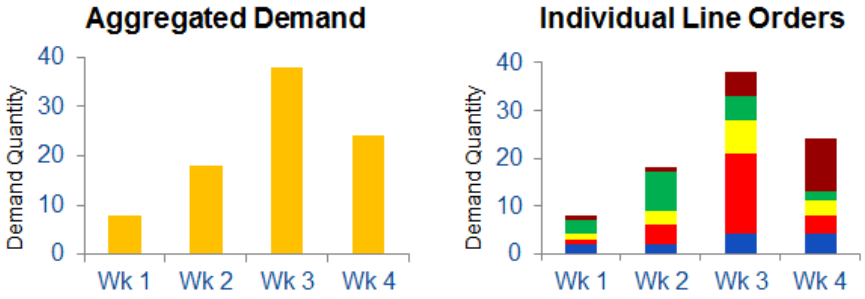
The good news is that you don't need all this data to improve forecasting and understand underlying drivers. Most companies can glean valuable information from data already at their fingertips. Most companies already have the data they need to begin distinguishing and extracting the demand signal from the noise.

Let's start with one valuable source of available data: **order-lines**. Most companies forecast future demand and determine inventory targets by analyzing demand history only in terms of quantity. For instance, their forecasts may be based on historical weekly demand quantities by product (SKU) at their own warehouse.

Yet almost all companies maintain much more detailed demand histories in the form of individual order-lines. So they already know whether their weekly demand for 48 cases was generated by a single order for 48 cases or by 12 orders with an average size of 4 (for instance: 1,6,7,2,1,3,3,8,2,6,8,1). So the **order-line frequency** and **order-line size**, two crucially valuable pieces of information to understanding the statistical behavior of their demand, are readily available but neglected. With this understanding they could have the fundamental building blocks for two important and connected processes:

- Predicting future demand
- Determining how much inventory is required to absorb the demand volatility in order to guarantee desired service levels.

Order-line frequency and size are particularly helpful to model demand behavior and understand the nature of its volatility. They are particularly important when dealing with "lumpy" and intermittent demand behavior, such as when dealing with common problems such as slow moving product, highly seasonal demand, or lots of new products. Yet many companies overlook this useful information and the insight it offers.



There is more information in order-lines than demand quantities

Additional insight can be gained from detailed demand data via "**short-term forecasting"** or "**demand sensing**". Many organizations use aggregate demand quantities at the warehouse level ("ship-from" location) to calculate and consume the weekly forecast. But more granular data, both in terms of time and market (**daily demand data** rather than weekly and **"Ship-To" or VMI Location** rather than "ship from") contains valuable predictive information that can enormously improve the short-term forecast.

At this detailed level, retailer ordering patterns can be identified within the week and the month (e.g., Wal-Mart places big orders on Thursdays except during the last week of the month). These patterns improve the forecast consumption logic over ineffective empirical "backward-forward" rules. It also helps solve the problem of one retailer's orders consuming another retailer's forecast. Finally, daily demand availability also means that forecast can be reviewed with fresh data more frequently, reducing the response latency.

Looking further downstream, **POS data** can improve forecasting by extending the supply chain visibility to the global network to take advantage of **daily sell-out data** and **store-level** or **retailer DC inventory positions**. This downstream data helps to further reduce the uncertainty of expected retailer orders, by better understanding customer behavior and translating it into upstream forecasts. Although POS and retailer data streams can pose hurdles, Demand Signal Repositories (**DSRs**) are increasingly capable of addressing data collection, harmonization and data management challenges.

In conclusion, most companies already have all the data they need to build more robust demand forecasts, thus improving service levels and reducing inventory levels. Even small steps to use this data more effectively can rapidly lead to lower operational costs, higher revenue and profits.