Author: William H. Green

Planning Demand

For Profit-Driven Supply Chains

Demand Planning solutions have traditionally been deployed in order to increase forecast accuracy and customer service levels, while decreasing inventories. Improving these metrics increases revenue and reduces working capital, resulting in higher profitability and Return-on-Assets. But Demand Planning can be more directly profit-driven by attacking these measures head on. Find out what it takes to become a profit-driven supply chain, starting with Demand Planning.

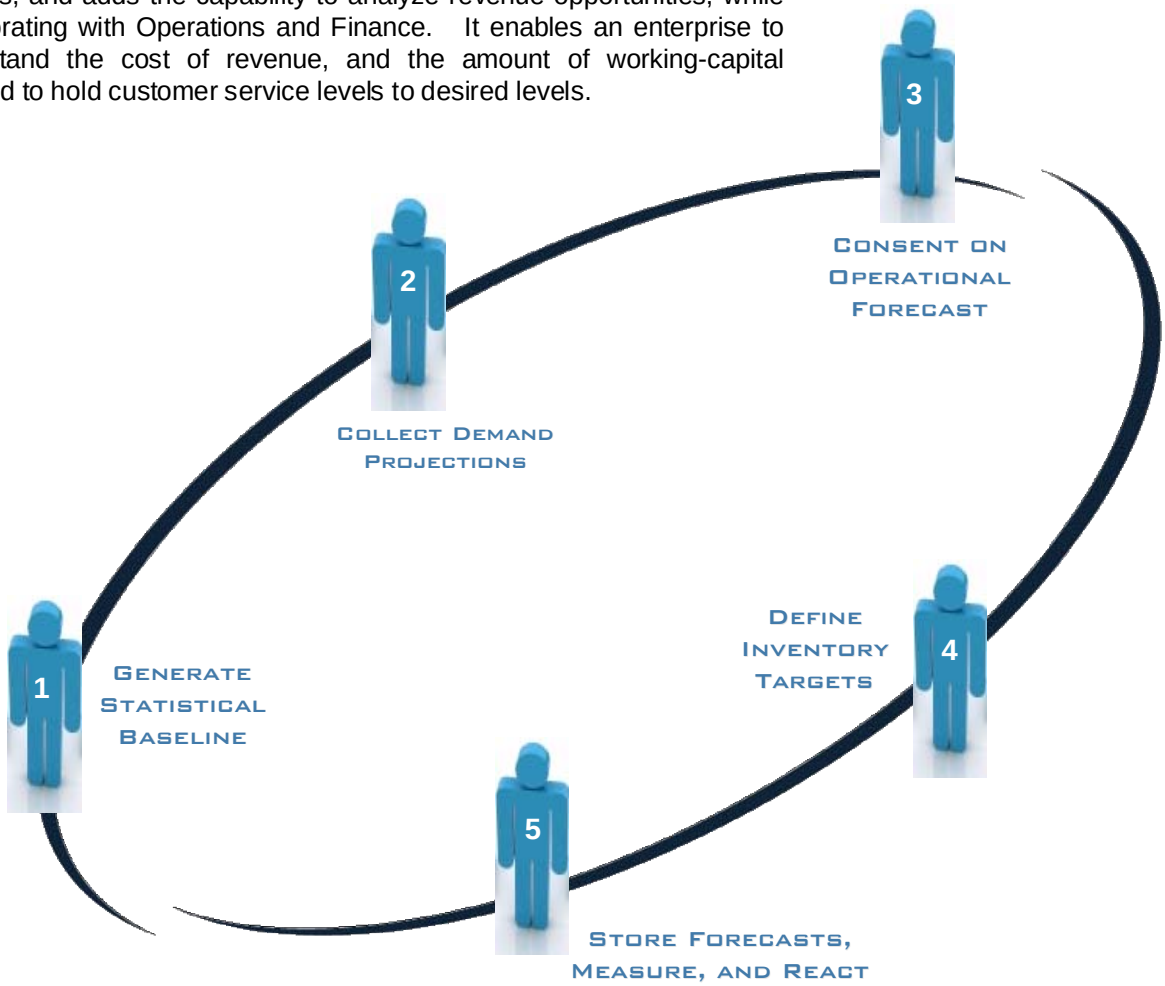
INTRODUCTION

Demand Planning is a company's connection to customers, the most important part of your supply chain. Understanding expected demand plays a critical role in profitability. Many companies have recognized that planning for profit requires a new approach to the entire DP process that can not be supported by conventional systems used in the past. The new approach goes beyond the ability to manage demand, and extends it to the ability to manage profit. *Demand* in the supply chain must be translated into revenue, but revenue can not come at any price. This ePaper outlines best practices to achieving a profit driven supply chain, through demand planning.

TABLE OF CONTENTS PG

BEST-PRACTICE DP FOR PROFIT-DRIVEN SUPPLY CHAINS

This figure outlines the best-practice demand management process for profitability. It incorporates the basics that help create accurate demand streams, and adds the capability to analyze revenue opportunities, while collaborating with Operations and Finance. It enables an enterprise to understand the cost of revenue, and the amount of working-capital required to hold customer service levels to desired levels.



This process requires a tight collaboration between customers, marketing, sales, inventory managers, finance, and operations to unlock the potential profitability of each demand stream. Also, technology components such as statistical forecasting, inventory planning, analytics, alerts, and messaging are leveraged in order to add speed and accuracy to this process. In the next few pages we will see how it all comes together.

Step 1: Generate Statistical Baseline

The first step in the process focuses on creating accurate forecasts for the breadth of products that your company sells. This is a base requirement. Profit-driven supply chains need to rely on accurate forecasts to keep customer satisfaction high and inventories low.

Statistical forecasts serve as the foundation for creating an objective view of expected demand. The 80/20 rule applies here. Baseline statistics can manage lower value and stable products, leaving planners free to manage high value relationships and products. The forecasts also police the human nature to over estimate demand numbers under pressure to perform, or to “sandbag” in order to make the numbers.

BASELINE FORECASTS FOR DIFFERENT INDUSTRIES

In generating baseline forecasts, its important to mention that for stable product lines, such as those found in retail and consumer packaged goods, historic sales are indicative of future demand, and therefore the statistical forecast directly drives the *operational* forecast.

For some verticals, such as Semiconductor and High-Tech, short product lifecycles and rapidly changing trends preclude the use of the statistical forecast as a direct input to the operational forecast. However, even in these dynamic industries the statistical forecast provides value in the following ways:

- It acts as an objective control measure to identify exceptions in other forecast sources (e.g. generate alerts if the forecast from field sales is more than 50% greater than the average of shipments over the past 6 weeks)

- It also allows people to work more efficiently by offering a mechanism to disaggregate and automate the propagation of family-level forecasts to the SKU level (e.g. proportionally disaggregate a category forecast to 5,000 SKUs based on shipments over the past month)

- It offers a scientific method to understand how external factors impact demand. Causal analysis enables an enterprise to understand how factors as diverse as weather to pricing can affect demand for various products.

- Forecasting methods also provide a way to forecast new products based on seasonal and lifecycle profiles, and *attributes* (details on page 7) which identify which prior products are similar to the new ones.

Step 2: Collect Demand Projections

The second step in the process inserts the operational wisdom of the people managing the business, by collecting their projections. Planning for profit includes projections from various planning stakeholders, including sales, marketing, finance, customers, and partner channels in order to highlight the market opportunities. Although some would argue that people have biases which can introduce errors in expected demand, a good system will incorporate human knowledge, as well as statistical data, in order to create better information than either could do alone. In such systems:

- Stakeholders need to be able to view and modify the demand plan at any level of aggregation, so the impacts are immediately highlighted at any level of or the organization. In this way high-level information can be translated into planning details.

- Expected revenue needs to be immediately calculated, based on the demand input and Average Selling Price (ASP)—at any level of the product hierarchy.

- The security model needs to be enforced on a product-specific, level-specific, and user-specific basis, so that the collaboration process can be controlled with proper levels of authorized input, and approval.

A NOTE ON ATTRIBUTE BASED PLANNING

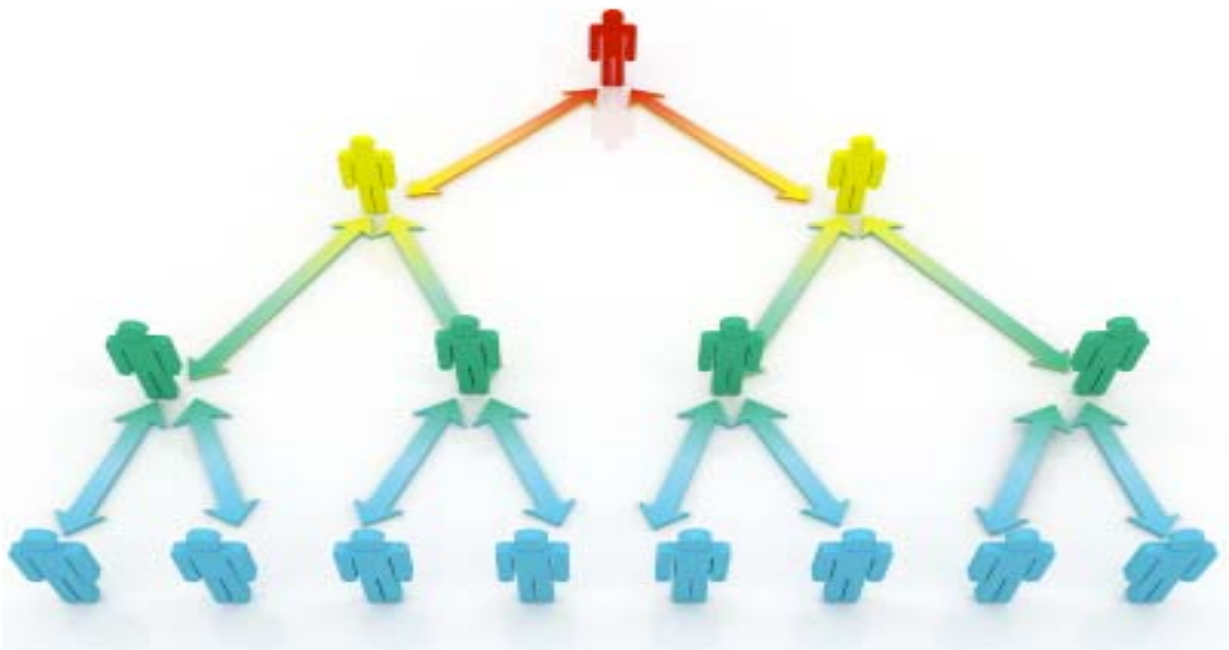
While you are collecting the data, don't forget that a market place is made up of many different products, with different characteristics, sold to different customers, in different geographies, each with their own special needs. A method is required to understand and manage market trends from different viewpoints, so that the most revenue and profit can be achieved. Each product may have multiple characteristics that simultaneously fall into multiple revenue generating segments. In order to manage this complexity a method must be established in order to identify all the unique characteristics of each product. *Product attributes* does this by enabling you to dynamically segment the market and identify trends that can be used to increase revenue.

- *Attributes* allow any stakeholder to segment the data in a way that is meaningful to them. An example of this is a market analysis by target industry, or product characteristics (e.g. color, speed, capacity, size, texture, purity, etc.).

- The stakeholder can analyze and edit data based on views that are segmented by these *attributes* to target revenue for any product, customer, geographic segment, or in any other way that is meaningful to them.

- The *average* selling price for a group of products should be set by using *attributes* to segment the market. You can then calculate expected revenue for any market segment based on the assigned selling price.

Attribute-based planning (ABP) is a critical part of profit-driven demand planning. To learn more about ABP, I highly recommend reading **Attribute Based Planning ePaper.**



Step 3: Drive Consensus Forecast

The third step in the process is to clean and merge all the projections, from the many sources, into *one* forecast representing the potential revenue in the market place. This requires an intelligent way to blend the input from all the sources and should not be influenced by constraints in operations yet, since operations planning will look at this later. This single demand stream is the *consensus forecast*, the one number used to drive everything.

Creating a viable consensus forecast is like a contest. The blending process takes on the role of a judge looking at all the data streams over time, and seeing which data elements win the *accuracy* contest. It is a process of mediation by the planner based on facts and data, not bias or personality. The judging is done by relying on past measures of accuracy from various sources and time horizons. It may be that only customer orders will be used in the very short-term. For some products the statistical forecast may win the accuracy contest from the second month and beyond. Highly volatile new products with high-margins will use sales input over the first month. Marketing may be the only source for forecasts beyond month six.

You really want your planners to focus on trouble spots, rather than mindlessly crunching numbers. For example, if a certain customer's forecast is more than 25 percent greater than a statistical forecast then the planner should be alerted to investigate the cause. Or another intelligent alert may be set up to draw attention to those forecasts that have changed by more than 15 percent since last month.

Note: Analytic views that can be sliced and diced by any *attribute* should be set up so that the enterprise can determine if it is on target to meet the revenue plan. If they are not on target, then alerts can be generated for any product/market segment or division which is not meeting their share of the financial plan. The advantage of the analytics is that they allow managers to view the plan from different perspectives to detect trends and problems. Many companies try to use spreadsheets for demand planning. Spreadsheets lack, proper security, collaboration capability, and Intelligent Alerts to manage the consensus forecast on an exception basis. We will discuss this more on page 11.

STEP 4: GENERATE INVENTORY TARGETS

The consensus demand is completed in the previous step, but expected customer demand is not the only source of demand on your operation. Buffer inventory is needed to help the supply chain run efficiently, and to protect against uncertainty. The buffer inventory targets need to be determined with an eye for profit. The more inventory that a company has on hand, the less risk there is to the revenue plan, and the more efficient a company can be in operations (i.e. saving set-up time, and order costs). On the other hand, higher inventory is a drag on Return-on-Assets and can directly reduce profits, if it has to be discounted or becomes obsolete. Remember,

- A company needs to use measures of demand uncertainty, and supply uncertainty, in addition to the value of inventory in order to figure out how much inventory to have for a buffer.

- Profit-driven companies understand that each business segment is different and therefore the buffer stock policies must fit each situation. A high-value/low-volume business requires a more generous buffer stock in terms of Days-of-Inventory than a high-volume/low-profit business.

- A profit-driven company will use its entire supply chain for inventory buffering. Products can be held at regional distribution centers, rather than local ones. Some products may be held as components and assembled to order, later. This all has to be part of the inventory strategy.

Finally, the consensus forecast, and its accompanying projected revenue plan, is combined with the inventory plan to get a complete picture of the demand and inventory targets. This gets passed to the Operations Planning team so that they can determine which demands can be satisfied, and which inventory targets can be met. Operations Planning will also determine how much it will cost to satisfy the demand and inventory plan, so that profitability can be accurately estimated.

STEP 5: STORE PLANS, MEASURE, AND REACT

In the last step, all plans need to be monitored and updated as required. People need to know when past plans were off-track, but more importantly future metrics and KPI's need to be established so that problems can be avoided before the company is off-track**.** A profit-driven enterprise must be able to predict the KPI's for the financial plan, demand plan, revenue plan, and inventory plan out into the future, when the plan is being created. Once the best plan is chosen and stored, the *actual* performance can be measured against it. The following key points should be taken into consideration when creating the set of metrics and KPI's that will be used to manage an enterprise:

- Some of the metrics are standard, such as expected revenue, targeted revenue, and actual sales for the financial plan.

- Other metrics such as Mean Absolute Percent Error (MAPE), and Quantity Sold, monitor forecast accuracy in order to alert users if the sales plan is off-track.

- Since each company is different in their behavior and goals in the market place, they should put in place unique measures and metrics into their process.

- The key is to have the metrics in place to provide alerts if they are off-track, and pinpoint possible areas of improvement.

Don't forget, each stakeholder needs to be able to personalize their dashboards to help them in their specific role:

- *Executive Managers* require higher level key performance indicators (KPI's) to be able to monitor a broad set of measures at a higher level.

- *Functional Manages* require area-specific KPI's to understand in more detail problems under their control.

- *Planners and Analysts* need alerts and the ability to drill into detailed information to correct problems.

AN IDEAL SYSTEM

The process described in the previous sections must be supported by a system that provides decision-support intelligence, analytics, reporting, collaboration, workflow, and full integration with other enterprise systems. These are some of the requirements for an ideal DP system for a profit-driven supply chain:

- Offer the traditional Demand Planning tools, in order to determine an accurate consensus demand
- Recognize the potential of profitability a consensus-forecast may have based on the expected revenue and marginal-cost for each unit sold
- Be able to translate the demand of various market segments based on their characteristics into a company sales and revenue plan through the use of *attributes* (Page 7)
- Recognize *average* selling price for various mix of products at a given volume in order to determine expected revenue, while considering segmented product groups
- Understand the cost of inventory and the trade-off between incremental revenue and additional dollars of inventory
- Utilize the supply constraints feedback in a closed loop analysis to determine the best product mix for maximum profitability
- Communicate and collaborate with financial management about the sales and revenue plan
- Monitor the plan with Key Performance Indicators (KPI's) to highlight when the company is not on-track to achieve operational or financial goals.

In most cases, systems need to be built from the ground up in order to be able to support a profit-driven process. Trying to combine separate Demand Planning, Performance Management, and Inventory Planning systems to do the job, creates an integration nightmare that needs to be custom built by the organization. There are systems that are designed to bring these capabilities together to make it easier for you to drive your supply chain toward more profitability.

BRINGING IT ALL TOGETHER

Managing the front-end of a Supply Chain for profitability requires a business process and systems that are different from traditional demand planning systems. The ability to plan revenue by product lines and customers, monitor progress to goals, and manage inventory, are all key capabilities of a profit-driven demand planning process. The last critical point to achieving profitability is to make sure that a profitable Demand Management process is coupled with an Operations Planning process that can properly close the loop. In other words, the demand plan must eventually take into consideration the operational constraints. The key is to be able to provide *supply* information that identifies the cost, and inventory investment, that is required to achieve the demand plan. When *demand* outstrips the ability of a company to *supply* the market place, then the operations plan must be able to optimize which demands to meet in the market, at the demand-segment level. This is the last part of the collaboration back to profitable selling.

About the Author:

William H. Green is Adexa's Vice President of Solutions, overseeing the company's Product Management Group and Solutions Support Center. With extensive application and technical expertise, he has implemented supply chain solutions for companies in multiple industries, including consumer package goods, chemical, high tech and semiconductor. Prior to joining Adexa in 1997, William spent eight years at Numetrix; prior to that, he worked in A&D industry, at Grumman Aircraft and Boeing Commercial Aircraft.

Contact: wgreen@adexa.com

Resources:

Click here For: **Supply Chain Planning Blog**

Click here For: **Planning Systems**

Click here For: **Questions**

Click here For: **Adexa**

Please feel free to post this on your blog or email it to whomever you believe would benefit from it. Thank You.