

Effective Demand Planning

Our vision at Solventure



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The effects of poor forecasting are well-known: service issues while having high inventories, high firefighting costs, a lot of slow moving and obsoletes ultimately leading to high write-offs. That's a vicious cocktail!

Stated positively, improved forecasting touches every aspect of our Supply Chain Triangle⁽¹⁾: it improves service, while reducing costs and inventory. That's a reason many companies launch forecast improvement initiatives.

There's a long list of challenges when trying to improve the forecast. Some typical ones are 'getting the data right', 'the right level of involvement from sales and senior management', 'the battle with overforecasting', 'missing promo or project information', 'missing info on NPI's', 'gaps with the financial forecast', ...

We've seen companies tackling the challenge in different ways. Some focus on the process and try it with excel. Others focus on the tools and overlook the education and the buy-in of the sales community.

As in any aspect of the Sales Inventory and Operations Planning (S&OP) process, we strongly believe that getting demand planning right requires a combination of good processes, a solid tool, the right analytics and putting people at the heart of it. We refer to our separate white paper⁽²⁾ with 'our vision on S&OP' for a more detailed discussion of the rest of the S&OP sub-processes.

In this white paper we want to present our approach to effective demand planning. It consists of the 5 steps shown below. We will review each of them in some more detail next.



¹ www.slideshare.net/Solventure/chapter-1-balancing-cash-cost-and-service-the-supply-chain-triangle

² www.slideshare.net/Solventure/S&OP-our-vision-at-solventure

1. Analyzing, Cleaning and Understanding your history

It is an old saying: “garbage in, garbage out”. Any forecasting process, whether you do it in excel, in your ERP, or in a best-of-breed software starts with analyzing and understanding your sales history. If you forecast based on shipments, you may need to correct for stock-outs. For a new product you may need to realign it with the history of (an) older product(s).

Next to typical ‘cleaning’ tasks (which we often understand), there’s also an important task in ‘creating focus’ for the forecasting process: which items do we need to review? High volume, fast moving items that are forecasted well statistically should probably be left to the system. A high volume forecast where we made a big mistake probably needs a review to verify corrective actions.

Any promotion, big project or tender, is always disruptive to the demand stability. To estimate their impact we need to understand their historical behavior: show the difference between the ‘baseline’ and the ‘promo/project/tender’ impact. This will be instrumental to reviewing their future impact in a next stage. Many software packages rely on ‘outlier detection and removal’ or ‘manual correction’. Check-out the capabilities of your software to use statistics to size the effect of historical events and incorporate them into the future.

Not all customer and products may be equally important. We refer to our separate white paper on product-customer segmentation⁽³⁾. If you haven’t done that segmentation before, the demand planning process may be a good point to introduce a list of key customers which need to be forecasted separately in a collaborative way, and a list of strategic products which need to be reviewed not only by sales but also by marketing to review the mid-term ambitions aside from the forecast by sales.

All of these steps are about ‘analyzing’, ‘cleaning’ and ‘understanding’ your history, as an input to the next steps in the demand planning process. Give it a thought in your process and ensure your tool has the right capabilities to manage this important step in the process.



2. Use Statistics to generate a quantitative forecast

Statistical forecasting is probably the most wrongly applied analytical technique in history. Out of a frustration with the high forecast error, we've seen many supply chain departments threatening to cut sales out of the process and relying on a statistical forecast instead. We've seen as many companies that say "oh yes, we've tried it, but it gave strange results so we turned it off".

We often compare statistical forecasting with a turbo-charger to an engine. If you have a good process and a good tool, statistical forecasting can easily get you 30-40% more efficiency from that existing engine. But it is a matter of precision. If you apply it in the wrong way, it will not get you anything ... or you will just blow it up!

We stress the combination of a process and a tool with statistical capabilities. Statistics should always be the starting point, not the ending point. Over the years we've seen many companies asking all of their sales people to give a forecast, often on a detailed level like customer-SKU, for the next 12-18 months. Imagine you were a sales person, what would you do? Yes, you'd pull data from your BI system with the sales of the last 3 years, try to estimate the trend, add some seasonality, ... Well that's exactly what these statistical techniques can do for you. So why bother sales people, who by nature will be more 'yellow' than 'blue' with inventing the statistics themselves. Giving them a good proposal may increase their buy-in to the process. But as mentioned just before, giving a 'good' proposal is specialist work.

Statistics also help to automate the generation of forecasts for the 'easy products'.

Everything that has an easily recognizable pattern which could be 'flat', 'constant trend', 'typical seasonality' can better be forecasted by statistics. It avoids bias, and it allows sales people to concentrate on where their market knowledge matters the most. For the lumpy and the erratic.

"Leading indicator forecasting" is the next generation of forecasting systems. Academics and software vendors for years have been competing each other in trying to invent the cleverest forecasting algorithm. The number of techniques available in the literature and software tools easily exceeds 100. Many of them with obscure names, only to be used in specific conditions and with multiple years of history. The added value of the last 95 compared to a basic set of 5 (containing level, trend and seasonality) is little to none. Given the added complexity it is actually even negative.

"Leading indicator forecasting" shifts the discussion from "who has the best technique" to "who has the best information" (and knows how to incorporate it in the forecast). Solventure has been sponsoring a PhD in this topic. The results provide a breakthrough (relative) reduction of 30% in the forecast error. To paraphrase James Carville: "It's the information stupid!".

The same techniques allow statistical "promo modelling and forecasting". Here the 'external' information is 'when did we do which type of promo'. Next to forecasting the uplift and cannibalization of a planned promo, it also allows assessing the promo efficiency. A lot of money for a little uplift may not be the wisest marketing spend.

So watch out for the statistics. On average they are too complex and poorly understood. That easily leads to failure and switching them off as a result. That is a pity because they are valuable. Look for a knowledgeable partner, an expert. He will help you in selecting the right level of complexity for your business and ensure you get an increased performance as a result.

Look for partners that give you access to leading indicator and promo forecasting expertise. Solventure has Phd's in the topic. We are ready to surf the next wave in forecasting!



3. Have the relevant people add info to the statistical forecast, both within the company and with key customers and distributors

An exercise we have done a couple of times is to ask people in a brainstorm “what is influencing your demand”. We give them an Ishikawa diagram and ask them to cluster demand drivers along a couple of main axes. There will be ‘economical factors’, ‘competitive factors’, ‘weather/climate’, ‘price (changes)’, ‘(governmental) regulations’, ‘promotions (of our own/competitors)’, ‘technological changes/adoption curves’, ...

There is a myriad of factors that are influencing demand. In any case and for sure too many than any statistical model can currently hold. Even if statistics would be ready, we simply don’t have the historical data to capture all of those effects. So NO, statistics alone can NOT do the job! You HAVE to rely on a collaborative process within and across the company boundaries.

A first type of information to get is product introductions, substitutions and end-of-life. Typically the responsibility of product management and marketing.

A second type of information to get is promotions, price changes, marketing campaigns ... Most of the responsibility of marketing, but in some companies these are customer specific so run by sales. Whomever has the info, you need to make sure you get it!

A third type of disruptive factor is about projects, tenders, ... in short “unusually big orders”. If you don’t have it in the forecast you either don’t have enough or you cannibalize on the ‘normal’ demand. This type of info you will typically need to get from sales.

The above three typically are managed via reviewing lists of NPI’s, promos, projects/tenders. On a regular basis (at least monthly) you review the latest status on the expected volume, timing and probability. It can be drawn from a CRM system or directly managed in your forecasting system. Watch out that your forecasting system has the capability!



Next to these three we will more generally ask sales people to validate the statistical forecast. If you want to get 'a feel for the business' it is often more easily done on an aggregated level. You forget about specific customers ordering specific packaging and products. You prefer to look at 'typical applications' in a 'certain region' and asses 'whether that makes sense' or 'whether something significantly different is going to happen'. For small changes the advice is to 'don't touch'. Those uncertainties are covered by the safety stock. Focus on big changes of +/- 20%, where you actually know something is going to happen. Ensure your forecasting system has this aggregation/disaggregation capability. Having sales people validate on an aggregated level reduces the workload and will increase the accuracy!

But why stop with sales?! As we argument in our white paper on customer-product segmentation, no 2 customers are the same. In each business there is 20% of the customers that make up 80% of the business. If these customers are so important you should stop guessing what they will buy. You should ask them and review your proposal on a frequent (at least monthly) basis. Getting these volumes right will stabilize your supply chain and make sure you have room to maneuver for the rest of the business where you don't have that opportunity!

Look at key customers but also at channel partners like distributors. Stop forecasting distributor demand based on the sell-in. Start forecasting the sell-out and set-up a vendor managed inventory. It will increase the 'forecastability' of the channel, reduce your inventory and reduce your cost. Sales may dislike this as they like to stuff the channel to hit their end-of-quarter sales target. That's killing your margin so don't accept it. Channel partners are an extension of your supply chain, not of your sales force.



4. Measuring forecast accuracy and the “forecast value-add”

It is a common saying that there is only 1 certainty when it comes to forecasting, that is: “the forecast is always wrong”. We should accept that. If we know it’s wrong we should rather add the question ‘how wrong’. It is key to measure and follow-up the forecast accuracy. If we put effort in improving the forecast using 1 of the above approaches, we should be able to measure the progress! If the accuracy goes in reverse, we should question what is happening. Did we lose focus or is our business growing more complex through NPI’s or acquisitions?

As we already outlined in the beginning, forecasting is 1 of the keys to improve the balance in the supply chain triangle. Reducing the forecast error will improve service while lowering cost and inventory. It is the beating heart of the supply chain. So there’s a good reason to try to improve it.

As outlined above, the final forecast is the addition of the information of multiple departments. Typically supply chain will generate the statistical forecast (as they are most handy with lots of data), marketing or product management will add info on NPI’s, phase-in/phase-out and promos, sales will add info from the customer, from competitors or market information in short. Ensure that in your tool you can measure the added value of each of the different forecast versions. It is not uncommon that the changes of sales people are not improving the accuracy of the statistical forecast. If they don’t, you should review that with them. In many companies I feel an urge to ‘confront’ sales with their ‘lousy forecast performance’. That is seldom motivating them to do a better job. We prefer to see it as a feedback, leading to an improved comprehension on which type of changes do have which type of effect.

That will ultimately lead to improvements of the accuracy by each of the people interacting. We call this the ‘forecast value add’ analysis.

Which metrics do we need? There is a lot of definitions out there in the literature. Each of them has shortcomings, which are typically worked around in a next variant of the metric. We also see that many companies have their own definitions. We’re not a fan of lengthy discussions on which is best. Make a choice, and ensure your forecasting system can accommodate your chosen metric. In general we advise to follow-up three metrics: the mean percentage error, as a measure for the bias, the mean absolute percentage error or MAPE, as a measure for the accuracy in a given period, and the stability, which measures if the forecast accuracy improves as we come closer to the actual period. We also see lengthy debates on whether to measure 1 month out, 2 months out, 3 months out, ... Clearly you make different decisions on different horizons. Make a choice which makes sense for your business, and above all, start measuring and communicating and given the feedback to all the participants in the process!

5. The demand review meeting

The final step in the demand planning process should be a demand review meeting. This meeting is led by the demand manager or the S&OP manager. In many companies that function is either part of the supply chain role or is reporting into the VP of Supply Chain. Supply chain is the only function that can be seen as ‘neutral’ between sales, operations and finance. From that perspective supply chain is the only function that can run this type of meetings. It also stresses the importance of having supply chain reporting directly to the CEO. Put supply chain under 1 of the three and you will skew the dynamics in your demand review and the broader S&OP process. It will create a big obstacle to alignment in the supply chain triangle.



In many companies the demand review meeting is meant to review the latest S&OP forecast, compare it to the budget, compare it to the financial forecast, challenge it, and come to a consensus. A couple of important notes here.

- Avoid discussions on the data. Ensure all of the preceding steps have been done right so there can be disagreement on where the business is going, but there should not be discussions on the correctness of the data. It is a too common mistake.
- Don't allow differences between the S&OP forecast and the financial forecast. If the S&OP forecast tells you can sell 120, then put the 120 in the financial forecast. Don't allow sales to put a buffer in the forecast. The buffer should be in the safety stock. Cfr. our next steps in our S&OP cycle.
- Money talks. If you want to get buy in from sales and senior management you should be talking values, not volumes. Ensure your system allows an easy translation from volumes to values and vice versa. If sales prices are volatile, allow sales to forecast prices as well.
- Keep it short and powerful. 1 hour is the maximum to keep people focused. Look for the right level of aggregation which allows you to walk through the numbers in a reasonable timeframe. Keep it light and easy to digest if you want to make it last.
- Build scenarios where there is big uncertainty. What will be the effect of Iran opening up to trade with the west. Difficult to say isn't it. If uncertainty is big, don't be satisfied with just 1 version of the truth. Create a minimal, most likely and an optimistic scenario to be used in the next steps of the S&OP process.

The above are some tips & tricks to running an effective demand review meeting as the ultimate goal of an effective demand planning process. The 'final' or 'consensus' demand will be input to the next steps of the S&OP process. But also for those steps like inventory and supply remember the mantra we already mentioned "garbage in, garbage out". Ensuring a high quality forecast is key in having a highly effective S&OP process!



In summary

We believe an effective demand planning process combines a good process, a solid tool, the right analytics and putting the people at the heart of it. Look for a knowledgeable partner that has experience with the different aspects. You can be the best at any of the 4 but if you don't know how to combine them you're likely to under-deliver on the final result.

When looking at the process, spend sufficient time on analyzing, cleaning and understanding your data. Use statistics to provide a good starting point and use a collaborative process within and across your company borders to enrich it. Measure the value add at each of the interaction points to trigger a continuous improvement. Compare to the budget, the financial forecast. Agree on 1 number and leave the buffer in the safety stock. Define scenarios when faced with high uncertainty. If you can do all that, you'll have a highly effective demand planning process!

We'd like to hear from you!

Let us know your thoughts. We're curious on which aspects you'd agree or disagree. Where you are in your demand planning journey? Which challenges you are facing? Together we can make it even more exciting and more rewarding!

Watch out for more!

Check our Slideshare, www.slideshare.net/solventure for our more in depth position papers on "Balancing service, cost and cash in the supply chain triangle", "Segmenting customer in B2B environments", "Effective Demand Planning", "Including Product Management in your S&OP cycle" and many more.

About Solventure



Solventure turns your supply chain into a competitive advantage and engages in long-term improvement projects. Solventure adds value by providing actionable insights through a unique combination of tools and expert resources. The Arkieva software selected and distributed by Solventure is user friendly, scalable, and proven in optimization and quantitative techniques. Solventure is Arkieva's channel partner in Europe. For more information please visit www.solventure.eu.



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Look out for more at <http://www.slideshare.net/Solventure>. Bram welcomes your feedback at bram_desmet@solventure.eu.



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