Demand Planning

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Accurate forecasting is a frequent topic around many company boardrooms.

The potential improvement in bottom-line business performance from being a "demand-led" company is a major driver towards more sophisticated ways of forecasting demand.

This session will show you how Oracle's integrated Advanced Planning and Scheduling software provides Oracle users with a unique advantage in Supply Chain Management initiatives.

Supply and Demand

Ask a production or distribution planner what is the hardest part of their job, and it is likely that the underlying cause of their grief is uncertainty. Imagine how much easier it would be if you could tell a year in advance exactly what quantity of what product you are going to sell or consume on each day.

One planner I know has the following sign over their desk *'The beauty of not having a plan is that you can not tell until the day it happens that things are going wrong, so you do not have to waste time worrying'.*

So what are the options for meeting demand, and how can Demand Planning actually help? Really there is a continuum from totally make to order – where for each individual order you go and purchase raw materials and do any manufacturing on a lot for lot basis, through to totally supply from stock – where all orders are satisfied from existing stock.

Make to Order companies are likely to have longer lead times (from taking the order to delivering), and work with fairly short horizons. DP can help with setting supplier arrangements; tooling for quick changeovers; and balancing production characteristics.

Supply from stock companies have almost no lead times – if they do not have the product the customer goes somewhere else. DP can help with making sure that the stock is on hand and not having so much stock that there is no where to put it all.

Most companies will work somewhere in between, possibly even using a different model for different product lines or customers. Regardless of the model, there will always be supply, always be demand, and always be the desire of the company to maximise their profits.

What are the different DP methods?

There are a number of different ways to create a forecast, and one of the most common reasons that demand planning as a process fails is that companies do not look at how they are going to use the forecast – how it will give them a return, what sort of data they have available, or what sort of product and market knowledge they have. Oracle offers different levels of Demand Planning, which cover a decent spectrum of currently available methods.

Within the Oracle Inventory module there is the capacity to create both manual and statistical forecasts. Manual forecasting simply involves keying in a set of expected demand figures. Oracle allows this to be at individual product level, or at product family level.

Statistical forecasting involves the use of sales history in order to generate a mathematical 'best fit' model, which can then be used to extrapolate into the future to create a forecast. The model can be as simple as taking a period average (adding up all previous sales and dividing by the number of periods, or months, that the history covers), or may be some sort of seasonally adjusted weighted average (which allows for seasonal variations and trends due to product life-cycle).

Moving out of Inventory, Oracle also offers a Demand Planning (ODP) option as part of the Advanced Planning and Scheduling module. The main reasons for moving to this module are the additional capacity for 'slicing and dicing' the sales history or forecast to apply additional market knowledge, the additional functionality around promotions, and the capability to deal with Cannibalisation (the introduction of new products to replace old ones).

Before you get hooked on the advanced features and the pretty graphs of ODP, you need to consider

the additional resource requirements on your company. In order to use ODP effectively you need someone that understands forecasting, understands the product life-cycle concept, has good market awareness (both of your company and your competitors), and knows how to identify outliers – and what to do with them.

Software on its own will not give you better forecasts. A classic example in this area of statistics and causal relationships is the research that showed ice-cream gives you skin cancer. The data used by the researchers did show a very strong correlation between ice-cream sales and skin cancer, but missed the causal factor – the intensity of the sun. Software should be seen as a way of enabling your company to perform better, and if you have a strong demand planning skill set ODP will provide the tools they need.

Many facets that effect demand

Already mentioned is the need to have the right product, in the right place, at the right time. But even if you have all this you may still not make the sale. A real estate valuer once said that the value of a house is whatever you can convince a purchaser to pay at the time. You have the product, but is the price too high? Or is the price reasonable, but the market is down due to a share-market crash or the threat of war?

Sometimes you will get it all together, only to have a competitor come in with something new and steal some of your market share. Or something as simple as some bad press may change people's tastes and the market collapse overnight – ask a British cattle farmer.

In some cases these changes are not considered a bad thing, and may even be relied upon as part of the business plan. In limited markets like telecommunications companies are always on the lookout for something new that will create a 'need' amongst existing customers to get out and trade up.

Every product will have a life cycle. It will be introduced as a new product and demand will gradually increase. As the product matures the demand will level out, and eventually it will sunset and demand drop-off. For some products the life cycle is very short (cucumber ice-cream), for others it spans many years (blue denim jeans). Position in the cycle will determine the rate of change of demand – all other things being equal of course.

If it is so hard, why bother?

'No Pain, No Gain'.

Going back 10 years or so, there were a number of companies that could and did make a profit regardless of what they did. Margins of around 200 percent meant it was possible to sweep a few mistakes under the carpet, and still have time for a round of golf. If any company is still like that today – my contact details are at the end of this paper, please call...

Assume you are starting up a new business. The magic quadrant to be in is bringing an existing product, to an existing market. The suicide quadrant is a new product in a new market. One of the reasons for this is the unknown. The market will not know the product, so your company will need to do a significant amount of advertising, and start-up will probably be slow. As a company, you will not have any track record of sales, and may find it hard to justify your forecast to your bank manager when asking for the capital. Either way you will need to do some research to quantify the value of the market. If this is so important during start-up, why should it become less important as you go on in business? Demand Planning will provide you the tools to monitor your market, and give you advanced notice when it is time to change.

OK, I have a forecast but it is [not so good]

'Only a fool repeats the same thing twice, and expects a different outcome'.

It is surprising the number of companies that produce the same forecast month in month out, and keep missing it by about the same amount month in month out. One of the biggest dangers with statistical forecasting is that it is easy to set things up, and then let the computer take care of things.

The only way to get a decent forecast is to sell a product that has the same demand every day forever, or put a bit of effort into maintenance. Again, by doing some work up front a company should be able to classify what type of product(s) they sell, and therefore what is most likely to influence the demand.

If your product is fashion or high-tech related it is likely that you will get most benefit by predicting and monitoring the life cycle. Using old product or market data to try and find a profile that represents the new. Use market research to try and size the value of the market – work out tooling and distribution requirements. Follow sales closely to avoid overstocking, or lost sales, and be ready to

shut the product down and move on to the next thing.

If your product is in the high volume retail market you need to do the research to determine what your unique value proposition is. Are you going to offer quicker delivery, more product variants, or cheaper price? Do you know how much you can discount and still make a profit? Do you know what sort of volume increase you can expect if you do a promotion? Will manufacturing and distribution cope with that increase? Will the extra margin cover the costs?

Oracle Demand Planning lets you model all these scenarios, and work out a range of best and worst cases. It provides a repository for you to store all you know about the product or market, and super-impose exceptions on top of base trends.

The inherent workflow and alerts allows you to monitor what actually happens on an exception basis, and to tell you when some sort of action is required.

KPIs can tell you where your forecast is most accurate, and where most of your problems lie.

The best way to get an accurate forecast is to get as close as possible to the source of the demand. When looking at a supply chain, each step – either distribution or production – introduces both a delay for processing, and typically some sort of buffering. This effect is referred to as Demand Latency. The best way to get rid of this problem is to ask the end user to enter the forecast. This is not always possible, but for those places where it is Oracle Demand Planning also allows for collaborative forecasting.

Whatever method a company ends up using, a rigorous Sales & Operations Planning process must support it. This should be where the demand plan is converted into profit, and also where it is scrutinised for continuous improvement.

So I have a decent forecast, now what?

Another common breakdown when implementing a Demand Planning process is that after going to all the effort of producing a forecast - it is not used. This can be for a number of reasons, but a common problem is the lack of integration with the transaction system.

While Oracle Demand Planning is a powerful tool, there are other specialist products that can match it on features. Unfortunately forecasting is often overlooked by ERP vendors, who either do not have an adequate Demand Planning tool, or use a third party 'plug-in'. So while you may be able to produce a decent forecast, it is not always easy to actually use them. This is where we feel Oracle has the edge.

A forecast should be the starting point for all other planning functions, and to be any good it needs to be kept up to date. This means that while the effort of producing a forecast may be a monthly exercise, the forecast itself should not then get stuck in a bottom drawer, or even on the wall. It should be referred to every time an order is taken, and every time goods are received into store (from purchasing or production).

If you re-read some of the places we suggest you should use a forecast you may notice that we are talking about a very large amount of data that needs to be entered and maintained. In order to make that possible the system must draw as much information as possible from the transaction or ERP system, and present that information back in a readily accessible form.

Examples of this can be seen in Oracle with the integration of the forecast with the Master Scheduling and Distribution planning modules. Multiple forecasts can be fed into the Advanced Planning scheduling to allow you to assess the impact on production and distribution over a range of demand scenarios. The link is also there with the standard MPS / MRP modules.

All forecasts end up back in Oracle Inventory, and can be consumed automatically every time an order is placed through Oracle Order Management. A given month's (or whatever period you choose) forecast can be split into a number of sub-forecasts, categorised by customer, or sales region, or product type, or whatever you find useful. The defaulting rules in Order Management can then be used to determine which sub-forecast is consumed for each order. This may be over-ridden for known demand exceptions. Standard reports may be run at anytime through the month to show how demand is tracking. If you are 50% through the month and only 10% through the forecast, it is a chance to review your sales effort, promotion effectiveness, and production plan. If you are half way through the month but 90% through the forecast you may want to start looking for additional resources.

Most of this paper has talked about demand pull, where supply is geared to meet demand. The philosophy is to supply what is actually required, rather than producing then hoping to find a buyer..

However, having produced a perfect forecast, there is always that annoying possibility that supply will not be able to keep up. The planning modules in AP&S can also cope with this, allowing you to provide a production or distribution plan as a supply schedule, and to see what is the best demand to satisfy.

Summary

If you have the people with the right skills, Oracle can provide a tool that will let them collate all their knowledge, simulate all the options, cope with the huge data volumes, and put a forecast in place that can drive supply to maximise profit.

It will help you to get the right product, in the right place, at the right time – with the least amount of inventory, the least amount of last minute production or purchasing changes, and with the knowledge that you are actually making a margin on the sale.

About The Author

Geoff Cammell has been consulting to industry for over fifteen years. His experience with Oracle dates back to 1996 when he joined Oracle to help implement CPG at the NZ Dairy Group.

Somehow he managed to survive CPG, and Geoff is now the Oracle Practice Manager at Mi Services Group, looking at how to make Oracle applications more accessible by New Zealand and Australian users. This includes developing functionality for Asia Pacific, and extending the Fast Forward approach for low cost, fixed price implementations.

Geoff combines many years of industry experience with a strong academic background, including a Doctorate of Engineering on the use of Artificial Intelligence to optimise production.

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