Delos
Looking at your business another way

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SALES FORECASTING AND DEMAND MANAGEMENT

"The only way to predict the future is to have the power to shape it." - Eric Hoffer.

That is one of those great phrases, and it applies perfectly to the idea of Sales Forecasting and Demand Management, which when successfully developed, can indeed give companies the ability to shape the future.

Most people give up with the idea of Sales Forecasting. Either people use the excuse of 'how are we expected to forecast, when our customers don't know what they are doing?' or the poor beleaguered sales man says 'What do you expect me to do - spend my time forecasting or spend my time selling'.

It is perfectly true that customers keep you guessing until the last moment. It is also true that spending time in front of the customer is one of the most value adding activities that a sales man can engage in. But it is always true that a sales man should not make promises they cannot keep - which could happen if they have not forecast the sale!

This article therefore addresses the issues behind Sales Forecasting and Demand Management, and proposes a formal structure through which a company can get to a consensus forecast each month.

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WHY SHOULD A FORECAST BE MADE?

Customers place orders on companies, and they determine what they want, how much, and when they want it. You are going to be successful if you deliver the requested product, in the requested quantity at the requested time. However, if when they want it is quicker than you can get the raw materials and assemble them into the product the customer wants, you will need to have a forecast to support that. Having a forecast will give you the visibility required on future orders to decide whether or not you can supply a customer requiring either an unforecast order or an order requested in a shorter than planned time-frame.
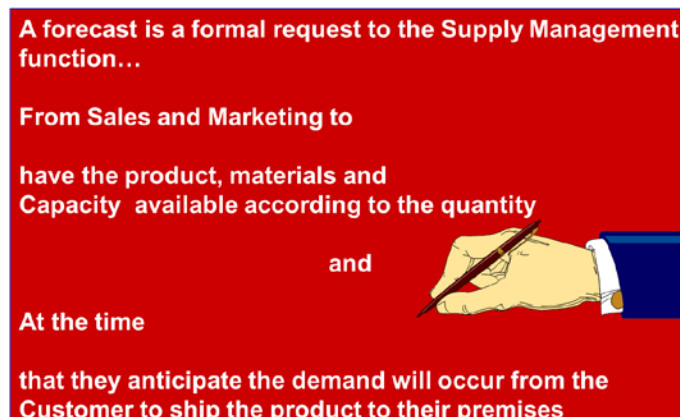
WHO SHOULD FORECAST?

In many companies I have seen several functions do the forecast. Finance puts together the financial plan. Operations use history to decide what to buy and make. Sales puts together a value forecast of the target they need to sell to.

The only people who have the best information to work out what the business is likely to sell, as they should know what is going on in the market place are Sales and Marketing. Sometimes this is one function in a company - sometimes two. In any case, these functions should provide a value and volume forecast of what they expect the business is going to sell.

DEFINITION OF A FORECAST

A forecast is often viewed as a bet or a gamble or a wet finger in the air. A best guess. However, manufacturing companies need to make a forecast to buy materials, calculate capacity and free up cash in anticipation of getting the order. It is crucial to the success of the organisation. It does not have to be accurate. But companies should avoid second-guessing, sand-bagging and dealing in unrealistic targets. The following definition will avoid all of these:

A forecast is a formal request to the Supply Management function…

From Sales and Marketing to

have the product, materials and Capacity available according to the quantity

and

At the time

that they anticipate the demand will occur from the Customer to ship the product to their premises

Note the signature. It should be a contract between Sales and Marketing and the supply chain. Often this leads to a discussion as to who is responsible for inventory, since if Operations makes the forecast, and it does not get sold they are 'fingered' for the inventory.

In a standard manufacturing organisation, the supply chain department will often have responsibility. In a company evolving effective roles and responsibilities, then Sales and Marketing should have responsibility. But in a mature supply chain organisation, inventory should be seen as the responsibility of all functions, who agree the right levels of inventory through an effective Sales and Operations Planning process. In this case the 'boss' - CEO/MD General Manager - is responsible.

## HOW DO WE PUT TOGETHER A FORECAST?

A forecast should be made up of a number of different elements, and it needs a formal process to support this. The two key elements to a good forecast are:

>   **DEMAND SENSING** – Using whatever tools are available to understand what is happening in the market place, and recording trends to determine what is going on.

>   **DEMAND SHAPING** – Using the tools or levers at the company's disposal to ensure that the business gets the optimum profit from its sales and marketing efforts – which includes optimisation of the capacity that the company has got. The levers are pricing, promotion, new product development and distribution.

The following diagram shows the overall process that the business should continually follow in sensing and shaping the demand. It is a circle as the process should be happening all the time in response to the market place:

Demand Driven Supply Chain
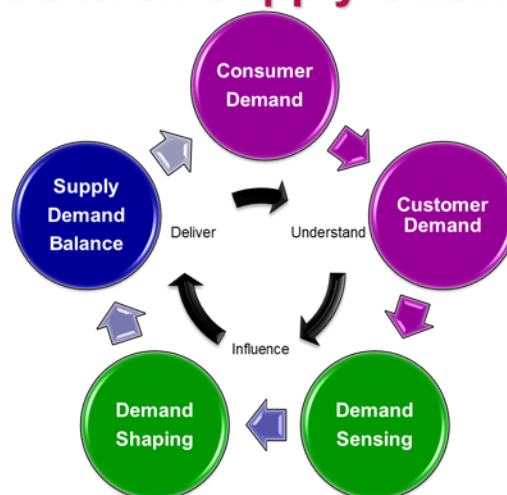
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Ultimately, there is a consumer for your products. You may be very removed from your market place. However, you need to understand the demand coming from your direct

customer by getting alongside your customer through effective customer relationships. This is what we call Demand Sensing. Many companies supply retail organisations, who in turn supply customers through supermarket retail outlets are investing in systems which forecast consumer sales based on Electronic Point of Sales (EPOS) data. That is another way of getting to understand better the data. Some companies invest in forecasting systems, which can be a sensible investment - as long as it is supplemented by 'Market Intelligence'.

Demand Shaping is about comparing the statistical forecast and current trends, gained from the Demand Sensing activity, with the capability of the organisation to supply, and then shaping the demand to fit. Thus don't accept a promotion on a plant where there is no capacity, or increase prices, if you don't have the capacity to cope with the effect of the demand being pulled forward If you have spare capacity sell it at incremental prices in markets where you will not have an effect on long-term strategy.

A good forecast, then, is a 'Consensus' forecast agreed by all parties in the organisation. An effective process should be supported by a proper agreement on RACI – who is Responsible, Accountable, Consulted, Informed. The following is an example:

Responsible	Sales and Marketing Director
Accountable	Sales and Marketing Managers
Consulted	Customer
Informed	Supply Chain and Operations

WHAT LEVEL OF DETAIL SHOULD ONE USE?

For a Make to Stock company, a forecast should be prepared at Stock Keeping Unit (SKU) or part number level, and sometimes go down to the customer level. It should be aggregated up to sub-families (brands and/or manufacturing processes) so you can see the wood from the trees.

Some companies, particularly those that are "Assemble to Order" should forecast at the family level, and then get to the "Part Number" level through using Family Planning Bills of Materials.

If you are a Make to Order company, then you may only need to forecast the amount of capacity you need in hours.

The company must decide whether it is Make to Stock, Make to Order, or Assemble to Order by comparing the lead time it offers to the customer with the lead time of materials and capacity before it can effectively answer the level at which to forecast.

It is vital that it is provided in volume and value - with the value being reported at the level of gross margin/trading profit i.e. the level at which Sales and Marketing are accountable.

WHAT SHOULD THE PROCESS BE FOR FORECASTING?

Each month or week as part of a formal monthly Integrated Enterprise Leadership process, the business should review its forecast. The key steps are illustrated in the following. The first step is to capture the actual data - which should be what the customer ordered by required date for delivery. The actual demand should be adjusted to take out spikes, and then the statistical forecast should be run. The next step should be to review the accuracy and bias of the forecasts to understand and correct the basis of the forecasts. Commercial plans should then be used to adjust the forecast. This should be done in the light of new product plans, pricing changes, new customers, promotional and advertising plans and responses to competitive threats, and external economic factors. A positive decision on whether to include or exclude unusual spikes in demand (which for example can be caused by extreme epidemics or seasonal factors) needs to be made which will then handle 'exceptional items'. On the principle that what gets forecast gets made, it is important to decide what gets into the forecast.

Forecasting Needs a Simple Process

Critical to this whole process is the creation of a visible set of assumptions which supports the forecast and any changes to the forecast. These should be included as notes to any product where the statistical forecast is replaced by 'Market Intelligence'.
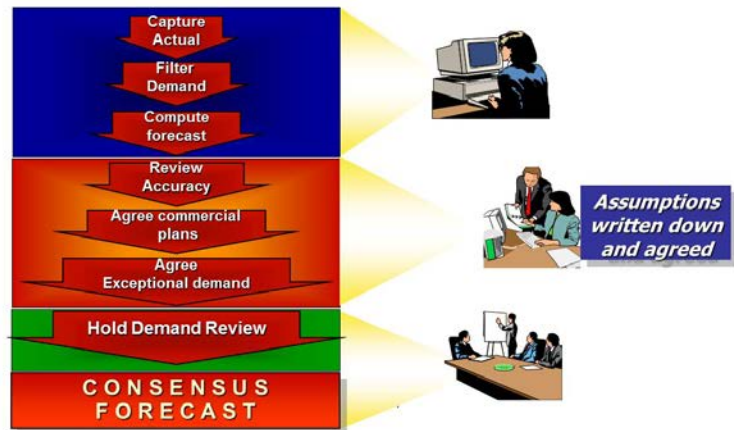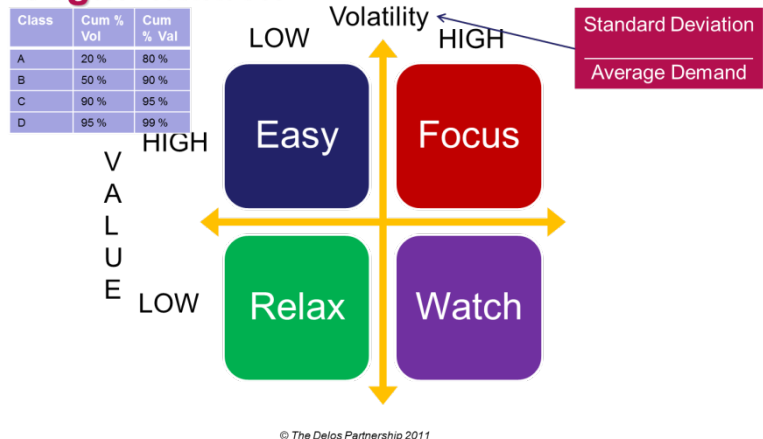
FORECAST SEGMENTATION

To avoid sales people spending too much time on forecasting, it is really useful to segment forecasts along the lines of high and low value items, and high and low variability of demand. High and low value can be measured in terms of revenue and gross margin. High and low variability can be measured by the ratio of the error of the monthly forecast to average monthly demand. If it is below 50% it is low; if it is above 50% it is high. You can then follow the matrix as on the next page, and direct people's effort accordingly.

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'Easy' means those products which are relatively easy to forecast, and should largely be capable of being managed by a statistical forecast – unless there is commercial activity associated with any of these products. Being high value they need the attention of sales and marketing people. Low value, low volatile products should definitely not be chased too much, we can 'Relax'.

Segmentation

Class	Cum % Vol	Cum % Val
A	20 %	80 %
B	50 %	90 %
C	90 %	95 %
D	95 %	99 %

Volatility — Standard Deviation / Average Demand

LOW / HIGH

VALUE — HIGH / LOW

Easy | Focus
Relax | Watch

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The products which need careful attention, 'Focus' are those that are highly volatile and high value. These should be carefully reviewed to avoid too much or too little stock. And lastly, we need just keep an eye on, 'Watch', those products with low value but high volatility.

HOW DO I KNOW IF THE FORECAST IS ANY GOOD?

Many companies use the MAPE measurement of forecasting – Mean Absolute Percentage Error. The advantage of this is that it shows the size of the deviations across all products.

The following table illustrates the calculation for a couple of product groups:

The 'Abs Error' is the absolute error - the difference between forecast and actual, ignoring whether it is plus or minus. In the case of the first group, if you add up all of the errors you get 100. If you divide this by the total forecast you get 17% - that is the 'average' error of the forecasts for that product group.

Forecast Accuracy Report - MAPE

Group	Product	Forecast	Actual	Abs Error	% Error
Product Group A	Product 123	100	120	20	20
	Product 456	200	150	50	25
	Product 789	300	330	30	10
Total		600	600	100	17 %
Product Group B	Product 345	200	300	100	50
	Product 567	500	300	200	40
	Product 890	600	700	100	17
	Product 678	200	400	200	100
Total		1500	1700	600	40 %

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You can do the same calculation and group it by customer, account manager, region or whatever. Some people then calculate accuracy as 1 – the error (thus 83% for product Group A. This is fine until the error works out at > 100%. So it is better to stick with error).

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Experience suggests that if you can get your forecast error to be less than 20% you are doing really well!

DEMAND MANAGEMENT

If one looks over the horizon, there comes a point where you need to manage demand, rather than plan it. This point is the 'cumulative lead time' for a product. The cumulative lead time is the sum of the longest lead time from acquisition of raw material through to the delivery of the product.

When a company is inside this 'time fence' capacity and materials are fixed. Hence the company typically has to choose between one product or another, or, one customer or another. Additional supply can only be sourced beyond the cumulative lead time.

Suppose the cumulative lead time for a product is 12 weeks. All demand inside this lead time (whether actual orders or forecast) is reserved for orders and those people who have forecast their demand.

Any unforecast demand should be promised in week 13 and beyond (depending on availability of capacity and raw materials). This principle would be easy to apply if it were not for the fact that some very big companies want the product and they want it now!

So an effective demand management process requires a way of identifying abnormal or unforecast demand, and a policy of how to treat customers. If you are travelling on a plane, and you find that they are overbooked, you will soon find out why there are gold, silver and ordinary grade customers!

FORECASTS WILL BE WRONG – HOW DO I MANAGE THIS?

It is clear that all forecasts will be wrong. It is hence vital – in order to meet those unusual demands from customers – that the business has a strategy for meeting unforecast demand. This means it should agree how much safety stock or capacity should be put in place to meet unforecast demand.

The amount should be tied to an analysis of the following elements:

- Forecast Accuracy
- Lead Time
- Customer Service Levels - expressed as e.g. 98% which means that a business will be in stock 98% of the time
- Replenishment frequency implied by order quantities

Alongside this should be a written document which supports the analysis - otherwise too many assumptions will be made about whether there is enough stock to support unforecast demand.

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All of the above can usefully be summarised in the following Ten Rules of Forecasting:

The Ten Rules of Forecasting

1. A forecast is never going to be right
2. A forecast is necessary for planning supply, supporting financial and business plans
3. Accountability for the forecast rests with Sales and Marketing
4. A forecast is wrong because the assumptions were wrong
5. Forecasting needs an application of intelligence
6. More accurate forecasting comes from your customers' customer
7. Forecasts at an aggregate level are more accurate than the detail
8. Effective management of demand is key to managing forecast inaccuracy
9. A written policy for managing flexibility is essential
10. Measuring forecast accuracy will improve the process

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In practise the companies which have the best forecasting process go through an effective process which takes them from forecasting the sale (using all information at hand to understand the direction, trend and factors which influence the forecast) to selling the forecast (using all the internal factors at a company's disposal to influence the sale).

An effective process leads to lower inventories, higher service levels and lower costs.

HOW DO I MAKE PEOPLE TAKE FORECASTING SERIOUSLY?

All behaviour is influenced by the way people are measured. If you want people to take forecasting seriously and to produce forecasts, then the only way is to give people a bonus based on the accuracy of their forecasts. This is the major change that people must make to create an effective forecasting process.

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