

TOP 10

Inventory Mistakes and How to Correct Them–

Webinar Questions & Answers

From Demand Solutions and Columbus IT's APICS webinar



01

Explain inventory turns in detail.

The common calculation of inventory turn is Annual Cost of Sales divided by Average Inventory. I like the average inventory to be a rolling average of the inventory balance of the past three months. That prevents the calculation from being impacted by monthly swings in inventory levels, such as being out-of-stock or posting a big inventory receipt just prior to month-end.

Inventory Turn is a good measure of the health of your inventory replenishment process. The results of making improvement in the replenishment process are reduced inventory, and therefore increased inventory turns.

Inventory Turn can be increased by:

- a. Increasing sales while holding inventory constant; or
- b. Reducing inventory required to support a constant level of sales.

You should work to increase inventory turns to the point that inventory reductions begin to affect customer service (line fill rate) performance.

02

Would you advocate planners forecasting their own product lines of responsibility, as opposed to one or more forecasters in a separate group?

My answer depends how much internal collaboration (forecast information provided by sales, marketing and product management personnel) and external collaboration (customer provided forecast information) you have designed into your sales forecasting process. If your company has worked at developing a collaborative forecasting process, it is more likely that the forecast will be managed by a separate forecasting organization.

Also, I see that it is more common for manufacturing companies to have separate forecasting functions and planning functions. It is more common in distribution and retail environments for the inventory planner to have both forecasting and planning responsibilities.

03

Why is adjusting the forecast not a good tool for managing inventory?

The sales forecast should be your best estimate of customer demand. If you expect customer demand to decline, respond by reducing the forecast. However, don't reduce the forecast simply because you happen to have too much inventory.

It is the function of the inventory planning process to maintain inventory at the appropriate levels. Inventory levels are managed by a combination of factors, including: forecast review, setting the level of safety stock by ABC classification, maintaining accurate product lead times, setting replenishment order quantities or lot sizes, expediting / de-expediting open replenishment orders and defining the order frequency periods.

Professionally managing inventory involves managing all of these factors to meet your corporate inventory goals. Don't assume that all of your inventory problems are all due to a high sales forecast.

04 Explain the 80/20 rule. How often should a company do a physical inventory?

80 / 20 Rule

ABC Analysis is the technique of assigning a velocity to code to items based on cumulative annual sales (annual units sold times unit cost). It is common to assign an ABC Code of "A" to the items that account for the top 80% of cumulative annual sales. These "A" items will typically make up 20% of the items in the database, hence the term 80 /20 rule.

ABC Analysis is an effective tool for prioritizing items to aid in forecast review, setting forecast accuracy expectations, setting inventory safety stock / safety time levels, and inventory cycle counting frequency.

Physical Inventory

I am a proponent of *never* conducting a physical inventory. Relying on an annual physical inventory often increases inventory errors in the database because we utilize staff people that are not familiar with the inventory to do the counts. Also, taking an annual physical inventory does not resolve the root causes of the inventory record errors.

Instead, I advocate using a cycle counting program where items are constantly counted rather than conducting an annual physical inventory. Companies that have successful cycle counting programs achieve near 100% inventory record accuracy and receive approval from financial auditors to eliminate the annual physical inventory.

05 What does SKU Rationalization mean?

SKU Rationalization is the analytical process of determining whether to retain or delete products from the company's product offering. Over time, companies tend to expand the number of items and item variations, such as multiple sizes, colors, options, etc. It is important to periodically review the company's item assortment to determine if each item still contributes enough in sales to justify continuing to offer the item.

A SKU Rationalization project is initiated to determine if products should continue to be offered or deleted from the company catalog of item. Another result of the SKU Rationalization project may be to reduce the number of stocking locations, such as warehouses or stores, and centralize the item in a central warehouse.

06

What's the difference between Safety Time and Days of Supply?

Though the terms are related, I do consider that they have different meaning.

Safety Time is the concept of expressing safety stock inventory as a function a number of periods of forecasting sales. Typical safety time strategies may be that we want to keep 2 weeks of safety time for "A" items, 4 weeks of safety time for "B" items and 8 weeks of safety time inventory for "C" items. Using safety time allows the safety stock inventory to automatically increase or decrease with the seasonality of the item. Fixed safety stock quantities have to be manually adjusted to account for changes in seasonality.

Days of supply is a common inventory measurement for an item that reports how many days of sales coverage is provided by the total onhand inventory balance for the item.

07

How does a long out-of-stock situation affect the forecast planning process? For example: out of stock 6 months or more.

If you are using shipment history as the input to the statistical forecast, an out-of-stock situation will obviously have an impact on the forecast planning process until the out-of-stock is resolved. In this case, we should modify the shipment sales history to post the history in the period when the order should have shipped, not when it actually shipped. That will allow the system to best reflect the sales history in the statistical forecast.

08

Does your S&OP system integrate with Microsoft Dynamics?

Yes. Demand Solutions has certified interfaces with Microsoft Dynamics GP, Nav and AX modules.

09

What measures do you recommend implementing (i.e. reports, etc) for measuring the forecast accuracy?

Forecast Accuracy should be a component of a comprehensive supply chain performance reporting process. I recommend developing a forecast accuracy scorecard that measures forecast vs. actual by ABC category. Also, we should measure forecast accuracy for a 1 month and 3 month horizon.

A key metric to track is Mean Absolute Percentage Error (MAPE). This provides an objective measure of your overall accuracy, regardless of whether the forecasts were high or low. We recommend that you calculate, track and report MAPE by ABC category, by forecaster, by product family, and by any other logical product grouping.

In addition to the reviewing MAPE at a summarized level, you should also review SKU-level comparisons of forecast to actual, focusing each month on the items with the most significant unit variances. If your data includes a combination of system-generated and adjusted forecasts, analyze and evaluate which forecasts – system or adjusted – were more accurate.

10

In constraint review processes, companies frequently change the forecast to what a manufacturing site can produce or what current inventory levels are in the pipeline. You say not to manage the inventory by adjusting the forecast, though. How can a company meet the forecast demands with low levels of inventory without changing to reflect the capabilities of the company and not the wants of the customer?

I support the notion that the forecast should drive the inventory, not inventory drives the forecast. It sounds like it is your production plan that should be constrained, not the sales forecast. We should not lose visibility to the true customer demand by overriding the forecast due to low inventory levels. It is the function of the planning / scheduling system to allocate available inventory and capacity to the planned production orders. A good planning and scheduling system automatically prioritizes the work orders and gives visibility to capacity overloads.

If your company is consistently capacity constrained, it is the role of executive management and the S&OP process to identify alternatives to increasing capacity and inventory levels to meet the customer demand. If you do not supply the wants of the customer, one of your competitors surely will.

In the short term, I suggest at least maintaining multiple forecast streams – one for the unconstrained forecast (true customer demand) and another for the constrained forecast (shipment forecast).

11

On item #5 - Not talking with customers, what incentives are you seeing to induce customer collaboration for CPFR? We've offered better delivery to request and supply forecasts, but maybe other incentives are necessary. Are you seeing sales discounts used or other incentives?

There are industry organizations that have developed guidelines for implementing customer collaboration programs. One well known industry organization is VICS (Voluntary Interindustry Commerce Solutions). VICS has published guidelines for the Collaborative Planning, Forecasting and Replenishment (CPFR) process. Information about the CPFR Guidelines can be found at www.vics.org.

The benefits of participating in collaborative relationships are well-documented, and include:

- Better store shelf stock rates: 2% to 8%
- Lower Sales Costs: 10% to 40%
- Higher Sales: 5% to 20%
- Lower Logistics Costs: 3% to 4%
- Better Customer Service: 5% to 10%

Having to pay for the forecast information through extra discounts suggests that the collaboration process is valuable only to the supplier. If you can work with the customer to recognize that the above level of benefits are possible through a collaborative relationship, having to pay for the forecast information through additional discounts should not be necessary.

Retailer Benefits Typical Improvement.

12 You mentioned VMI, does it not increase inventories to own the customers' stock?

In a Vendor Managed Inventory (VMI) program you manage the customer's inventory replenishment process and automatically generate replenishment orders, though the customer still owns the inventory at their location. In a consigned inventory program, you typically still own the inventory while it is sitting at the customers' location.

The real benefit of these programs is when we are able to reduce total inventory in the supply chain. While it is true that you continue to own consigned inventory while it is sitting at the customer's location, the real benefit is that you have a sales channel with the customer that excludes other competitors products.

13 With regard to slow moving obsolete items, do you prefer a specific method or have a recommendation on the best way to review and take action to reduce this inventory category?

To identify and review the excess / obsolete items:

- Assign ABC codes to all items (see definition of the 80 / 20 Rule above);
- Compute weeks of supply for all items;
- Establish the criteria for what constitutes excess / obsolete inventory. For example:
 - o Excess – inventory greater than 8 weeks of supply
 - o Obsolete – inventory for an item that has no sales in past 6 months
- Sort the items by greatest weeks of supply;
- Publish the level of excess / obsolete inventory to give visibility to magnitude of the excess / obsolete inventory problem.

There are a number of actions to reduce the level of excess / obsolete inventory:

- Review the sales forecast for the items to evaluate whether forecast reflects the drop in customer demand;
- Reduce the safety time / safety stock settings to reduce the replenishment quantities;
- Set obsolete items to "do not replenish" to ensure that we no longer make or buy the items;
- Redistribute the excess / obsolete inventory to other DC's that may still be selling the item;

- Reduce the number of stocking locations. Consolidate the inventory in a central DC;
- Offer discounts to move the excess inventory;
- Return excess inventory to the supplier;
- If all else fails, write-off and dispose of obsolete inventory.

14 Safety Time vs. Safety Stock, should they be used together or separate?

I prefer the concept of safety time over safety stock, because it is simple, easy to implement and automatically increases / decreases inventory with the seasonality of your items. Safety time is especially appropriate for “A” and “B” items – the ones that are the highest volume items. However, many “C” items often have a forecast of 0 units for months of the year. Using safety time with a 0 forecast, results in planning for 0 inventory.

In managing “C” items, it is appropriate to use either a fixed safety stock quantity or a strategy that utilizes the greater of the fixed safety stock quantity or the computed safety time.

15 How do you define “Days on hand”?

Compute Days Onhand by taking total inventory onhand divided by average sales per day.

While the calculation can be made using units or dollars, the following example is in units:

Total onhand inventory = 100 units

Total monthly sales = 80 units

Sales days per month = 20 days

Average Sales per Day = $(80 / 20) = 4$ units per day

Days onhand = $(100 / 4) = 25$ days onhand

Days onhand is a similar performance measure to Inventory Turnover in that it relates the amount of sales that can be covered by the current level of inventory. In general, a lower Days Onhand is preferred, assuming the appropriate level of customer service is maintained.

16 How do you implement an “on-going” SKU rationalization program as new SKUs are launched, instead of a periodic snapshot review or project?

First, companies should establish a stocking policy that defines the minimum volume of sales that justifies stocking an item in a company DC. The stocking policy may define a minimum sales dollar volume or a minimum number of warehouse “picks” for the item to continue stocking the item.

Some companies include an item review as part of the Sales & Operations Planning process. The item

review provides visibility to both the status of new items and items that are candidates for removal from the Company's product line.

17 Do you include raw materials in the inventory turns?

The key is to be consistent in your use of the inventory turn calculation. It is a good idea to compute both a finished goods inventory turnover and a total company inventory turnover (includes raw materials, work-in-process and finished goods).

18 How does implementing Kanban system fit into managing inventory?

The APICS dictionary defines kanban as "a method of Just-in-Time production that uses standard containers or lot sizes with a single card attached to each. It is a pull system in which work centers signal with a card or other devices that they wish to withdraw parts from feeding operations or suppliers." Kanban is a method of replenishing inventory without utilizing work orders to initiate the production activities. Production begins on the item as soon as the onhand inventory in the bin is reduced to a certain level.

Many companies have experienced significant inventory reductions by implementing kanban and other lean manufacturing techniques. Companies that implement kanban techniques for scheduling production still utilize a sales forecast for planning raw material requirements and for managing distribution center inventory.

19 I am currently reducing the Warehouse inventory due to a 67% reduction in Warehouse space and excessive safety stocks. All material was put on SS. I have been looking to establish. Min/max levels based on demand during lead time + 1 STD dev, and have a reorder at the min level. You advise against this, rather going with time-phased, correct?

I am a proponent of time-phased inventory planning because it provides much greater visibility to your future inventory requirements. Using a reorder point method simply tells you whether you need to take action today, not what is needed in the future.

There is always a trade-off between inventory levels and customer service. One of the inventory mistakes that we discussed in the presentation was that of managing all items the same way. You should manage the replenishment of "A" items differently than "B" and "C" items. Carefully evaluate whether the 1 standard deviation setting will allow you to maintain the appropriate level of service for your "A" items or the items with a high level of demand variability.

20

Should forecasting be a sales function and responsibility?

Sales forecasting is typically considered a sales and marketing function since it has responsibility for identifying and managing customer demand. Also, it involves collaboration with both the field sales staff and directly with customers. However, there are many companies that have developed successful sales forecasting processes where the sales forecasting function is under the operations or supply chain departments.

21

How should inventory be used for protecting against a single source going down due to a quality or other issue?

Safety stock exists to protect against both uncertainty of customer demand (forecast error) and uncertainty of product supply (uncertain lead times, late supplier delivery or supplier product quality). However, it is very difficult to determine how much safety stock inventory is needed to protect against having sole source supplier is unable to deliver product.

Among the considerations are:

- What is the likelihood that the supplier will have a quality problem?
- How much time would be required to identify a new supplier and have them deliver quality substitute products.
- Do the price, delivery guarantees and quality offered by the sole source supplier outweigh the risk associated with having a sole source supplier?

These factors should be part of the risk assessment involved in determining whether a sole source supplier is appropriate for your company.

22

How should you go about development of performance measures when the company culture is focused on the employee? Currently there are no measures in place. Would you get buy-in first, or full steam ahead?

I'm concerned how the company can have long term success without having an adequate set of performance measures. There needs to be measures of sales, profit, inventory management and customer satisfaction. If there is not a company-wide set of performance measures in place, how about implementing a set of measures for your particular area of responsibility? At a minimum, the basic supply chain performance measures should include Inventory Turnover and Line Fill Rate.

23

Do you mean Safety Time as in Turn Time? Our company buys from China and there are sometimes 120 days which grow longer than the vendor commitment.

Safety time is an expression of how many weeks of supply we want to maintain as the "floor" level of

inventory. For example, a safety time setting of 4 weeks means that at the beginning of the month we already want to have the next 4 weeks of forecasted demand onhand.

Just because the supplier lead time is 4 months (120 days) does not necessarily mean that we need to have 4 months of safety time inventory for the items. If we have the pipeline filled with replenishment orders due to arrive 30, 60, 90 and 120 days in the future, we can manage the items with a smaller amount of safety time inventory.

24 How do you define Safety Stock?

The APICS Dictionary defines safety stock as “a quantity of stock planned to be in inventory to protect against fluctuations in demand or supply.”

Fluctuations in demand occur when the actual customer orders for a period are greater than the sales forecast for the period. There are a variety of statistical safety stock calculations that are designed to compute the safety stock quantity to cover a given level of service, for example 95% service.

Fluctuations in supply occur primarily due to uncertainty or variation in production or supplier lead times.

25 When doing ABC analysis do you separate purchased items and manufactured items?

A good idea would be to first compute the ABC class for all items (manufactured and purchased items together) to get a total company view of the relative ABC rankings of all items. Then, compute the ABC ranking for each vendor separately (make your plant a separate vendor) to analyze how the items rank in each vendors' product line.

26 Is it best to have an S&OP for both Demand and forecast?

I'm assuming that your terms imply that the Demand is the customer demand and the forecast is your shipment forecast. The shipment forecast is based on your ability to actually ship product, not necessarily when the customer requested the product.

Yes, some companies display the Demand forecast and Shipment forecast separately. I've seen this most often in “make-to-order” companies. However, if the Demand forecast and Shipment forecast are significantly different due to fill-rate issues, I hope that you will address the root cause issues behind the lower customer fill rates.

27

Explain 'Manage the gap, don't' force the gap' in detail.

Most companies develop two sets of forecasts:

1. The sales budget is computed at the beginning of the year, typically by product family or sales territory that is then "rolled-up" to create a company total budget. The sales budget is a key input into the company's financial planning, reporting to investors and other company stakeholders and the Sales & Operations Planning process.
2. The sales forecast is updated monthly as the each new month's actual sales are collected and imported into the sales forecasting software. The sales forecast is usually generated at the SKU level and then "rolled-up" to the product family, sales territory and total company level. The sales forecast is typically one of the primary inputs into the replenishment planning system.

Since the sales forecast is updated monthly to reflect changes in actual customer demand, while the budget remains static, it's natural that the sales forecast will begin to deviate from the budget as the year goes along. The "gap" is the deviation between the sales budget and the sales forecast.

Some companies use a technique of rolling-up the sales forecast to a product family or sales territory level of detail, then overlay the sales budget value onto aggregated sales forecast, and then prorate the sales budget down to the SKU level. They do this because they have heard that it is a good idea to keep the sales budget and the sales forecast "in synch."

The result is an adjusted sales forecast at the SKU level that represents the sales budget, not the estimate of customer demand. Since the SKU forecast is used to drive inventory replenishment, we are then replenishing inventory based on what we hope happens (the budget) as opposed to what we expect the customer to actually buy (the forecast). **Forcing the budget onto the rolling sales forecast is an inappropriate technique for planning inventory replenishment at the SKU level.**

During the Sales & Operations Planning process it is important to measure and report the gap between the sales budget and the sales forecast. When the gap gets to large, we should take corrective action to get actual sales performance in line with the company expectations as defined by the budget – or change the budget if it is obvious that budget is not realistic compared to what is actually happening in the market. However, we should not force the budget onto the rolling sales forecast. We should manage the gap, not force the gap.

28

In a High Variety (product), and high volume environment, what could be the best approach for inventory management?

I am always a proponent of using a time-phased inventory replenishment technique for managing and replenishing inventory. A high variety product line presents extra challenges to the inventory replenishment process.

If the products are highly configurable or there are many different colors and sizes to plan for, we

may choose to forecast and plan the items at a parent level instead of at the detailed SKU level of detail. Then, we can utilize a planning bill of material or item history to “explode” the sales forecast of the parent item down to the SKU level of detail.

29 What is an average industry forecast accuracy percent? +/- 10%, 20%? Is it measured by absolute or net units or dollars?

Probably the best source of comparable forecast accuracy information that I have seen is by Dr. Kenneth Kahn in an Institute of Business Forecasting article.

The article offered the following as the level of forecast accuracy should you expect:

<i>Level of Detail</i>	<i>Level of Forecast Accuracy Achieved</i>
Corporate	96%
Business Unit	87%
SKU	77%
SKU / DC	67%

Typically, the forecast accuracy measurement is in units at the SKU level. As you aggregate to higher levels, such as business unit or total company, the forecast accuracy measurement moves to a common unit of measure, such as dollars.



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