

Inventory Planning Methods: The Proper Approach to Inventory Planning



Merchandise planning is a systematic approach taken to maximize inventory investment and increase profitability.

Proper inventory planning strives to ensure markdowns due to overstock and lost sales due to stock outs **are minimized**.

The leading practice for inventory planning is to enter key performance indicator (KPI) values, based on historical performance, and derive the inventory values. There are six methods for planning inventory values:

1. Forward Weeks of Supply
2. Weeks of Supply
3. Stock to Sales Ratio
4. Sell Through Percent
5. Turn
6. Basic Stock

These methods are outlined next along with our strategic recommendation for implementing inventory planning in your retail business.

1. Forward Weeks of Supply

Forward Weeks of Supply (FWOS) is superior for planning appropriate inventory levels in plans to the week level. Using FWOS allows a planner to think about their inventory across time and is essential to effectively managing inventory levels. The goal of effective inventory management is to have enough inventory on hand at any given time to support planned sales until the next delivery arrives.

FWOS is calculated as the number of weeks of planned sales from the next week forward that the current inventory value represents. When FWOS is entered in a plan, it will calculate the ending period inventory (EOP) by counting the forward number of weeks of sales and summing the value to calculate the required ending inventory. To illustrate (using the method of wrapping sales to the beginning of the plan when forward sales are exhausted):

Figure 1: FWOS Sample Calculation

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Sales	10	20	25	60	75	15
FWOS (entered)	4.0	4.0	3.5	3.0	3.0	4.0
EOP (calculated)	180	175	155	100	45	115

FWOS requires a complex calculation when planning the end of the plan time horizon and the sales of the plan have been exhausted. There are advantages and disadvantages to Forward Weeks of Supply, but we believe its complexity is worth the effort.

Advantages of using Forward Weeks of Supply as a planned value

Inventory is linked to the sales trend across time

Planned sales trends are the driving factor when using FWOS. Inventory levels are planned to meet future sales and the potential for overstock situations is diminished. FWOS puts the focus on maximizing the return on the inventory investment by linking inventory levels directly to planned sales.

Better information to make merchandise choices

With explicit visibility to the amount of inventory required to meet sales objectives, Forward Weeks of Supply provides greater insight into how each product and/or category will contribute to the overall inventory objectives.

Disadvantages of using Forward Weeks of Supply as a planned value

As part of defining the FWOS calculation, planners need to define the behavior when sales in a plan are exhausted

Forward Weeks of Supply calculates by counting the number of weeks of planned sales from the next week forward that the current inventory represents. A statement needs to be added to the calculation to address behavior when there are not enough forward weeks of sales available in a plan. Three methods are:

- Enable the calculation to wrap around the beginning of the current plan's time horizon. This solution means planning for the end of the current plan is based on the beginning of the current plan, which is less than ideal for businesses experiencing growth or retraction in sales, or for plan horizons that are not a full year.
- Use the average weekly sales for the entire plan horizon. This solution provides a less than ideal FWOS value for the ending of the planning time horizon, yet it is the easiest to achieve in most planning solutions.
- Enable the calculation to look into a future plan. This is complex behavior not available in all planning solutions. It is important to note that there will be no future plan available during the earliest preseason planning.

Requires planning to the week level

In order to calculate FWOS, plans must be created to the week level. Weekly planning is not always practical when creating high level top down plans.

2. Weeks of Supply

Weeks of Supply (WOS) is an inventory measure calculated by dividing current inventory by average sales. WOS helps to educate a planner to think of inventory in terms of time. To illustrate:

Figure 2: Weeks of Supply Sample Calculation

	Week 1	Week 2	Week 3	Week 4	Week 5	Month A
Sales	10	20	25	60	75	190
WOS (calculated)	---	---	---	---	---	1.18
EOP	180	175	155	100	45	45

Advantages of Weeks of Supply as a planned value

Simple calculation

Weeks of Supply is an uncomplicated calculation, taking the inventory position for a period (i.e., month) and dividing it by the average sales for the period. WOS requires no complex behavior for exhausted sales, since the measure looks at past trend versus future sales projection.

Disadvantages of Weeks of Supply as a planned value

Not appropriate for detailed inventory planning

Since WOS uses average sales values to calculate, it cannot be used for planning weekly inventory requirements. WOS can only display values at an aggregated time level (i.e., month) and performs as an analytics measure rather than a planning measure.

Looks at past trend, not future forecast

WOS is not an appropriate measure to calculate inventory needs. By using past sales, WOS illustrates an inventory position based on where the business has been, not where the future sales trend is going.

3. Stock to Sales Ratio

Stock to Sales Ratio (SSR) is ideal for planning appropriate inventory levels in plans to the month level. Stock to Sales Ratio forecasts how much inventory is required to achieve the projected sales. SSR represents proportion of merchandise on hand at the beginning of a period to the expected sales for that period. SSR is calculated by dividing stock at the beginning of the period by sales for the period.

Advantages of Stock to Sales Ratio as a planned value

Inventory is linked to sales values

Stock to Sales Ratio is the most logical key performance measure to plan inventory values in a month level plan. SSR calculates inventory levels to meet planned sales, resulting in the potential for overstock situations to be diminished. V

Provides an estimate of annual Turn

Stock to Sales Ratio provides a planner with a guideline of expected annual inventory turnover.

Figure 3: Stock to Sales Sample Estimate of Turn

<u>Average Monthly SSR</u>	<u>Estimated Annual Turn</u>
4	3
3.5	3.5
3	4
2.5	5

Disadvantages of Stock to Sales Ratio as a planned value

Only looks to one period of time

Stock to Sales Ratio uses a single time value to calculate planned inventory and does not consider the movement of a sales trend over time. The higher the level of time dimension being planned (i.e., quarter versus month) the more the sales and inventory fluctuations over time are flattened.

4. Sell Through Percent

Sell Through Percent (ST) allows a planner to understand the rate at which inventory is consumed as compared to sales. While ST is a Key Performance Indicator, it is best suited for analysis rather than planning. Sell Through Percent represents the ratio of sales to beginning period inventory. ST is calculated by dividing sales for a time period by stock at the beginning of the period.

Advantages of Sell Through Percent as a planned value

Links inventory consumption to sales

Sell Through Percent illustrates the relationship between sales and inventory, providing guidance to historical results and industry standards.

Disadvantages of Sell Through Percent as a planned value

Only looks to one period of time

Sell Through Percent uses a single time value to calculate planned inventory and does not consider the movement of a sales trend over time. The higher the level of time dimension being planned (i.e., quarter versus month) the sales and inventory fluctuations across time are flattened.

5. Turn

Turn, also known as turnover, refers to the number of times during a period that the average inventory is **sold and replaced**. **Turn is a ratio of sales to inventory for a long period of time, usually season or year.** While Turn is the most commonly used Key Performance Indicator, it is best suited for analysis rather planning, since **inventory fluctuations across time are flattened**. Turn is typically calculated by dividing sales by the average inventory value.

Advantages of Turn as a planned value

Provides a starting point to planned inventory

In the absence of all other inventory key performance indicators, Turn can provide direction in starting the inventory planning process. Typically Turn Targets are developed early in the planning process and can be used to roughly estimate inventory levels by month.

Disadvantages of Turn as a planned value

Uses average values, thus flattening trends

Turn is not an ideal measure from which to calculate planned inventory since Turn is calculated from average inventory. Average inventory is a blend of beginning and ending inventory values across time; using average inventory to calculate a specific time period's beginning and ending inventory will result in seasonal fluctuations being flattened.

6. Basic Stock

The Basic Stock method of inventory planning calculates a baseline level of inventory that is the same for all months; inventory should not drop below the base level. Planned sales for each month are added to the basic stock to derive the beginning of period inventory value. Basic stock value is calculated as average inventory divided by average sales.

Advantages of using Basic Stock method to plan inventory

Supplies a very conservative method of inventory planning

The Basic Stock method of inventory planning is an option to consider for businesses with very consistent sales and inventory levels, meaning there is little seasonality or fluctuation in sales, as the baseline stock is the same for all months.

Disadvantages of using Basic Stock method to plan inventory

Uses average values, thus flattening trends

Basic Stock is not an appropriate method from which to calculate planned inventory for seasonal business, emerging categories, or products with less predictable selling patterns. Basic Stock is calculated from average inventory and average; using average values to calculate a specific time period's inventory will result in seasonal fluctuations being flattened.

Better suited for planning at the lowest level of detail (SKU)

Basic Stock method is suitable for planning individual SKU's and is similar to the process used by replenishment applications.

Final Word

Based on the advantages and disadvantages of the different methods of planning inventory as described, The Parker Avery Group recommends:

Forward Weeks of Supply (FWOS) is the ideal method for calculating planned inventory levels and should be used in all plans containing the week level of time. FWOS is the best method of planning inventory to support the projected sales trend across time. FWOS is a retail industry best practice inventory planning measure. The Parker Avery Group recommends enabling the FWOS calculation to wrap around the beginning of the current plan's time horizon when future sales are exhausted.

Stock to Sales Ratio (SSR) is the most appropriate method for high level, top down inventory plans and other inventory plans that do not contain the week level of time. SSR forecasts the appropriate inventory level required to support projected sales. SSR is a leading retail industry planning measure.

The Parker Avery Group

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Learn more about us at:

www.ParkerAvery.com

for more details
contact:

Robert Kaufman

CEO | robert.kaufman@parkeravery.com

770.882.2205