



Global Transport and Logistics



**DSV Inventory Optimization**  
Inventory Scan



## Introduction

DSV offers important customers and prospects a deep dive into stock-on-hand and replenishment data. Largely based on standard WMS data, a comprehensive analysis is made covering a wide variety of dimensions for assessing inventory health and replenishment efficiency. A DSV Inventory Consultant performs the scan and presents the findings to the client during a workshop or quarterly business review.

### 1. Value for your business

- Insights into inventory stocking levels (safety stock, cycle stock, shortfall stock, excess stock, etc.)
- Transparency on product availability at SKU level
- Analysis of stock rotation at SKU level
- Identify and quantify the opportunities for inventory optimization/improvements in inventory management

### 2. Benefits of an inventory scan by DSV

- DSV has the data, the technology and the in-house expertise to effectively visualize your inventory health
- The DSV Inventory Scan identifies areas for improvement that can lead to significant cost savings when both client and logistics service provider are aligned on the potential
- Market-leading analysis tools and expert inventory consulting





## Scan features

### DSV Inventory Scan at a glance:

- A powerful collection of dashboards visualizing your inventory data
- Over 20 visualizations aimed at diagnosing any potential inventory management issue
- 95% of the data comes from the WMS; very limited additional data required

### Main metrics scanned

#### Order activity.

Total number of orders per year, quarter, month, week, day and hour, visualizing volatility and trendlines.

### Order composition.

Breakdown of total number of orders and orderlines on weight, volume, number of lines per order and the number of items per orderline including the evolution of a particular order type over time (e.g. a growing percentage of 1-line orders).

### ABC analysis.

A methodology that ranks all SKUs by the number of orderlines they generate. All A-class SKUs combined generate 50% of the orderliness, B-class SKUs generate the next 50% to 80% of the orderliness. The remaining C-class SKUs generate the last 20% of the orderliness. As a rule of thumb; if the number of SKUs in the C-class is higher than 80% of the total number of active SKUs, this needs further investigation.

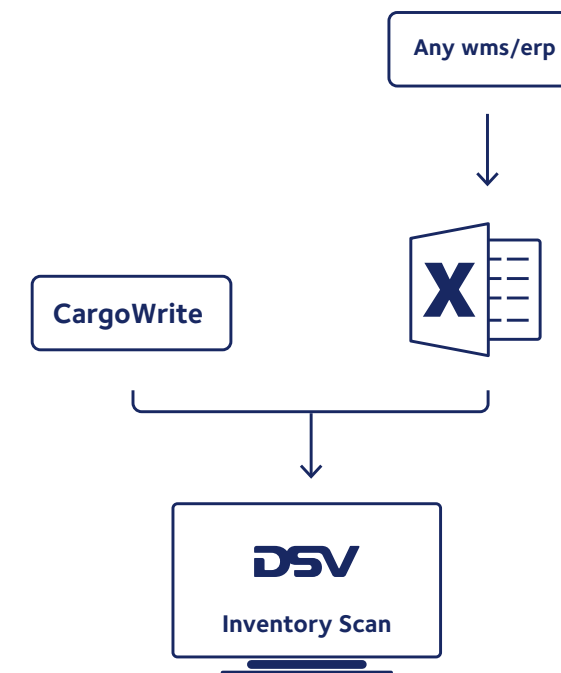
### Data fields that are not included in our WMS but that are required for a complete Inventory Scan are

#### Must have:

- SKU value (retail, cost or even a fictitious value)

#### Very useful to have:

- Order lead time per SKU
- Minimal order quantity per SKU
- Quantity on order
- Quantity on open sales order
- Purchase order date per inbound order



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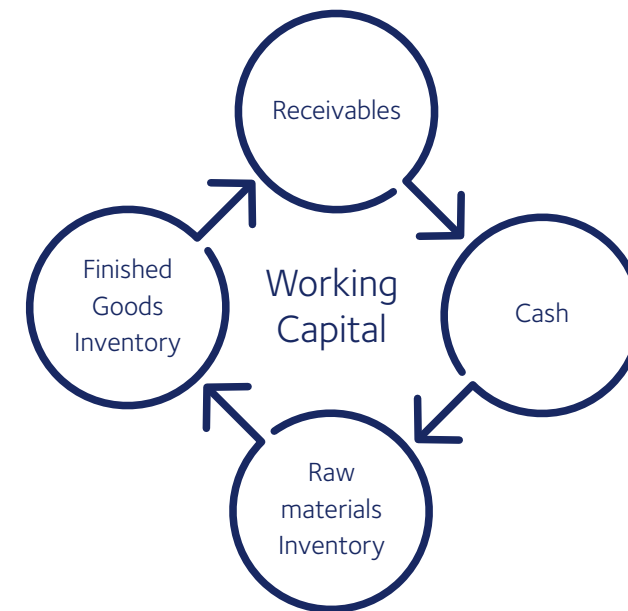


## Working capital reduction

Every supply chain team must balance inventory levels with product availability. Without the right balance, excess inventory accumulates throughout the supply chain and ties up vital working capital.

Companies often attempt to manage inventory based on a 'rule of thumb' philosophy or using their enterprise resource planning (ERP) system. This approach leaves companies vulnerable and unable to cope with demand uncertainty, supply volatility and the interdependencies between nodes and tiers of the network.

Inventory optimization (IO) can have a huge financial impact by minimizing inventory and freeing up working capital while guaranteeing the right stock is on hand, when and where it is needed.



### Main metrics scanned

#### Capital in stock.

The total value of the stock as well as the inflow and outflow of value at any given time interval.

The metric can also be displayed as an average over the year and can be filtered, e.g. based on SKU category (A, B or C movers)

#### Stock rotation.

The value of the outbound SKUs (products sold) divided by the average value of the total inventory calculated over the past 12-month period.

#### Value density.

The average product value on a full single-SKU pallet and the evolution of this metric over time.



## Product availability The supply chain paradox

Supply chain executives worldwide face an ongoing dilemma: how to improve customer service levels without creating excess or obsolete inventory at the same time. It's a double-edged sword for supply chain performance.

Because of variability in supply and demand, raising customer service levels can lead to higher levels of safety stock. Meanwhile, improving cash flow by indiscriminately reducing working capital can result in slashing the wrong inventory, leading to lower customer service levels.

While many supply chain teams have conducted IO initiatives to raise service levels while reducing inventory cost, the DSV Inventory Scan never fails to surprise our customers by highlighting areas for significant improvement that have remained undetected.

### Main metrics scanned

#### Average daily demand.

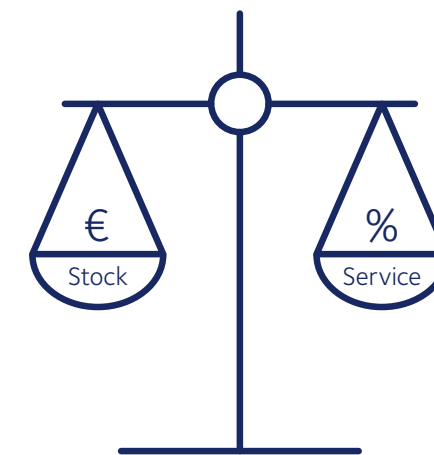
The average number of items per SKU you sell per day. This average can be calculated based on a full year, 6 months, 3 months, current month and last month as well as the actual demand that month.

#### In-full availability.

If your inventory on hand drops below the average daily demand, that SKU is regarded as being unavailable that day (i.e. inventory = 10, average daily demand = 15, availability = 0%)

#### Partial availability.

If your inventory on hand drops below the average daily demand, a partial availability is calculated for that day (i.e. inventory = 10, average daily demand = 15, availability = 67%)



[Click image to enlarge](#)



## SKU classification and product life cycle management

How can you sustain profitable inventory levels when different departments have conflicting priorities? This is an impossible task within any distribution organization if it does not realize that each department has its own priorities

### The three core rules are simple:

1. Have Enough Inventory to Service Demand
2. Don't Overstock
3. Know thy inventory

### Main metrics scanned

#### New products.

These are SKUs that have appeared in the warehouse for the first time over the past four months. This group is segmented because it is normal to have higher inventory levels during product introductions.

#### End-of-life products.

These products have not been ordered during the last 12 months. By zooming in, you can see how many SKUs are in this group and the value that they represent.

#### Mature products.

Mature SKUs are products that do not fit into one of the other two categories. These are further segmented into 'frequent' (more than 20 lines per month), 'normal' (more than 8 lines per month) and 'irregular' (fewer than 8 lines per month).

### Overstocked



Finance

### Understocked



Sales & Customers

### Optimal Inventory levels



Finance, Sales & Customers

[Click image to enlarge](#)

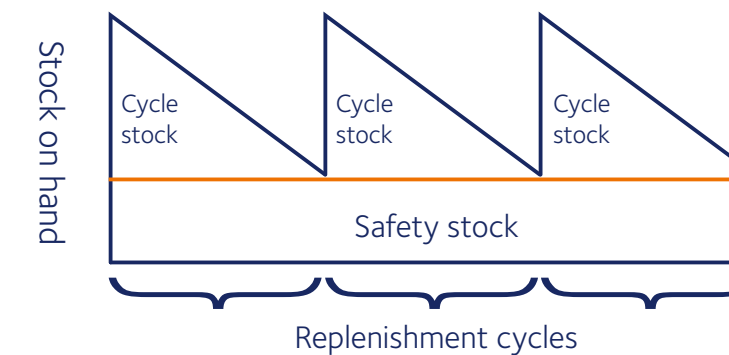


## Safety stock and excess stock

The solution for profitably securing a sale lies in optimum safety stock and replenishment buying practices. Your in-stock position should be buffered by your safety stock which protects you against uncertainty in supply and demand. Your inventory-turn goal should be achieved through smarter replenishment buying.

Remember, safety stock is a defence mechanism against supply and demand uncertainty. It should be demand-driven and take into account variances in supply and demand.

You should not settle for a replenishment solution that does not enable you to simulate multiple safety-stock policies using side-by-side comparisons as a way of finding the right combination of service and investment for your business. Even in an otherwise well-run enterprise, this is an area where significant inventory savings can be achieved while maintaining the desired in-product availability.



### Main metrics scanned

#### Safety stock.

The number of items you need to keep in stock in order to mitigate possible stockout. This metric can be calculated using the traditional formula, setting off variability in demand against variability in supply. If variability in supply cannot be calculated, we can set a static value of minimal levels of stock based on days of sales covered.

#### Cycle stock.

This is the number of items in stock you need to satisfy average demand in between replenishments. The average demand can be calculated based on a full year, 6 months, 3 months, current month and last month as well as the actual demand that month.

#### Buffer stock.

Additional amount of stock as a buffer for unforeseen circumstances, calculated as a percentage of cycle stock.

#### Excess stock.

Stock on hand - (safety stock + cycle stock + buffer stock) = excess stock.

#### Shortfall.

Stock on hand < safety stock



## Smarter replenishment

One aspect of smarter buying is knowing how much time to supply is associated with each SKU. Retail stores and other sales channels do not – or at least should not – operate in a vacuum.

So, apart from the safety stock component discussed above, which other components need to be considered when deciding how much to order for a given SKU?

Lead time is one such component, but another component that can help you to have a major impact on the inventory investment is the average stock you carry for each SKU to enable you to last from one delivery of goods received to the next. This is your cycle (or order cycle) stock.

Of course, you also have safety stock to bail you out if anything unusual should happen, but in a perfect world cycle stock should last from one delivery to the next.

### Main metrics scanned

#### Economic order quantity (EOQ).

The number of items of an SKU in a replenishment order that lead to the lowest combined fixed costs of purchasing and variable costs of storage. Fixed and variable costs can be customized in the dashboard representing your actual cost levels.

This metric can be analyzed on a per-SKU basis.

#### EOQ lines.

The total number of inbound order lines needed if the economic order quantity of each SKU would have been ordered during each replenishment cycle.

#### EOQ savings.

The savings that could have been realized if the EOQ had been used. This is a comparison based on EOQ and actual number of lines. Calculations are based on: purchasing cost per line, capital cost, storage cost and obsolescence cost levels selected.



Inbound line



Outbound lines

[Click image to enlarge](#)



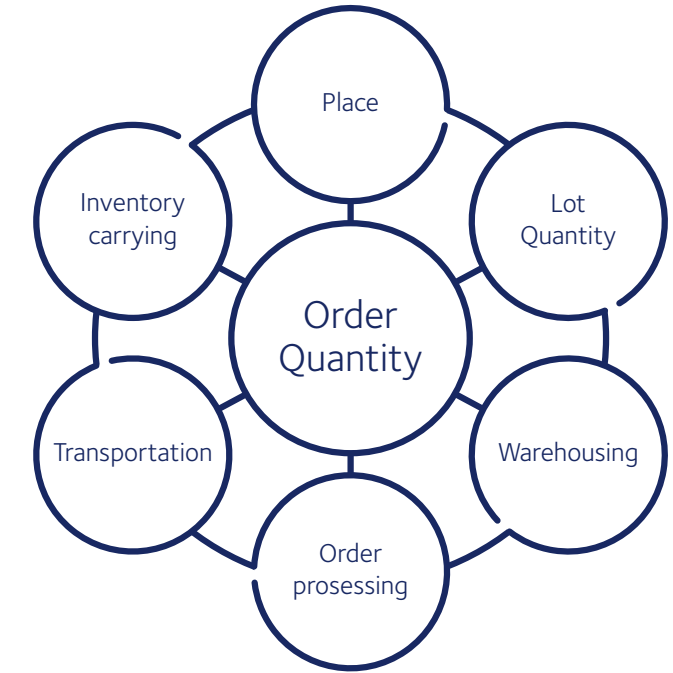
# Inventory Optimization Recommendations

The right Inventory Optimization approach automates the stocking and replenishment process as well as enables rich 'what-if' scenario analysis to evaluate tradeoffs between costs and service levels.

For example, to optimize your inventory-carrying costs you reduce the ordering quantities. In practice, this often negatively affects your transportation and warehousing costs because it results in many order lines and probably inefficient use of transport modalities. If you increase batch order sizes as a way of reducing production costs, your inventory and warehousing costs will rapidly increase. The order quantity is the one thing that influences all your supply chain costs when replenishing your inventory position.

Based on the complete Inventory Scan the Inventory Optimization Consultant or your Account Manager will recommend follow-up actions. If the scan identifies significant potential savings and there is a practical solution for capitalizing on those savings, the most frequent scenario is a follow up session with DSV's Supply Chain Innovation team.

All the dashboards that comprise the Inventory Scan will be made available as an interactive dashboard allowing the customer to do a deep-dive himself into the data and validate the recommendations made. Customers that are serious about improving their inventory and replenishment together with DSV will benefit from continued access to the Inventory Scan dashboards.





## The DSV Inventory Scan process

Identifying opportunities for improvement



### Data validation

- Validate and where necessary clean the data in the WMS
- Collect the required additional data
- Load complete data into the DSV Inventory Scan template



### Data analysis

- Inventory Optimization Consultant analyses dashboards
- Account manager provides input in the context of the findings



### Recommendations

- Publication of the DSV Inventory Scan to the client
- Presentation by DSV Inventory Optimization Consultant or Account Manager
- Agree on follow-up approach

For more information, contact us at: [inventoryscan@dsv.com](mailto:inventoryscan@dsv.com)

Explore a sample dashboard at: <http://dashboards.dsv.com/inventoryscan>