

Overview

As the online channel has become a requirement for retailers to support, new challenges in planning and managing inventory for it have surfaced. There is great opportunity for retailers and their suppliers to increase sales with online platforms, but it is not without risk and financial concern. Retailers have offset some of this risk to their supplier partners in the form of drop shipping. This is where an item can be purchased at a retailer's website but is fulfilled by the supplier from their own stock. According to [Fundera](#), drop shipping was valued at \$102.2B in 2018 and projected to grow by 28.8% between 2020 and 2025. About 23% of all online sales are fulfilled by drop shipping.

For many suppliers a significant number of additional resources and skills are required to manage that process. And because they bear the risk of owning the inventory (not the retailer) there is an inherent risk of tying up too much capital in slow moving inventory. All these risks can directly affect profit margins.

In most cases inventory is bought up front and warehoused until used. That might be fine if there are only 20 SKUs, but most suppliers drop ship hundreds or thousands of SKUs. Traditional POS reporting and analytics don't often provide the data integration, tools and pipeline visibility required to manage the drop ship business. Manufacturers fly blind or make the most of the reporting they have, until a major problem is uncovered, generally too late to minimize the expensive damage.

Benchmarking, tracking, and forecasting drop ship products is a must to help suppliers make better purchasing and assortment decisions. Our client, Britannica Home Fashions, Inc. who produces home products under several licensed brands including UGG, Pendleton, and Tracy Porter asked us to create a tool to help them manage the thousands of SKUs they drop ship. The challenge was to create something that provided visibility, highlight problems and opportunities and a recommended action for each SKU, each week. The goal was to reduce what seemed like consistent stock outs and lost opportunities.

Step 1: Data Requirements and Technology Platform

Managing drop ship business is essentially the same as running a retail business. However, the manufacturer's skill set is more wholesale based. We were able to adapt many of our current applications and logic for drop shipping. For example, creation and storage of sales curves and item attribute management were linked directly to our [intelligentretail.net](#) application.

While we knew we would deliver the information in Microsoft Excel, it was not the most efficient means to manage all the data integration and run all the calculations. We created algorithms and queries directly on the SQL Server database. New fields were created to house comments, expanded range of status and other mathematical fields that needed to be stored.

The most important step in creating a tool is to determine what data is needed to make decisions. They are obvious- sales (shipments in this case) and inventory levels. Then there are parameters that must be defined. They include:

- The period of time to evaluate performance.
- Benchmarks for the various levels of performance (Top Performer, Above Average, Average, Below Average, Poor Performer).
- Inventory coverage model (weeks of supply).

- Production lead time.
- Seasonality (Sales curves based on historic sales by product category).
- Inventory health levels (Extreme Surplus, Surplus, Healthy, Low Inventory, Critical Low Inventory, Out of Stock).
- Item status (Active, Discontinue, Watch, Sell Down, Expired). *Note: Having a broad range of statuses can help decision makers see the stage of each item's lifecycle and provide more insight and ability to recommend action.*

Our typical data storage setup is by manufacturer-retailer. However, in this case, Britannica acts as a retailer because they are shipping, and each online retailer is treated as a store within the Britannica retailer. By storing the data in this way, rather than only by item, we can study performance by item, by online store.

Step 2: Collecting the Data

Ensuring a consistent flow of sales and inventory data is essential to accurate reporting and forecasting. There are multiple ways to collect sales data including getting data from the retailers themselves. But because Britannica ships over 50 retailers, this would be cumbersome. We decided to rely on actual shipments, which could be reported automatically from their ERP on a weekly basis.

Example of Weekly Sales (Shipments) File

The weekly data feed is a summation of orders shipped the prior week. Order details such as the purchaser or their address are not necessary for this purpose. We just need to know which items were shipped. The following fields are included in the feed and are mapped to our data import process:

- Customer Name (or Customer Number)- this is the online retailer that generated the order.
- Item Identifier- Could be a variety of identifiers including UPC, retailer item ID or supplier item ID. This must be consistent or cross referenced with the inventory information.
- Item description, color, size- these are product attributes and make the file more meaningful to read.
- Quantity Sold- in this case this is number of units shipped.
- MSRP- the retail or ticketed price of the item sold.
- Sales \$ Amount- the dollar amount of the order.
- Order Date- the date the order was shipped.

	A	B	C	D	E	F	G	K	L
1	Customer Name	Item Number	Item Description	QTY Sold	MSRP	SALES \$ Amount	Order Date	Color	SIZE
2	AMAZON SELLER	1	Item 1	1	\$278.00	\$278.00	2022-08-08	SEAL	FULL/QUEEN
3	AMAZON SELLER	2	Item 2	1	\$98.00	\$98.00	2022-08-02	SNOW	50X70
4	AMAZON SELLER	3	Item 3	1	\$148.00	\$148.00	2022-08-08		
5	AMAZON SELLER	4	Item 4	1	\$19.00	\$19.00	2022-08-05	BIRCH	HAND TOWEL
6	AMAZON SELLER	5	Item 5	2	\$65.00	\$130.00	2022-08-08	MULBERRY	20X20
7	AMAZON SELLER	6	Item 6	3	\$125.00	\$375.00	2022-08-08	INDIGO	50"X70"
8	AMAZON SELLER	7	Item 7	1	\$98.00	\$98.00	2022-08-05	SEAL	50"X70"
9	AMAZON SELLER	8	Item 8	2	\$49.00	\$98.00	2022-08-04	SEAL	SQUARE
10	AMAZON SELLER	9	Item 9	1	\$259.00	\$259.00	2022-08-08		
11	AMAZON SELLER	10	Item 10	3	\$49.00	\$147.00	2022-08-03	OYSTER	SQUARE
12	AMAZON SELLER	11	Item 11	1	\$128.00	\$128.00	2022-08-05		
13	AMAZON SELLER	12	Item 12	1	\$269.00	\$269.00	2022-08-08	AQUA MULTI	FULL/QUEEN
14	AMAZON SELLER	13	Item 13	1	\$68.00	\$68.00	2022-08-08	SNOW/CORAL	20"X20"
15	AMAZON SELLER	14	Item 14	2	\$24.99	\$49.98	2022-08-02	LT BROWN	21"X12"
16	AMAZON SELLER	15	Item 15	2	\$24.99	\$49.98	2022-08-02	DK BROWN	21"X12"
17	AMAZON SELLER	16	Item 16	1	\$98.00	\$98.00	2022-08-05	SNOW	50X70
18	AMAZON SELLER	17	Item 17	1	\$98.00	\$98.00	2022-08-08	OYSTER	50X70
19	AMAZON SELLER	18	Item 18	2	\$128.00	\$256.00	2022-08-08		
20	AMAZON SELLER	19	Item 19	1	\$24.99	\$24.99	2022-08-08	DK BROWN	21"X12"
21	AMAZON SELLER	20	Item 20	1	\$279.00	\$279.00	2022-08-04	NAVY MUTI	FULL QUEEN

Example of Weekly Inventory File

The wholesale inventory file is the lifeblood of a manufacturer’s business. Selling inventory is the way they generate cash, so ensuring the sales and planning teams have accurate information is vital. For our purposes, we can use an inventory report that is already in use. One challenge is that the inventory is shared- meaning it is available to both drop ship and brick and mortar buys. This must be kept in mind. The inventory report includes the following fields:

- Item Identifier- this should match the identifier on the weekly sales file.
- Item Description, color, size, etc.- these are product attributes and make the file more meaningful to read.
- Quantity OO- this the wholesale on order also known as work in process.
- Quantity On Hand- this is the inventory physically sitting in a warehouse.
- Quantity Allocated- this is the number of units that have been allocated against an open order.
- Customer Order Quantity- this is the number of units requested/ordered from a retailer.
- Quantity Available- the number of units that are available to be shipped/sold, after open orders have been allocated.

	A	B	G	H	J	L	M	O	P	Q
1	Item Number	Description	Status	Color/ Pattern	Size	QTY OO	QTY On Hand	QTY Allocated	Cust Ord Qty	QTY Available
2	1	Item 1	ACTIVE	SNOW LINEN	STANDARD	0	9,802	16	240	9,786
3	2	Item 2	ACTIVE	OATMEAL	STANDARD	0	7,068	0	800	7,068
4	3	Item 3	ACTIVE	SEAL	STANDARD	0	6,966	0	758	6,966
5	4	Item 4	ACTIVE	NEUTRAL	BATH RUG	0	6,142	0	524	6,142
6	5	Item 5	ACTIVE	AGAVE	20X32	0	6,139	8	3,990	6,131
7	6	Item 6	ACTIVE	SEAL	STANDARD	0	6,062	0	776	6,062
8	7	Item 7	ACTIVE	SIDEWALK	STANDARD	0	6,032	0	620	6,032
9	8	Item 8	ACTIVE	AGAVE	72"X72"	0	5,468	44	7,936	5,424
10	9	Item 9	ACTIVE	QUARTZ	50"X70"	0	6,380	1,672	0	4,708
11	10	Item 10	ACTIVE	ROSEWOOD	50X70	0	4,561	0	54	4,561
12	11	Item 11	ACTIVE	WHEATFIELD	STANDARD	0	4,394	0	600	4,394
13	12	Item 12	ACTIVE	SNOW	50X70		1,168	4,040	0	4,040

Step 3: Establishing Sales Performance Benchmarks

Determining what is “good” and “bad” is not easy. There are many factors at play. The nature of the product and general demand for it are two of the biggest. For extended assortment items, that may not appeal to the general population, sales may not be generated every week, and quantities could be low. You can include both unit and dollar sales benchmarks. In

this case, we are mostly concerned with the revenue generated by an item. That combined with how much inventory is required will determine if a SKU is earning its slot in the assortment.

Benchmarks should be updated as needed. When we first created benchmarks there was only a few months of history. As the business grew, we checked the average sales and updated as needed. The stakeholders also must provide feedback as to how much revenue or profit they deem acceptable.

Our benchmarks are shown below. Average units and dollars may not be applicable or enough for other businesses. Profitability, sell through or other statistics could be substituted.

Dollar Performance

Average Sales \$ Between:

>\$500	\$501	Top performer
\$500	\$201	Above Average
\$200	\$120	Average
\$119	\$51	Below Average
\$50	\$0	Poor Performer

Average Sales Units Between:

>11	11	Top Performer
10	5	Above Average
4	2	Average
1	0	Below Average

Step 4: Establishing Inventory Health Benchmarks

Like sales, inventory levels are also key in determining how good a business is. Selling inventory is how cash is generated, so ensuring a healthy turnover is key. Inventory Health is determined by the weeks of supply. It is calculated by taking the available to sell inventory and dividing it by the average weekly sales units. The stakeholders must determine what weeks of supply model is acceptable. For example, if it is based on 12 weeks of supply, the sum of the next 12 weeks' sales estimates for the item is the quantity allowed on hand.

In this case, we decided a healthy inventory was one where we own between 9 and 16 weeks of inventory. From there we can determine which items might have too much or too little and determine what, if any, action needs to be taken.

Weeks of Supply:

> 25	25	Extreme Surplus
17	24	Surplus
9	16	Healthy
5	8	Low Stock
1	4	Critical Low Stock
0	0	Out of Stock

If OH = 0 Out of Stock

If OH = 0 AND OO > 0 Temporarily Out of Stock

Step 5: Determining the Recommended Action

Getting the data, organizing it, and determining benchmarks are all done to aid decision making. Acting on those decisions is how you continually optimize and improve the health of the business. We came up with 6 possible actions based on the combined dollar performance and inventory health as follows:

Action	Definition
Buy	More inventory is required. Item is expected to run out of inventory within lead time.
Buy if needed	Consider more inventory. Stock is low, review other considerations
Watch	Performance isn't spectacular, continue to monitor performance.
Sell Down	Performance isn't getting better, but inventory levels are manageable at current rate of sale.
Markdown	The rate of sale needs to be accelerated.
Discontinue	Inventory almost out, ensure item not purchased again.

The recommended actions are determined in conjunction with the stakeholders. They helped us determine when they would buy something or mark it down and we created a list of scenarios that followed their logic.

This table shows how the combinations determine the recommended actions:

\$ Performance	Inventory Health	MATCH	Rec Action
Poor Performer	Extreme Surplus	Poor Performer-Extreme Surplus	Markdown
Poor Performer	Surplus	Poor Performer-Surplus	Markdown
Poor Performer	Healthy	Poor Performer-Healthy	Watch
Poor Performer	Low Stock	Poor Performer-Low Stock	Sell Down
Poor Performer	Critical Low Stock	Poor Performer-Critical Low Stock	Sell Down
Poor Performer	Temporarily Out of Stock	Poor Performer-Temporarily Out of Stock	Watch
Poor Performer	Out of Stock	Poor Performer-Out of Stock	Discontinue
Below Average	Extreme Surplus	Below Average-Extreme Surplus	Markdown
Below Average	Surplus	Below Average-Surplus	Watch or Markdown
Below Average	Healthy	Below Average-Healthy	Watch
Below Average	Low Stock	Below Average-Low Stock	Sell Down
Below Average	Critical Low Stock	Below Average-Critical Low Stock	Sell Down
Below Average	Temporarily Out of Stock	Below Average-Temporarily Out of Stock	Watch
Below Average	Out of Stock	Below Average-Out of Stock	Discontinue
Average	Extreme Surplus	Average-Extreme Surplus	Watch
Average	Surplus	Average-Surplus	Watch
Average	Healthy	Average-Healthy	Watch
Average	Low Stock	Average-Low Stock	Watch
Average	Critical Low Stock	Average-Critical Low Stock	Watch
Average	Temporarily Out of Stock	Average-Temporarily Out of Stock	Watch
Average	Out of Stock	Average-Out of Stock	Buy if Needed
Above Average	Extreme Surplus	Above Average-Extreme Surplus	Sell Down
Above Average	Surplus	Above Average-Surplus	Sell Down
Above Average	Healthy	Above Average-Healthy	Watch
Above Average	Low Stock	Above Average-Low Stock	Buy if Needed
Above Average	Critical Low Stock	Above Average-Critical Low Stock	Buy
Above Average	Temporarily Out of Stock	Above Average-Temporarily Out of Stock	Watch
Above Average	Out of Stock	Above Average-Out of Stock	Buy
Top Performer	Extreme Surplus	Top Performer-Extreme Surplus	Sell Down
Top Performer	Surplus	Top Performer-Surplus	Watch
Top Performer	Healthy	Top Performer-Healthy	Watch
Top Performer	Low Stock	Top Performer-Low Stock	Buy
Top Performer	Critical Low Stock	Top Performer-Critical Low Stock	Buy
Top Performer	Temporarily Out of Stock	Top Performer-Temporarily Out of Stock	Watch
Top Performer	Out of Stock	Top Performer-Out of Stock	Buy
Review History	Temporarily Out of Stock	Review History-Temporarily Out of Stock	Watch
Awaiting Restock	Temporarily Out of Stock	Awaiting Restock-Temporarily Out of Stock	Watch
Review History	Out of Stock	Review History-Out of Stock	Watch
Awaiting Restock	Out of Stock	Awaiting Restock-Out of Stock	Watch

These recommended actions help our client prioritize action by acting on items that need the most attention. Although there are more than two factors that should be considered when determining what actions need to be taken, these measurements are large indicators of product health.

Step 6: Putting the Information Together

Once all the data is imported the queries do all the calculations and return the results in a report format in Microsoft Excel. There the data can be filtered and sorted as needed. This report helps to visualize what decisions have already been made and what decisions will need to be made. This excerpt from the report (attribute columns are hidden) shows the key statistics:

- Age- how many weeks the item has been selling.
- Average 8 Week Units- the average weekly sales units over the last 8 weeks.
- Average 8 weeks Sales \$- the average weekly sales dollars over the last 8 weeks (revenue).
- Avail- Available to sell wholesale inventory.
- OO- On order or wholesale work in process.
- WOS- weeks of supply based on the last 8 weeks sales.
- \$ Performance- the item’s ranking for dollar sales performance over the last 8 weeks.
- Unit Performance- the item’s ranking for unit sales performance over the last 8 weeks.
- Inventory Health- the designated inventory position based on the benchmarks.
- OOS Date- the projected date when current inventory will be depleted.
- REC Action- based on the scenarios, the recommended action.

ITEM #	DESCRIPTION	STATUS	AGE(WKS)	AV 8 WK UNITS	AV 8 WK SALES \$	AVAIL	OO	AVAIL + OO	WOS	\$ PERFORMANCE	INVENTORY HEALTH	OOS DATE	REC ACTION
1	Item 1	ACTIVE	87	4	\$1,220	69		69	20	Top Performer	Low Stock	8/17/2022	Buy
2	Item 2	ACTIVE	130	13	\$1,139	337	2,750	3,087	27	Top Performer	Healthy	9/5/2022	Watch
3	Item 3	ACTIVE	128	11	\$996	1846	2,600	4,446	170	Top Performer	Extreme Surplus	9/27/2023	Sell Down
4	Item 4	ACTIVE	33	8	\$937	188		188	24	Top Performer	Healthy	8/29/2022	Watch
5	Item 5	WATCH	136	4	\$831	653	500	1,153	180	Top Performer	Extreme Surplus	10/25/2023	Sell Down
6	Item 6	ACTIVE	128	9	\$788	3775	1,100	4,875	438	Top Performer	Extreme Surplus	9/21/2025	Sell Down

For items that have a recommended buy, additional columns are provided.

- Next 8 Weeks- the estimated sales units for the next 8 weeks.
- Next 16 Weeks- the estimated sales units for the next 16 weeks.
- Annual- the estimated sales units for the next 52 weeks.
- FWD WOS- the weeks of supply based on the next 8 weeks. This is included because seasonal product may have peaks and lulls based on the time of year, which we want to anticipate in our inventory measurement.
- \$ Performance- the item’s ranking for dollar sales performance over the last 8 weeks.
- Unit Performance- the item’s ranking for unit sales performance over the last 8 weeks.
- Inventory Health- the designated inventory position based on the benchmarks.
- OOS Date- the projected date when current inventory will be depleted.
- REC Buy- the recommended buy quantity. In this case it takes into consideration a 17-week lead time and then calculates a 16-week inventory model.

DESCRIPTION	AGE (WKS)	AV 8 WK UNITS	AV 8 WK SALES \$	AVAIL	OO	AVAIL + OO	WOS	NEXT 8 WKS	NEXT 16 WKS	ANNUAL	FWD WOS	\$ PERFORMANCE	UNIT PERFORMANCE	INVENTORY HEALTH	OOS DATE	REC BUY
Item 1	87	4	\$1,220	69		69	19.7	72	143	511	7.6	Top Performer	Average	Low Stock	8/17/2022	400
Item 2	50	3	\$649	68		68	27.2	82	153	304	6.7	Top Performer	Average	Low Stock	8/10/2022	201
Item 3	167	9	\$641	170	2,750	2,920	20.0	176	347	1,241	7.7	Top Performer	Above Average	Low Stock	8/18/2022	
Item 4	67	2	\$591	17		17	8.5	41	82	292	3.3	Top Performer	Average	Critical Low Stock	7/17/2022	251
Item 5	92	2	\$441	1		1	0.4	49	97	347	0.2	Above Average	Average	Out of Stock	6/26/2022	317
Item 6	129	5	\$420	69	1,000	1,069	13.8	104	204	730	5.3	Above Average	Above Average	Low Stock	8/1/2022	
Item 7	30	2	\$393	9		9	4.2	69	130	258	1.0	Above Average	Average	Critical Low Stock	7/2/2022	220
Item 8	127	1	\$333	18		18	18.0	21	41	146	7.0	Above Average	Below Average	Low Stock	8/12/2022	116
Item 9	35	2	\$331	38		38	19.0	41	82	292	7.3	Above Average	Average	Low Stock	8/15/2022	230
Item 10	35	4	\$263	-36		-36	-8.7	85	168	602	OUT	Above Average	Average	Out of Stock	OUT	589
Item 11	90	5	\$242	87	350	437	17.0	106	209	748	6.6	Above Average	Above Average	Low Stock	8/9/2022	250
Item 12	113	1	\$232	-5		-5	-5.0	21	41	146	OUT	Above Average	Below Average	Out of Stock	OUT	139
Item 13	114	1	\$230					26	51	182	OUT	Above Average	Below Average	Out of Stock	OUT	168
Item 14	10	2	\$208	-172		-172	-76.4	47	92	328	OUT	Above Average	Average	Out of Stock	OUT	474
Item 15	120	1	\$179	-7		-7	-9.3	16	31	109	OUT	Average	Below Average	Out of Stock	OUT	108
Item 16	53	2	\$156	-21		-21	-8.8	49	97	347	OUT	Average	Average	Out of Stock	OUT	339
Item 17	47	2	\$137	-15		-15	-6.7	47	92	328	OUT	Average	Average	Out of Stock	OUT	317
Item 18	31	1	\$134	-8		-8	-9.1	18	36	128	OUT	Average	Below Average	Out of Stock	OUT	125

Other Considerations

When purchasing drop ship SKUs, there are other factors that need to be considered. Minimum order quantities with factories, how a SKU might relate within a set or size range and a retailer's commitment to continue the listing of items are just a few.

Conclusion

After several months of use, the stakeholders gained a much better understanding of the business. They used the sales analysis to determine which items and brands were worth continuing. They got on a more regular schedule of placing buys, which were more balanced. After a year, we estimated that lost sales declined by more than 40% and in-stocks rose to 95%. Sales revenue nearly doubled and is expected to have double digit increases over the next year.

Including drop ship management in their discipline of planning has made it easier for the planning team to answer questions and make assortment recommendations. They can optimize inventory turnover and reduce the cost of capital.

For more information, contact Enhanced Retail Solutions at 212.938.1991 or visit www.enhancedretailsolutions.com.