

# Case report

## Team 4

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## **1.1 Sport Obermeyer's supply chain**

Generally, it is complex, risky, and low efficient.

What does Sport Obermeyer's supply chain look like?

- Ingredient are collected from different vendors, and they located nearly all over the world.

Different location and different requirement cause different lead time.

- The cycle time of production is long, there are lead time of suppliers and textile, lead time for Obermeyer to get the products, and lead time to ship those products to retailers, etc.

- And uncertainty of demands. The retailers' estimation of annually sales may be incorrect. Obermeyer cannot decide their annual production only based on their orders, but no other certain reference material available to make such estimation.

## **1.2 Difficulties on management**

- Different supplier has different lead time, for one type of production, the factory can only start to work after get all required raw material – that the longest lead time represent a bottleneck.

While for different combination of one kind of product the bottleneck of lead time is different, it is hard to deal with it.

- It is hard for Obermeyer to estimate the accurate data of demand, is some product out of stock, due to the long cycle time, making adjustment is nearly impossible. So, they can just loose those exponential profit.

- The restrictions imposed on the total amount of product categories is a force majeure. This causes the risk of loosing products and leftovers, because these goods did not reach the retailer. While this risk cannot be managed.

## **2. Operational changes recommendation**

- Use less types of textile and accessories suppliers, restrict the usage of non-standard fittings, say zippers, in their design and prototypes. This can cut down lead time due to the statement of vendors: standardized products have shorter and more stable lead time.

- Reduce the prototype styles. As shown by exhibit3, and the department design stated, the number of size-style-color combination are steadily increased, which may cause longer produce time for the factory. Each different combination means an adjustment of their work flow and increasing flow time.

- Relocate their factories, making the total distance between factories and raw material

vendor to be closer. This may cut off the lead time of textile and accessories suppliers' shipment due to the shorter shipping distance. They can also deliver their products earlier and facing a lower risk of a lost due the governments quota.

### **3. Obersport's role**

A regulation and command center, work to pre-position.

After received the order from Sport Obermeyer, they translate them into requirements for components and then place appropriate orders of them. During the order cycle, they producing prototype and sample garments, determining component requirements, and placing order to vendors.

They do add value, by organize all the raw material order and production flow.

Yes. For most of Obersport's job, is more like a purchase department of a company, these works can be down by Obermeyer themselves. But to do this, they need a new department to hold their job. Because for such many components' requirements, it would be hard for the company to simply add those work onto existed department, it would be hard for them to quickly arrange them well.

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### **4. 1 Production opportunities in November and one in March**

- For November, they will place first production order. For the order' volume. The feedback of this order will be used to make further decision.
- For March, they place the second production order, which decide the production of their clothes, after received retailers' initial orders.

For the first chance, the manager must forecast without related information, this makes the order quantity less accurate; while the second opportunities are actual order placed by the retailers, representing a quite accurate partial of the annual volume, and the second one can use the feedback from the first one. The the second one can make a more accurate direction.

### **4.2 Newsvendor and Obermeyer**

Similar:

- Short product life cycle and Demand uncertainty
- Left-over inventory sold at a discount or discarded.
- Fixed underage cost and overage cost, make the optimal quantity countable

Difference:

- Newsvendor: limited probable demand;  
Obermeyer: nearly infinite choices for ordering quantity.
- Newsvendor: no concern of holding cost,  
Obermeyer: supply chain management, warehouse management.
- Newsvendor: no advance decision requirement  
Obermeyer: has long lead time for both ingredient purchase and product shipment

incorrect

Strategies:

They can make order on products whose prediction has small variances. Leave orders for products with large forecast errors to be decided in the second adjustment. This can be done based on experience and data from previous years.

Second, they can order larger quantity of raw materials to get part of the inventory they need for the second order. So, for the second order, the factory can start working early by using the leftover while waiting for the rest of the raw materials arrive.

## 5. Recommendation order quantity

To consider the standard deviation of demand, we first considered in the no-restriction condition: apply following rule for determining first-period production quantity:

$$P = \text{Maximum}(0, \mu - k\sigma)$$

k = z-score to be determined for making total production quantity to be 10,000.

We found out that the quantity of some styles are less than 600. Therefore, we decide to fix the order quantity of those styles to 600 and make the balance from others. Because a lower standard deviation means higher accuracy, we decided to cut some produce in those of high forecast demand, and high deviation.

We use the deviations as indicators, compute the weighted average of the product volume of the ten styles, and get the new arrangement(last column):

Style	Price <sup>a</sup>	Individual Forecasts						Average Forecast	Standard Deviation	2 x Std. Deviation	Production QTY (unlimited)	Production QTY (limited)
Gail	\$110	900	1,000	900	1,300	800	1,200	1,017	194	388	605.4187527	605
Isis	\$99	800	700	1,000	1,600	950	1,200	1,042	323	646	356.7384387	600
Entice	\$80	1,200	1,600	1,500	1,550	950	1,350	1,358	248	496	831.8549003	830
Assault	\$90	2,500	1,900	2,700	2,450	2,800	2,800	2,525	340	680	1803.672041	1740
Teri	\$123	800	900	1,000	1,100	950	1,850	1,100	381	762	291.6883751	600
Electra	\$173	2,500	1,900	1,900	2,800	1,800	2,000	2,150	404	807	1293.953437	1100
Stephanie	\$133	600	900	1,000	1,100	950	2,125	1,113	524	1,048	1,306321595	600
Seduced	\$73	4,600	4,300	3,900	4,000	4,300	3,000	4,017	556	1,113	2836.355855	2505
Anita	\$93	4,400	3,300	3,500	1,500	4,200	2,875	3,296	1,047	2,094	1074.734196	720
Daphne	\$148	1,700	3,500	2,600	2,600	2,300	1,600	2,383	697	1,394	904.2776835	700
Totals		20,000	20,000	20,000	20,000	20,000	20,000	20,000			10000	10000