Reebok nfl replica jerseys: a case for postponement essay sample

Reebok’s Goals

Reebok’s goal should be to maximize profits, while taking into account the production costs, the revenue it can get from a sale, inventory holding costs and salvage value of the excess jerseys. This is because although Reebok may want to minimize inventory, it needs to consider the impact such an action will have on the service level and its profitability.

A low inventory may mean lower holding costs and lower risks of having excessive dressed jerseys after the end of season, which may become obsolete due to players switching teams or changes in jersey design. However, it could also mean a lower service level as it takes 4-8 weeks for jerseys to arrive at their warehouse from the CM. By that time, the demand would have yet changed again as the NFL games are played almost every week. Therefore, it would be better for Reebok to aim at maximizing profit, as that will take all the risk, service level and inventory into account.

MANAGING UNCERTAINTY IN DEMAND

Demand for the jerseys is very seasonal and is uncertain as a lot depends on the performances of the team. This is especially so for the months of Oct – Dec when the NFL regular season is in play. Here is when certain jerseys become hot-market items, resulting in shortages. In addition, the signing on of new players or changing of teams of players during the off-season also add to the difficulty in having an accurate forecast for the number of jerseys to produce.

Postponement and Risk-pooling

Given the uncertainty associated with player demand, Reebok should make use of postponement and try to push back the decision to print the players' number and name on the jersey as back as possible. This is because the longer the horizon, the worst the forecasting. By postponing the decision to nearer the regular season, Reebok will have a better idea of the demand for the individual players. This will help prevent Reebok from having too many jerseys of a player it does not need. Postponement also means that Reebok is aggregating the jerseys and such aggregated forecast are more accurate. Reebok will be able to enjoy some of the benefits from risk-pooling as high demand for a certain player in a team will be offset by a lower demand for another.

Delaying Product Differentiation

One way of achieving postponement and risk-pooling would be through process standardization. This involves standardizing as much of the process as possible for different products, and then customizing the products as late as possible. Products and manufacturing processes are designed so that decisions about which specific product are manufactured can be delayed until after manufacturing is under way.

Currently, there are two screen printing facilities within Reebok's supply chain: one is at the CMs, and the other one is at Reebok's DC. Since there are very high variations for the dressed jerseys of each player, Reebok might consider not ordering any dressed jerseys from the CMs. That is, the manufacturing process should start by making a generic product that is later differentiated into a specific end-product. Moreover, the pull strategy of

which the supply chain is driven by demand would be helpful in this scenario since the lead time from new Screen Printing is 1 week, relatively low compared to the current scenario of which the lead time is about 4+1= 5 weeks because it includes the transportation time. In this way, the company will achieve the higher service level by deploying a responsiveness and flexible supply chain, which will work well for its products, which are characterized by very high uncertainty.

The above would help towards aggregating the jerseys for each team. More could be done and thus, lower inventory could be achieved if Reebok were to look into the possibility of getting the CMs to hold inventory of just white (or black) jerseys, which are dyed and sewed with the teams colors only when there is demand for the specific team. This will provide even greater flexibility for Reebok in meeting the uncertainty of demand.
Postponing localization also affects the level of safety stock. Since we keeps safety stock of only the generic jerseys, customizing teams and numbers as demand is realized, we will be able to focus on aggregate demand levels and, therefore, aggregate demand has a much smaller standard deviation than individual demand, requiring less safety stock than the currently existing system. In this scenario, Reebok would therefore enjoy a reduction in production cost as it produces dressed jerseys at a higher volume. In addition, dollars can also be saved from transportation economies of scale, due to the standardization of production process of generic jerseys. That is, we could reduce the transportation costs of the reordering the dressed jerseys many times.

However, there are various important factors coming into play at this point. Firstly, Reebok needs to review the contract with CM, assessing the cost for contracting out the dressed jerseys and the relationship among them. The company may also hold a higher inventory level of blank jerseys. However, Reebok will reduce the risk of having dressed jerseys left over, which would be greater in magnitude if the demand forecast is wrong and unexpected teams or players become “ hot”. High demand forecast error has a detrimental impact on supply chain performance, resulting in lost sales, obsolete inventory, and inefficient utilization of resources. Thus, aggregate demand information will be more accurate than disaggregate data, the push portion of the supply chain, which is blank-jersey production, will have less forecast error.

These trade-offs should be quantified when consider to expand the capacity of screen printing at Reebok’s DC and remove the screen printing at CM. In other words, we need to weigh the set-up cost and benefit from implementing process standardization.

Risk Sharing with Retailers

Reebok is facing a lot more risk than its retailers as it is the party that will be left holding the excess and unwanted stocks should there be any forecasting errors (which more often than not would definitely happen) and overproduction. The risk could also come from the change in the style of teams’ uniforms. Therefore, Reebok would prefer to not produce as many jerseys and would rather wait for the orders to come in from its retailers before decorating or producing more. But this waiting for orders will

definitely have an impact on the service level that is provided to its customers.

At the same time, its retailers faced with the risk of having not enough stocks to meet the spike in demand when it occurs as the NFL season progresses. Shortages might occur if Reebok does not produce enough jerseys, and the replenishment lead time would be longer if Reebok postpones decorating. Therefore, the retailers would prefer Reebok to order more dressed jerseys before the selling season.

In order to find a trade-off between the conflicting objectives of Reebok and the retailers, it is beneficial for both parties to share the risks of holding leftover inventory, so that Reebok will have more incentives to order more jerseys from its CMs, and hence improves the service level it provides to the retailers.

Currently, Reebok provides some incentives for retailers to place early orders using a discounted wholesale price. There are some other approaches that could help to share the risk between these two parties. For example, a lower wholesale price will be charged if the retailers were to commit to a certain amount of jerseys for certain players or for certain teams.

Another approach is to implement a capacity reservation contract. The retailers pay to reserve a certain amount of jerseys, and incur additional cost for executing orders. In this way, Reebok partially delegates the responsibility of producing before observing the demand to the retailers, and therefore achieve the goal of risk sharing.

Optimizing the Current Supply Chain – Newsboy Model

Reebok’s practice is to keep blank jerseys for the next season, and therefore the overage cost for blanket jersey OB is the inventory holding cost, that is, Blank Jersey Average Cost × Annual Holding Cost = $1. 05.

The leftover dressed jersey is sold at a discount, so the overage cost for dressed jersey OD is

Dressed Jersey Average Cost – Discount Price = $3. 90.

The blank jerseys are mainly used to satisfy the urgent demand, and therefore short lead time (1~2 weeks) is required. If Reebok runs out of blank jerseys, the demand cannot be satisfied within 1~2 weeks, because the manufacturing time and the shipping time greatly exceeds the expected lead time. Therefore, the underage cost for blanket jersey UB is the lost-of-sale cost, that is,

Wholesale Price – Blank Jersey Average Cost – Decorate Cost = $12. 10.

For the dressed jerseys, the excess demand can be met by decorating the blank jerseys. As a result, the underage cost for dressed jerseys UD is calculated by

Blank Jersey Average Cost + Decorate Cost – Dressed Jersey Average Cost = $1. 00.

Suppose that all the jerseys ordered are blank jerseys. According to the newsboy model, the number of jerseys we should order Q is, where F-1(•)

denotes the inverse function of the cumulative distribution function of the total demand.

However, decorating blank jerseys in Indianapolis incurs higher cost than ordering dressed jerseys from the CM. Therefore, we would like to order some dressed jerseys for each player i. According to the newsboy model, the optimal quantity Qi is calculated by, where Fi-1(•) denotes the inverse function of the cumulative distribution function of the total demand for player i. Note that there is a minimum order level for dressed jerseys. Since the risk will be reduced if less dressed jerseys are ordered, we could set Qi = 0 if the optimal quantity Qi calculated by the newsboy model is less than the minimum order level.

Based on these values, the number of blank jerseys we should order is.

Example: New England Patriots

According the above analysis, the optimal ordering quantity for each play and the blank jerseys are shown in Table 1.

We should order a total number of 114, 738 jerseys, and hence the expected leftover of all jerseys is 114, 738 – 87, 680 = 27, 058. Since the number of dressed jerseys ordered is much lower than the expected demand for each player, we expect that there are no leftover dressed jerseys. All the 27, 058 leftover jerseys should be blank and therefore can be used in the next season.

Table 1: Optimal order quantity

DescMeanStdevCritical FractileNewboy SolutionOrder QuantityProb (Demand ≤ Production)

New Eng Patriot Total87, 68019, 2110. 9205114, 73877, 22292. 05%

Brady, Tom #1230, 76313, 8430. 204119, 31319, 31320. 41%

Law, Ty #2410, 5694, 7560. 20416, 6356, 63520. 41%

Brown, Troy #808, 1593, 6710. 20415, 1235, 12320. 41%

Vinatieri, Adam #047, 2704, 3620. 20413, 6623, 66220. 41%

Bruschi, Tedy #545, 5263, 3160. 20412, 7832, 78320. 41%

Smith, Antowain #322, 1181, 2710. 20411, 0670

Other Players23, 27510, 4740. 2041 0

The unit profit of dressed jersey and blanket jersey is $13. 10 and $12. 10 respectively. The profit from selling the dressed jerseys are $13. 10 × ∑i Qi = $491, 461, and the profit from selling the blank jerseys are $12. 10 × (77, 222 – 27, 058) = $606, 983. Moreover, the inventory cost for the leftover jerseys is $1. 05 × 27, 058 = $28, 275. As a result, the total profit is calculated by $491, 461 + $606, 893 – $28, 275 = $1, 070, 169.

Therefore, with a probability of 92%, we can satisfy the demand using ordered dressed jersey or blank jerseys, and so the supply lead time should be no greater than 1~2 weeks. The probability for the demand exceeding

the order quantity is merely 8%. In this case, Reebok needs to order from the CM during the season and incurs a longer lead time.