LL Bean case – Production Commitments

Case Problem

L.L. Bean must make stocking decisions on thousands of items sold through its catalogs. In many cases, orders must be placed with vendors twelve or more weeks before a catalog lands on a customer's doorstep, and commitments cannot be changed thereafter.

As a result, L.L. Bean suffers annual losses of over $21 million due to stockouts or liquidations of excess inventory.

So our objective in this case is we are going to study the forecasting method where LL Bean follows to predict the future demand. And we identify the problem with the existing method and we propose an other methods, which will help them to do better forecasting, which minimize the forecasting error and maximize the accuracy.

Case Questions

1. How is the production commitment strategy decided by the LL Bean managers?

2. What method do they follow to forecast the demand?

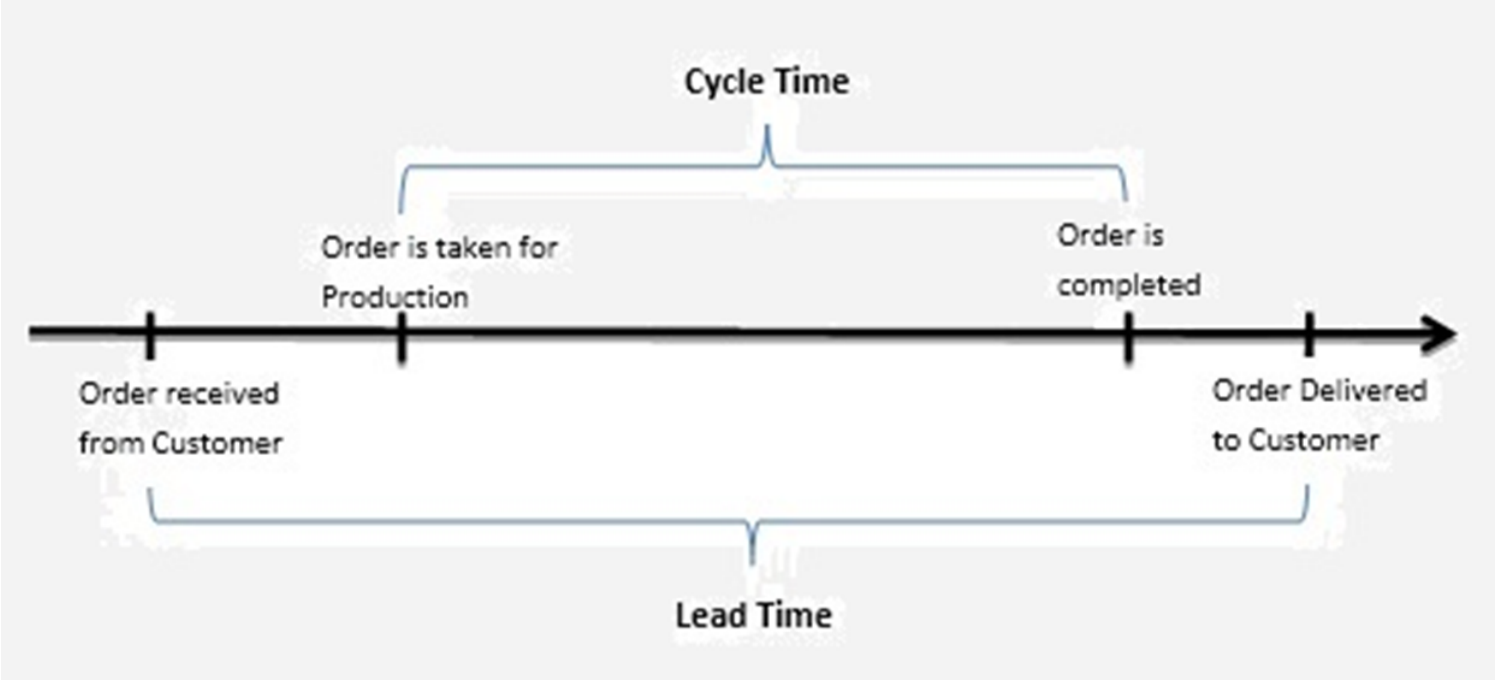
3. How does LL Bean use past demand data and specific item forecast to decide how many units of that item to Stock?

4. What item costs and revenues are relevant to the decision of how many units of that item to stock?

5. What should LL Bean do to improve its forecasting process?

Production Commitment

Lead Time: The time between ordering a good and receiving it.



LL Bean has a production lead time of eight to twelve weeks (2 to 3 month) for domestic orders

LL Bean will make a production commitment only once in a year.

Forecasting procedure – LL Bean

- Forecasting error is calculated based on a/f ratio (a – actual demand and f-forecasted demand).
- Ranking the items error according to the ascending order
- Frequency distribution for these a/f errors was compiled for every items.
- This frequency distribution of the past forecast error was then used as a probability distribution for the unrealized future forecast error.
- From the probability distribution LL Bean frame two Quantity Decision Strategy
  - 1. Expert Decision
  - 2. Revenue Decision

And this forecasting method is called as *point forecast*

Expert Decision

The case express about 50% (Expert Opinion) of the forecast error falls between 0.7 and 1.6 for new items. Then the probability of 0.5 the forecast error for any new item also would fall between 0.7 and 1.6.

If the frozen forecast for the particular item is 1000 units, then it assumed the probability 0.5, actual demand for that item would be end up being between 700 and 1600 units.

If the expert fixes 50% of forecast error or 60% of forecast error, which decides the order quantity.

Revenue Decision

- Each item commitment quantity to the vendor was determined by balancing the individual items cost margin.
- Suppose product Cost 15$, Selling cost 30$ and salvage/liquid cost 10$.
- The gain = 30-15 = 15;
- the loss = 15-10 = 5;
- Here we introduce a ratio called critical fractile = (G/(G+L)) = (15/15+5) = 0.75.
- So the optimal order quantity should be 0.75 fractile of the item probability distribution of demand.
- Suppose 0.75 fractile falls at forecast error 1.3. then the frozen forecast is 1000 * 1.3 = 1300.
- LL Bean make a commitment to 1300 units to the vendors.

Quantity	Min	Max
Expert (60%)	600	1010
Revenue	600	1176

Moving Average

Quantity	Min	Max
Expert (60%)	580.6452	1018.923
Revenue	580.6452	1097.561

Exponential Smoothing

Quantity	Min	Max
Expert (60%)	651.2408	1021.936
Revenue	651.2408	1181.308

Case Answer

How the production commitment strategy is decided by the LL Bean managers?

- Expert Decision
- Revenue Decision

What method they follow to forecast the demand?,

A/F Error calculation; Frequency Distribution; Probability Distribution

What item costs and revenues are relevant to the decision of how many units of that item to stock?

Quantity Decision Min and Max – Commitment to the vendor

What should LL Bean do to improve its forecasting process?

Moving Average, Exponential Smoothing, Any other advance method to increase the forecast accuracy

Thank You