I pledge on my honor that I have not given or received any unauthorized assistance on this

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the Internet or any other source except where I have expressly cited the source.

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Date: 09/15/2022

**Topic name -**

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Date: September 15, 2022

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**Management Overview**

1. **Problem Statement:**

To develop a model to determine the order quantity to be placed by the company based on estimated demand using the demand uncertainty modeling and maximum profit. The Profit v/s Order quantity and Demand needs to be visualized using appropriate graphs.

1. **Data Sources**

The probability of demand from the past demand data, Regular and Leftover price cost of the books, the quantity discount table

1. **Model Approach**

* Calculate revenue = (revenue regular product price + leftover product price)
* Calculate the total cost using the cost lookup table and the demand of the product using LOOKUP function
* Calculate the profit as Revenue – total cost
* Calculate the profit for various ranges of order quantity and demand, using two-way data table
* Perform the SUMPRODUCT() function to get the weighted profit value for different values of order quantity, using the demand probability data from the past
* Get the order quantity corresponding to maximum profit from the above step

1. **Solution & Sensitivity Analysis**

There are two Graphs representing the following—

**Expected Profits vs Order quantity –**

The maximum profitability is $12250

The optimized quantity to be ordered is 2000 units.

The sensitivity analysis shows a trend of increasing profit as the demand increases. However, we need to get a realistic figure for the demand. For this graph it clearly depicts the expected profits for mentioned order quantity. As the order quantity increases expected profits see a steady rise but since after there is a high rise in ordered quantity up to a certain level which gains highest profits and reduce down to the negative profits as order quantity rises up to 4500.

The demand probability table from the past data shows 0.25 chances for both 2000 and 2500 units of demand.

**The Profit v/s Demand & Order Quantity** was plotted using excel charts

As the graph depicts since at initial stages where there was less demand and also the order quantity was limited which led to losses. But once the demand and the order quanity took a steady rise it turned to the profits over the time and as it rightly shows in 4500 demand the order quantity being highest which fullfills the end goal

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To find the Yield which acts in calculation of current price we can easily figure out with placing yield as one of the parameter that nees to be discovered using tht e goal seek functionality of excel .

When we place NPV with Yield and over the years of cost price we can easily discover the required Yield field with the Goal Seek by setting current bond price with expected amount and getting the cost over the years and discovering the Yield parameter.

Hence we could find the value without having to put in the required formula.