HW #6: Eurogrocer: Demand Forecasting Assignment Questions

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Question 1:

a) Effect of Eliminating Stock Outs (Analyzing Increased Profits)

Increase in Revenue = 3.4 % stock out rate * $ 8 billion revenue = $ 0.272 billion
% Profit Margin = 34.2 %
Increase in Profit = Increase in Revenue x Profit Margin =$ 0.272 billion x 34.2 %
= $ 93 Million

b) Effect of Eliminating Spoilage (Analyzing Reduction in Cost)

Cost Reduced = % stock loss x % due to spoilage x Revenue x % Cost on Sales
= 5.8 % x 50 % x $ 8 billion x (1 – 34.2 % margin)
= $ 0.058 x 0.5 x 8 x (1 – 0.342) billion
= $ 153 Million

Question 2

Attached Excel Sheet with Solutions

Question 3

a) Upfront Cost = Time Spent * Cost per unit Time

Let's Analyze the per month upfront cost for different types of employees engaged during pilot.

- **IBM Team**
  # of Employees = 6 (5 Engineers + 1 Program Manager)
  Salary per month = $ 40k
  % Utilization = 100 %
  Upfront Cost = 6 x $40k x 100% = $ 240k / month

- Eurogrocer Full Time Team Effort
  # of Employees = 4 (2 Engineers + 2 Analyst)
  # Salary per year = $ 200k / year = $ 16.67k / month
  % Utilization = 80 %
  Upfront Cost = 4 x $16.67k x 80% = $53.34k / month

- Eurogrocer Subject Matter Experts Team
  # of Employees = 1
  Salary per year = $200k / year = 16.67 / month

  Assumptions:
  - 22 working days in a month
  - 8 working hours / per day.

  Salary per hour = 16.67k / (22 x 8) = $ 95 / hr
  # hours worked = 9 hrs
  Upfront Cost = 95 x 9 = $855 / month

Total Upfront Cost / month = $ 240k / month + $ 53.34k / month + $ 0.853k / month
= $ 294.2k / month
Total Upfront Cost for 6 months = $ 1.765 Million

b) Same group of Eurogrocer Team is responsible for maintenance and contribute to annual labor cost.

   Let's calculate per year cost of both development Effort by Engineers and Analyst and Subject Matter Expert

   - **Development Effort**
     # People = 4 (2 Engineers and 2 Analyst)
     Salary per year = $200k per year
     % Utilization = 30 %

     Total Cost = 4 x $200k x 30 % = $240k / year

   - **Subject Matter Expert**
     # People = 1
     # Hours = 2.5 per month = 30 hrs / year
     # Salary per year = $200k per year = 16.67 per month

     Assumptions:
     - 22 working days in a month
     - 8 working hours / per day.

     Salary per hour = 16.67 / (22 x 8) = $ 95/ hr

     Total Cost = 1 x $ 30 hrs / year x 95 / hr = $ 2.85k per / year

     Total Labor Cost per year = $240k + $ 2.85k = $242.8k / year

c) Solution in Excel Attached

Question 4

a) Solution in the Excel Attached

b) Net Benefit = Annual Benefits – Annual Cost

Let's analyze all the associated Cost.
Annual Benefit = $ 104.12 Million
Annual Variable Cost (Cloud Computing) = $ 15.36 Million
Annual Fixed Cost (For Maintenance) = $242.8K
Upfront Cost for 6 months = 1.765 million

Net benefits = $ 86.75 M

Net Benefits are Significant; hence we can conclude that Benefits are well worth the cost.