**Module 4 Project 4**

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**By**

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**Title: Project 4 Report**

**ALY 6050 – Introduction to Enterprise Analytics**

**Prof. Tamir Hegazy**

**Introduction**

In this assignment, I am using MS Excel to work on 2 different problems as given. It helps us to identify and develop a model with the total profit and maximization of it. This gives an idea about the profit optimization, excel solver, data table, and implementation of the model. In Problem 1 & 2 I have used optimization techniques to maximize the efficiency of the model. In Excel, we can simply access it by clicking on Data Tab and then click on What-if Analysis in the Forecast group. And, Solver in Analyze tab under the Data tab.

I will also tend to determine the type of evaluations for each problem and showcase the results, and findings. In this report, I have implemented 2 Problems and their related questions.

**Analysis**

**Problem 1(A):**

In this problem, the manufacture was set to prepare a price for a new action game. The demand is given as D = 2000 – 3.5P. By using this given equation, we can perform some calculations and evaluations. The profit is given as Revenue – Cost, where Revenue = Demand \* Price. Given cost is C = 5000 + 4.1D. From the basic assumption of Price as $100, I obtained a Profit of $153, 235 for a demand of 1650.

**Problem 1(B):**

In this, I have developed a one-way data table to evaluate profit as a function of price and choose a price range that is reasonable and appropriate. From this, I have got to see that Price at $300 and achieved a maximum Profit of $276,105.

**Problem 1(C):**

In this problem, I have used the Solver, which is in the Analyze Section under the Data tab. From the solver Analysis, I can achieve a price of 287.76 and the profit maximum achieved is 276,628.99. This table is used to measure the profit when the price is taken as a function.

**Problem 2(A):**

In this problem, the Radio Shop sells two popular models of portable sports radios which is model A and B. These are not independent of each other. The shopkeeper decided to start a pricing policy to get maximum revenue. Given, NA = 20 – 0.62PA + 0.30PB and NB = 29 + 0.10PA – 0.60PB. Now, let’s develop a model for the total revenue and implement it. By using the above-given equations, we can perform some calculations and evaluations. From these equations, we can find slopes, intercepts, quantity sold, and prices of both A and B products. Developed a model and the profit obtained was $ -. Because no the prices of A and B were left empty.

**Problem 2(B):**

In this, I have developed a two-way data table to evaluate profit as a function of price and choose a price range that is reasonable and appropriate. From this, I have got to see the matrix of Prices of A and B. This table showcases the profit values of each combination of prices.

**Problem 2(C):**

In this problem, I have used the Solver, which is in the Analyze Section under the Data tab. From the solver Analysis, I can achieve an optimal price of A is $25.37 and a price of B is $35.76 for a maximum revenue amount of $799.19. And, the Quantity sold for A is 16 and B is 11. This table is used to evaluate profit as a function of price.

**Conclusion**

From this project, I have gained a lot of knowledge and got familiar with the optimization techniques, MS Excel Solver, What-if Analysis, and decision modeling. I used data tables to predict the best value for the decision to take and showcase the optimal solutions. The solver function is very much useful and I found it a good resource to play on and experiment with. Now, I am clear and will work on these concepts very well with deep understanding. Also, I have worked on the calculations to find the best solutions. So, I used these analyses and models to define and predict the prices and forecasted them. Also, working on MS Excel allowed me to work on these techniques. I previously did not work on these aspects, but from this Assignment, I had a great time learning them. In the coming days and assignments, I will make sure to use this knowledge and apply it to the problems.

**References**

[1] Dr. Isaac Gottlieb, Excel for Decision Making Under Uncertainty Course was retrieved from the https://www.myonlinetraininghub.com/excel-for-decision-making-course

[2] Juliane Marold, Ruth Wagner, Markus Schöbel, Dietrich Manzey (May 2012) Risk, Uncertainty & Decision-Making: Decision-Making In Groups Under Uncertainty was retrieved from https://www.foncsi.org/en/publications/collections/industrial-safety-cahiers/decision-making-in-groups-under-uncertainty/CSI-uncertainty-NDM-groups.pdf