

Explanation and definition of sensitivity analysis economics essay



**ASSIGN
BUSTER**

According to Business Dictionary, “ A statistical technique in which inputs are changed one at a time or in combination while the effect upon a particular variable such as output, sales, or profits is observed. For example, price, packaging, and size are changed to determine the effect upon sales.”

EXPLANATION

Sensitivity analysis is used to examine the changes in the structure of the organization’s model. With the help of sensitivity analysis, anyone can determine the changes in terms of parameter’s values of model that how it is sensitive enough. We can easily evaluate and build the model with the help of sensitivity analysis. Sensitivity analysis could examine the uncertainties which are associated with model’s parameters. It is difficult to calculate the different parameters of system dynamics models when there are difficult quantities, and it is difficult to estimates the parameters values of the models which are uncertain. Sensitivity analysis is important tool to measure accuracy of parameter which will require to make model valid and useful in realistic scenarios. When we gets result that the model is insensitive with the help of sensitivity analysis, than we could estimate the possible in the model, but we can know the reasonable parameter values. It is an important technique to better understand the dynamics of a system modeller. Experimentation with a variety of values may include the conduct of a procurement system in extreme situations. The discovery that the very system behaviour changes for a change in the parameter value can identify a starting point in the parameters of the model and individuals, and the value can significantly influence the mode of system behaviour. The sensitivity analysis is a strategy that is useful in determining what might

happen if a particular variable does not work inside a projection, as originally intended. The idea is the possible variations that occur when one or more variables can identify changed or deleted, and how these changes affect the final result. From this point of view, makes this type of analysis can be prepared for other outcomes that the desired target, thus minimizing the negative impact if these variables do not meet or influence than expected. In the process of conducting a sensitivity analysis, it is possible for each factor or variable that is relevant to verify the expected results. For example, if a company expects a new product is an increase of 20 per cent annual earnings as a result, the analysis, what the result would be concerned if the response of consumers were only half as excited as originally planned. As part of the development of different scenarios that work in which a particular variable, as expected, the issue of increased costs to be considered for raw materials also determine the impact that this increase would earn the profits they have a new product line. Although there are exceptions, a sensitivity analysis is not usually include the development of scenarios that occur in a certain potential for reality to come. But to focus the process of identification and projection of the results when certain variables that occur at least a realistic possibility, however. For this reason, the sensitivity analysis tends to be somewhat ' under the facts and use these facts in the creation of alternative scenarios. What is a reasonable scenario is slightly different from one sector to another, and is very much about general economic conditions and factors affecting the sector in which it operates and the internal workings of the company shall apply.

Construction of a sensitivity analysis is important, any attempt to assess the potential profitability of the project partners. Taking account of turnover or changes in the cost of raw materials, business, alternative responses that minimize the impact, if not prepare everything as expected. When used effectively, this form of analysis will go a long way towards keeping a business competitive in the market and demonstrates an ability to continue to provide a wide range of events to derail the other companies that do not have time to consider alternative to the manage the results.

EXAMPLES

Example 1:

Reliance Equipment limited are dealing in three construction products, bearings, fuel pumps and gas water pumps. The sales price of bearings, fuel pumps and gas water pumps are £ 10000, £ 7500 and £ 9000 respectively. Now there is are a changes in prices of them and it is £ 200, £ 600 and £ 300 respectively. The below table shown the resource requirements of the products.

Calculate the optimal product mix and do sensitivity analysis.

Equipment

Parts

Hydraulic Pump

Carriage Part

Stock Track link

Bearings (200)

Fuel pump (800)

Gas water pump (600)

8 %

4 %

6%

8 %

2%

4 %

8 %

4%

6 %

Solution:

Hydraulic Pump :

$$= 8(200) + 4(800) + 6(600)$$

$$= 1600 + 3200 + 3600$$

$$= 8400$$

Carriage Part :

$$= 8(200) + 2(800) + 4(600)$$

$$= 1600 + 1600 + 2400$$

$$= 5600$$

Stock Track link :

$$= 8(200) + 4(800) + 6(600)$$

$$= 1600 + 3200 + 3600$$

$$= 8400$$

Profit = Sales price – Cost price

Hydraulic Pump :

$$= 10000 - 8400$$

$$= 1600$$

Carriage Part :

$$= 7500 - 5600$$

$$= 1900$$

Stock Track link :

$$= 9000 - 8400$$

$$= 600$$

We have to understand the opportunity cost and dual price before doing the explanation of example

Opportunity cost:

There are two circumstances for opportunity cost and it is given below.

We can interpret the variable cost advantage for effective goal of co-operation between the variables and it must be upgraded before the benefit of these variables has a positive value for the optimal solution.

The variable opportunity cost can be used as the amount of fines will be imposed for each variable in the solution of the association will be interpreted.

Dual price:

Two prices are sometimes called shadow prices, as they will give you the amount which should be willing to pay for an extra unit of resources.

The target value is reduced for limitations with the positive shadow price's constraint in minimization problem.

It is the target value which should be increased in maximisation problem.

Shadow price is the amount that would have to improve constraint and it is by result of the one unit increases.

EXPLANATION OF EXAMPLE

The effects of sensitivity analysis are as below.

The shadow price is impactful to maximize the profit when each of extra unit that we produces.

From above three parts, the bearings contributes maximum profit to extra hour of labour.

The shadow price could be apply for variations within the ranges.

The range of sensitivity analysis on objective function is as follows.

The objective function's ranges could contributes the sensitivity of optimal solution in terms of changes in per extra units produced for three products.

Product 1 is favourable as long as it vary between £ 1600, £1900 and £600 and it does not affects the optical solution also.

The range of Products 2 should be interpreted.

The changes affects to maximization of profit. E. g. The increase in profit of each unit of product 2, from £600 to £640, will give same answer to optimal solution but it will increase the maximum profit.

It is not favourable to produce product 3 as opportunity cost gives negative impact to profit maximization.

It is recommend to produce product 3 after the increasing in profit on each unit of product 3.

Example 2:

Spencer's Retail Limited sold £ 2100 unit. The cost of direct material is £ 21000 and £ £ 38000 is operating income.

Determine the sensitivity analysis in above example.

Units Sold

Direct Material Costs

Operating Income

Increase in sales by 20% (Per unit)

Decrease in sales by 10% (Per unit)

Decrease in cost of material by 10% (Per unit)

2520

1890

2520

£ 25200

£ 600

£ 25200

£ 36000

£ 600

£ 48000

When Production costs is high:

Increase in price of labour or raw material

We should increase the selling prices or we should reduce the expenses.

Increase in volume of production

When there is increase in production by increasing sales, there is no actions should be make.

When the revenues is low:

Low selling price

It is advisable to increase the selling price or should reduce the expenses.

Less units sold

It is advisable to increase the advertisement of products or should reduce the fixed expenses.

We should know that is there any need of corrective action or not by comparing the actual results to budgeted results. It is favourable when the actual results are better than expected and it is unfavourable when the actual results are worse than expected. And this difference between actual results and budgeted results make a difference. When there is a favourable variance, there is no need of corrective action, but when there is unfavourable results then there is need of corrective actions.