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**PMEducation**

SENSITIVITY ANALYSIS

**WHAT IT IS**

In Project Management, Sensitivity Analysis is a tool used to determine how different values (of an input variable) impact a particular dependent variable under a given set of assumptions. It can be used to determine which individual Risks have the most potential impact on project outcomes.

An easy to use representation of Sensitivity Analysis is the Tornado Diagram, named for its tornado shape. This is useful for comparing the impact of project Risks on a project variable (such as Time or Cost), or a project objective (such as Profit)

**HOW IT WORKS**

1. Begin with the project variable or objective to be evaluated (say Profit)
2. Next, make a list of the Risks to be compared (Risk 1, Risk 2, etc.).
3. Then determine the impact of each Risk on our project variable or objective. For example Risk 1 could impact the Profit by plus $17,500 or by minus $8,000 or any number in between.
4. Plot the Profit range beside the Risk and continue with the other Risks (see diagram below).

**KEY ELEMENTS**

For this method to be effective, the following key elements must be used:

* List the Risks in descending order of variability
* One project variable or objective per diagram

ADVANTAGES and DISADVANTAGES

Of SENSITIVITY ANALYSIS

ADVANTAGES

* Relatively simple tool to use
* Highly visual. Easy to see and to explain to others
* Identifies correlations between Risks and project outcomes
* Shows relative importance of each Risk
* Can also be used to show the positive and negative impacts for particular actions

DISADVANTAGES

* Needs the range of impact for each Risk

Below you will find a Tornado Diagram illustrating Sensitivity Analysis.

