

Fault Tree Analysis

What it is:

Fault tree analysis is a graphical representation of the major faults or critical failures associated with a product, the causes for the faults, and potential countermeasures. The tool helps identify areas of concern for new product design or for improvement of existing products. It also helps identify corrective actions to correct or mitigate problems.

When to use it:

Fault tree analysis is useful both in designing new products/services or in dealing with identified problems in existing products/services. In the quality planning process, the analysis can be used to optimize process features and goals and to design for critical factors and human error. As part of process improvement, it can be used to help identify root causes of trouble and to design remedies and countermeasures.

How to use it:

Select a component for analysis. Draw a box at the top of the diagram and list the component inside.

Identify critical failures or “faults” related to the component. Using Failure Mode and Effect Analysis is a good way to identify faults during quality planning. For quality improvement, faults may be identified through Brainstorming or as the output of Cause and Effect Analysis.

Identify causes for each fault. List all applicable causes for faults in ovals below the fault. Connect the ovals to the appropriate fault box.

Work toward a root cause. Continue identifying causes for each fault until you reach a root or controllable cause.

Identify countermeasures for each root cause. Use Brainstorming or a modified version of Force Field Analysis to develop actions to counteract the root cause of each critical failure. Create boxes for each countermeasure, draw the boxes below the appropriate root cause, and link the countermeasure and cause.

Fault Tree Analysis Example

