**Case Study: Statistical Inference**

**Overview**

The research department of an appliance manufacturing firm has developed a new bimetallic thermal sensor for its toaster. The new bimetallic thermal sensor can sense the temperature of the bread and move the lever arm to activate the switch. The research department claims that the new bimetallic thermal sensor will reduce appliance returns under the one-year full warranty by 2%–6%. To determine if the claim can be supported, the testing department selects a group of the toasters manufactured with the new bimetallic thermal sensor and a group with the old thermal sensor and subjects them to a normal year’s worth of wear. Out of 250 toasters tested with the new bimetallic thermal sensor, 8 would have been returned. Seventeen would have been returned out of the 250 toasters with the old thermal sensor. As the manager of the appliance manufacturing process, use a statistical procedure to verify or refute the research department’s claim.

**Instructions**

Create 8 slides, including a cover and a sources list, for a presentation to the director of the manufacturing plant in which you:

1. Summarize the problem with the appliance manufacturing firm's toaster.
2. Propose the statistical inference to use to solve the problem. Support your decision using a scholarly reference.
3. Using Excel:
   * Develop a flowchart for the proposed statistical inference, including specific steps.
   * Compute all statistical calculations.
4. Place your flowchart in a slide.
5. Determine if you can verify or refute the research department's claim.
6. Choose sources that are credible, relevant, and appropriate. Cite each source listed on your source page at least one time within your assignment.