

## Data Collection for Problem Solving

Earlier, you learned that to improve any process, you must understand it. You also need to understand and quantify the sources of variation within the process. All processes can produce information that enables, and facilitates, process improvement. You can't improve a process that you don't understand! A corollary is that you can't improve the performance of a process unless you measure it.

Earlier, you learned that process maps are an important tool for building process knowledge. In an industrial setting, SIPOC maps and input/output maps are particularly useful. For example, when you develop an input/output map, you identify the inputs, the process steps, the in-process outputs, the final outputs, and the CTQs.

The inputs and the in-process outputs are potential causes of variation in the outputs. The CTQs are the measurable output characteristics. The potential causes are often referred to as factors, or Xs. The CTQs are often called responses, or Ys.

You learned about other methods for identifying potential causes in the previous lesson. With these subjective tools, you identify variables that you'll need to investigate as you move through the problem-solving process. In your investigations, you need to observe the process. You need to ask questions. And, most important, you need to collect or compile data that will enable you to solve your problem.

In this lesson, you learn about data collection for problem solving. You learn about types of data and the importance of having clear operational definitions for each of your variables. You also learn some methods for collecting data.

In the next module, Exploratory Data Analysis, you learn more about types of data. You also learn how to explore your data and how to prepare your data for analysis.