advanced training and analytical techniques. Beyond that, there are a few problems that require expertise that may not be found within the company. Thus you can see that care should be taken when determining what projects should be undertaken by Six Sigma specialists.

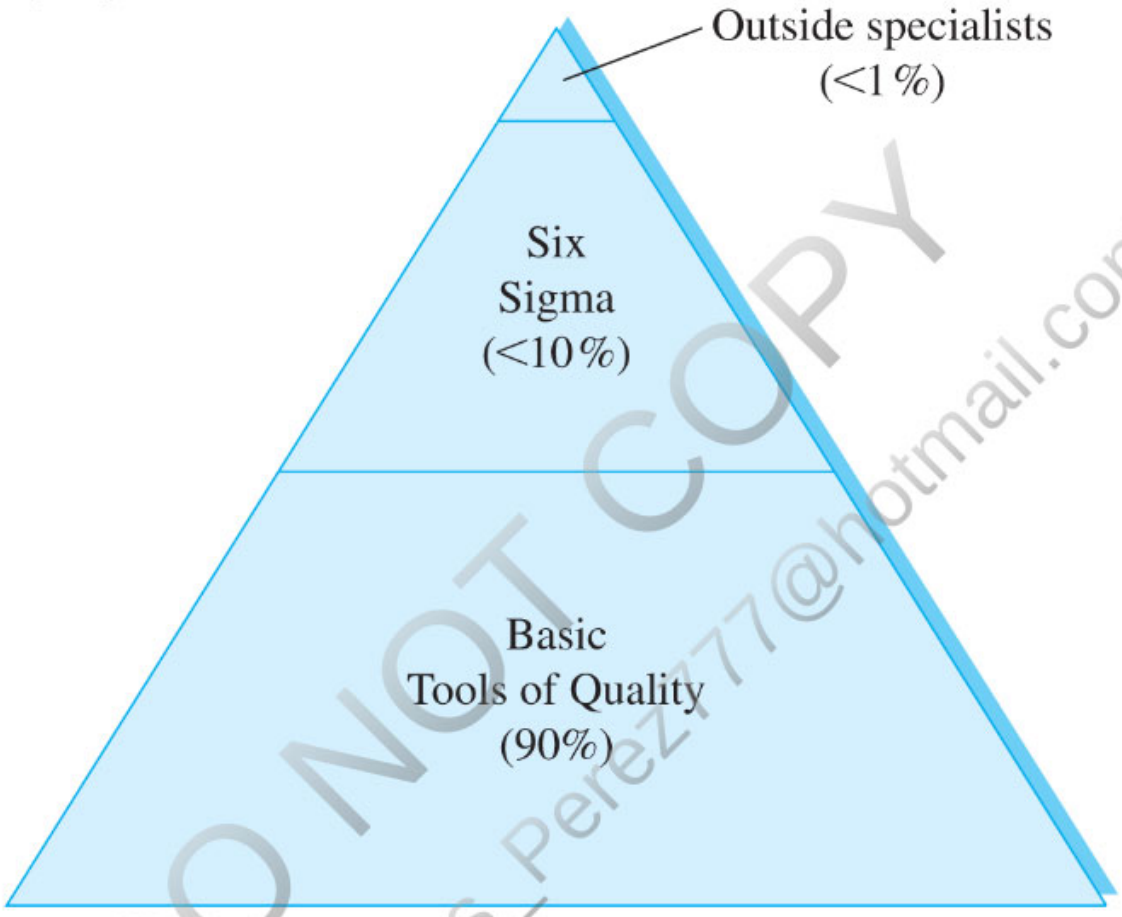


**Figure 13-2 Six Sigma Effectiveness**



At the core of Six Sigma is the following equation:

$$Y = f(X) \tag{13.1}$$

Strictly speaking, it means that *Y* (the dependent variable) is a function of *X* (an independent variable). To Six Sigma practitioners, it means that an output is a function of inputs and processes, where

*Y* = output (key business objectives and measures)

*f* = function (interrelationships to be controlled and managed)

*X* = controllable and noncontrollable variables that affect *Y*

For example, the profitability of a company (*Y*) is affected by several variables (*X*s), including customer retention, inventory turnovers, rolled throughput yield, production costs, and many others. If our objective is to improve profits, we focus on these variables on a project-by-project basis and improve our performance. In this scenario, the job of management is to identify and prioritize projects to achieve the goal of lowered costs and higher profits. The job of employees is to obtain the training and expertise required to meet these objectives.

As you can see, Six Sigma started as a single firm's approach to reducing costs and improving quality. Currently, it is much more. It involves planning, organization, training, human resources planning, and pay for knowledge. This requires both organizational and individual cooperation to achieve a goal. At GE, management made it clear that participation in Six Sigma was a prerequisite for advancement within the company.