

SIX SIGMA FOR GLOBAL COMPETITIVENESS:

An Executive presentation

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Abstract

Globalization has intensified competition, worldwide. Rising cultures in the East, with a population base of over 2 billion, are in the process of opening up their economies to international competition creating tremendous opportunities. To take due advantage of the opportunities and to meet the challenges, a large number of enterprises in the United States have embarked on a program of quality improvement through a concept first deployed at Motorola called six sigma. Six sigma processes can produce virtually defect-free products and services, with the concomitant outcome of achieving the highest level of customer satisfaction. The net result is best possible bottom-line performance. **An interesting feature of six sigma is that it applies equally well across the board to all endeavors, manufacturing and transactional, and to all organizations, Universities included.** Among notable successes is General Electric which embarked on an ambitious six sigma initiative in 1995 in all its divisions ranging from GE Capital, Consumer Services, and NBC to Aircraft Engines, Appliances, Plastics, and Medical Systems. The benefits from six sigma efforts at GE exceeded \$1billion in 1998 and \$2 billion in 1999. Du Pont and Dow Chemical claim annual benefits of \$1 billion from their recently embarked six sigma initiatives.

In this executive presentation, we provide an overview of six sigma concepts. We begin with a brief historical perspective on six sigma. This will be followed by a synopsis of a stepwise procedure to implement six sigma. The first three steps are to articulate the problem, define response variables, and establish critical-to-quality parameters. The next step is to draw a process map showing linkages between potential causes and the defect(s). This is followed by validation of measurement systems. Then, current defect levels are determined. These defect levels represent the baseline against which performance improvements from six sigma are evaluated. This is followed by the procurement of data on the potential causes and the defect(s). Data analysis allows for the isolation of the “vital few” causes that have a large influence on the defect(s). Working on these causes diligently reduces the defects and improves performance. Design of experiments, model building, and optimization all contribute to improvement. The last step, defect monitoring through statistical process control (SPC) ensures that problems once fixed stay fixed.

Biographical Sketch of the Speaker

Pradeep B. Deshpande is President and CEO of Six Sigma and Advanced Controls (SAC) Inc. (www.sixsigmaquality.com), a Louisville-based company specializing in six sigma technologies, software products, training, and services for manufacturing (continuous, batch, and discrete parts-manufacturing) and non-manufacturing (transactional) processes. He is also Professor of Chemical Engineering at the University of Louisville. SAC has made pioneering contributions to six sigma by extending its applicability to dynamic systems. With these contributions, it becomes possible to implement six sigma on any work-process, whether manufacturing or transactional, static or dynamic, linear or nonlinear. SAC's clients include many domestic FORTUNE 500 clients and several international clients. Pradeep has thirty years of academic and full-time industrial experience and has served as chairman of the Chemical Engineering Department at the University of Louisville for five years. Dr. Deshpande is an author or co-author of five books in process control and has developed a number of control algorithms and technologies. Dr. Deshpande has supervised seventeen Ph.D. graduates and fifty master's graduates and has one hundred refereed papers and presentations to his credit. Pradeep is a recipient of several awards for his work including the 1990 Donald P. Eckman Award in process control education given by ISA. Pradeep consults for many companies in diverse disciplines and offers continuing education courses in several countries. He is a member of AIChE, a Fellow of ISA, and is listed in *Who's Who in the world*.