**SIG SIGMA PROCESS**

**Sig Sigma (**Importance of statistical process control, the role of sigma in quality control, aims of a Six Sigma business process improvement strategy, relevance of Six sigma quality levels)

The **Statistical** process control improves quality by analyzing variation, quantifying variation, classifying variation. SPC is to gather data to determine the reason for the difference. And you need to identify the reason the process has deviated and eliminate the root cause of the variation. It provides a way to graphically summarize data. Variation from common cause systems is normal and, at best, can only be reduced, but special cause variation should be identified and eliminated.

The name Six Sigma is used because sigma is a letter of the Greek alphabet that is used in mathematics to represent standard deviation. Standard deviation indicates the difference between a measured result and the average result. Six related to the six specification levels developed to represent defects per million production opportunities. A sigma quality level provides indication of how often defects are likely to occur. SPC is used to gather data to determine the reason for variance.

Six Sigma is a business process improvement strategy. Most importantly, it is used to check that a business is doing what its customers want. It targets 3.4 defects per million opportunities as it goal.

It enables you to monitor key business processes to ensure that the output conforms to Customer requirements.

A sigma quality level gives an indication of the number of defects likely to occur in a process. A higher sigma level indicates a process that is less likely to produce defects.

**Statistics** are a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of numerical data. A single statistic is measure of performance over time.

**Product Quality levels** used to monitor product quality levels.

**Absentee Rates** need to be calculated because companies need to be able to predict staffing levels going forward so that production targets can be met.

**On Time delivery:**  On time delivery is a key performance indicator for most organizations because it reflects how they satisfy customer requirements.

Six sigma is a strategic business improvement approach that aims to increase customer satisfaction while increasing profits. Sig sigma projects move through clearly defined stages of measurement, analysis, improvement and control.

Key features of Six sigma: 1. Clearly defined measures of success, project roles for six sigma practitioners and leadership. Focus on customers and processes. A sound statistical approach to improvement.

**Phases of Six sigma Implementation:**

The main phases of Six sigma are define, measure, analyze, improve and control. **Define the definition of projects based on what is important to customers, and the creation of a project improvement infrastructure.** During the measurement phase, statistical analytical tools are used to measure aspects of the process. At the analysis phase, the major causes of defects are determined, charts are created and regression analysis variance is conducted. At improvement phase, the major causes of defects are removed. At the control phase, mechanisms are put in place to monitor and maintain the improvements.

Six sigma business strategies will measure how well business processes are meeting their objectives.

You need to focus on Key process Input Variable (KPIV) and (KPOV) and try to focus on several variables such as productivity, quality and efficiently.

Providing feedback that clearly shows how the measurements are going to benefit the employee and the organization as a whole can help to overcome this.

Internal measures focus on production processes and their costs to a firm. External measures look at conformance to customer requirements.

There are a number of graphical tools for measuring organizational performance. One of the most useful is a process flow chart that enables you to produce a graphical representation of a process. Processes generally consist of inputs (man, machinery, etc.,), activities (services), and outputs.

The scatter Diagram is a data analysis tool that displays the relationship between 2 variables. Firstly you collect two sets of data and display these in a summary table. Usually, the cause variable is plotted on the horizontal axis and the effect variable on the vertical axis. For example, an increase in cause variable results in an increase in the effect variable.

The control chart is a graphical tool that helps to distinguish between types of variation in critical processes. Control charts are often used to determine process capability. Any points outside the limits are proof of special cause variation and of the process being out of control.

The Pareto Diagram: This is a graphical tool which is a quality improvement program. 80% of the problems are caused by the same 20% of causes (focus on these areas)

The cause and effect diagram: Graphically displaying problems and their possible causes.