



Decision-Making Using Statistical Process Control SPC Seminar

25 – 29 April 2027
Muscat (Oman)



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Introduction

Quality and productivity are at the forefront of sustaining competition in the global market. High customer expectations propel the demand for consistent quality in products and services. The quality control process is intrinsic to this, involving measuring and managing process variations that affect the final product.

Statistics is pivotal in quality management. The SPC statistical process and control for the decision-making seminar provide a quantitative foundation for managers to monitor and control production processes and evaluate the output quality, aligning closely with the ideals of Total Quality Management.

Managers responsible for product delivery or service provision must know about statistical tools that analyze process outputs that impact quality. Additionally, they should hone quantitative reasoning abilities to interpret statistical process control SPC findings or critically examine interpretations provided by others.

Targeted Groups

- Managers, Supervisors, and Team Leaders.
- Management support professionals.
- Analysts who encounter data/analytical information in their jobs.
- Individuals seeking to enhance decision-making through data analytics.

Conference Objectives

By the end of this SPC statistical process and control for the decision-making seminar, participants will be able to:

- Grasp the concept of variation in work processes and how it is measured.
- Recognize the significance of data quality in SPC.
- Utilize the normal distribution in SPC effectively.
- Differentiate and employ various control charts for diverse SPC processes.
- Apply suitable statistical tools for quality control data analysis.
- Translate statistical output into actionable management decisions.
- Comprehend process capabilities concept, purpose, and assessment.

Targeted Competencies

Upon the end of this SPC statistical process and control for the decision-making seminar, participants will be able to:

- Applying data analytics in management roles.
- Valuing the role of data in analytics.
- Executing data analytical methods with practical examples.
- Mastering interpretation of statistical evidence for managerial purposes.
- Integrating statistical thinking within the professional sphere.

Key Benefits and Concepts of Statistical Process Control

SPC, or Statistical Process Control, is an advanced method used to monitor and control processes through statistical methods. Here are some key areas where SPC is beneficial:

The Purpose of Statistical Process Control

The SPC statistical process and control for the decision-making course is designed to analyze a process or its output so that appropriate steps can be taken to achieve and maintain a state of statistical power, thus enhancing the quality of products.

Benefits and Advantages

SPC provides numerous benefits, such as reducing variability, increasing efficiency, improving quality, and lowering costs. It also assists businesses in complying with industry standards and achieving certification.

Understanding and Definition of SPC

At its core, SPC helps define a system where alerts can be established for real-time monitoring of processes. It's essential for maintaining a high level of product quality and predicting potential issues before they become critical.

By integrating these principles and tools, managers and analysts can develop a robust Statistical Process Control program, enabling better decision-making and improved outcomes.

Conference Content

Unit 1: Setting the Statistical Scene for SPC

- Overview of Statistical Process Control SPC.
- Fundamentals of Process Analysis and its Connection to Quality and Variation.
- Implementing SPC with Six Sigma.
- Statistics and Data Analysis in Quality Control.
- Differentiating Data Types and Emphasizing Data Quality.
- Introduction to Basic Statistical Concepts and SPC Tools.
- Utilizing Summary Tables and Graphs to examine data distribution.
- Exploring Descriptive Statistical Measures.
- The critical role of the Normal Probability Distribution Z Statistics.
- Practical Excel analysis of sample QC datasets using essential statistical tools.

Unit 2: Exploring SPC Tools

- Framework of SPC Tools: Terms and Definitions.
- Sub-group formation strategies.
- Deep dive into Control Charts:
 - Different Types.
 - Data Requirements.
 - Methodology.
 - Interpretation.
 - Applications and Benefits.
- Variable Control Charts for Continuous Data.
- Detailed analysis of each Control Chart in Excel with sample datasets.

Unit 3: Advancing SPC Tools

- Investigation of Control Charts for Individual Data.
- Study of Attribute Control Charts for Discrete/Countable Data.
- Applying Excel to analyze datasets for each Control Chart.

Unit 4: Validity Tests and Process Capability

- Understanding Valid SPC Analysis Conditions.
- Assumptions of Control Charts.
- Using Curve Fitting to test for Normality.
- Implementation of Run Chart and Run Test Rules in SPC.
- Detailed Overview and Calculation of Process Capability Indices.
- Utilizing Excel for validity tests and process capability analysis.

Unit 5: Advanced statistics in SPC

- Statistical Methods and inferences about Process Behaviour.
- The role of Sampling and its distributions.
- Confidence Limits and Hypothesis Tests: Interpretation and Use.
- Analysis of Variance ANOVA and Regression Analysis.
- Integrating SPC into the work environment using Excel.