SEMBIT429

Leading the carrying out of capability studies

Overview

This standard covers the competencies required for leading the carrying out of capability studies. It involves obtaining and approving all the necessary data needed to carry out the study analysis, and agreeing the appropriate sample size using statistical based techniques. From the study you will be required to lead the production of statistical information, this will include calculations for mean, mode, median, standard deviation, range, variance, and the process capability Cp and its index Cpk for the process. You will also need to approve calculations for the sigma score (Z) from the Cpk and the parts per million outside upper and lower specification limits for the processes studied for both the long and short term.

You will be expected to lead an analysis of the information gained and identify activities, which will improve the process capability. You will also need to lead the production of and approve a process capability report, highlighting the improvements to be made and the actions to be taken.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken and to report any problems with the activities that you cannot solve or are outside your responsibility to the relevant authority. You will need to ensure that all the necessary documentation is completed accurately and legibly. You will be expected to take full responsibility for your own actions within the activity and for the quality and accuracy of the work that you produce.

Your underpinning knowledge will provide a good understanding of capability studies, and will provide an informed approach to the techniques and procedures used. You will need to understand the principles and application for carrying out the capability studies, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying and advising on safe working practices will be a key issue throughout.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. obtain and approve all the necessary data needed to carry out the capability study analysis
3. agree the appropriate sample size using statistical based techniques
4. determine whether rational sub-grouping is appropriate
5. lead the process capability study and confirm relevant statistics
6. lead the production of a histogram to represent the Cp and Cpk graphically
7. obtain and approve the information gained and agree activities to improve the process capability
8. lead the production of and approve a process capability report highlighting the improvements to be made and the actions to be taken
9. monitor the progress of the actions to be taken in the process capability report

Knowledge and understanding

You need to know and understand:

1. how to work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. how to plan the resources and time needed to carry out the agreed activity
3. why we need to assess process capability and how this affects a Six Sigma project
4. what is meant by the term Sigma Score (Z)
5. how to calculate the Sigma Score (Z) and use this to estimate the percentage outside of specification
6. how to explain and calculate process capability and its index (Cp and Cpk)
7. how to calculate long-term capability from short term data
8. how many samples are needed for a statistically valid short term capability study
9. what is a population and what is a sample
10. how to select appropriate sample sizes
11. how to calculate parts per million
12. how to calculate mean, median, mode, standard deviation, range, and variance
13. how to perform rational sub-grouping
14. the extent of your own authority within the project and whom you should report to, in the event of problems that you cannot resolve

Scope/range related to performance criteria