

Statistical Process Control Methods

# Process Evaluation

**Evaluate** your process using 1 of the following:

* Use the lean concept to find ways to eliminate waste and improve the process
* SPC or Six Sigma to reduce defects or variances in the process

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| Waiting, delays, inventories, and motion are all examples of wastes. Consistency and performance of operations can be improved by reducing the amount of time spent on them. The principles and methods of lean manufacturing can assist to eliminate waste, emphasize customer value, and standardize the work process. Besides, it facilitates the flow of work. |

# Evaluation of Control Chart and Process Metrics

**Complete** the following in Excel:

* Calculate the defined process metrics including variation and process capability.
* Develop and display a control chart for the process.

**Evaluate** the control chart and process metrics using Statistical Process Control (SPC) methods. Determine whether the process could benefit from the use of Six Sigma, Lean, or other tools. (Include all calculations and charts.)

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| Variations in a process are frequently the result of a variety of factors. It's mostly due to changes in the process mean. Furthermore, variance is influenced by the occurrence of random events. In the statistical process, process capability can lead to the long-term performance of boundaries. Six Sigma requires a thorough knowledge of data types and the ability to work with them effectively. The importance of a controlled check cannot be overstated. |

# Executive Summary

**Write** a 700-word executive summary that includes the following:

* A summary of the Process Evaluation (using either Lean or SPC or Six Sigma)
* A summary of the Evaluation of Control Chart and Process metrics based on SPC methods
* A summary of your evaluation of whether the process would benefit from the use of Six Sigma, Lean, or other tools
* A description of the SPC project and recommendations for improvements

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| Waste may be reduced, and the process can be improved using the lean-approach. In most cases, the lean process is based on removing waste from the manufacturing process. Wastes can come in many forms, but the overall goal is to eliminate everything and everything that doesn't offer value to products and consumers. Waiting, production faults, inventories, overproduction, and motion are all examples of waste. Consistency and performance of operations can be improved by reducing the amount of time spent on them. The principles and methods of lean manufacturing can assist to eliminate waste, emphasize customer value, and standardize the work process.  In addition, it can help streamline the process. Some strategies for dealing with the problem of waiting include implementing continuous-flow processes, minimizing production buffers, and employing standard operating procedures (SOPs) to assure consistency (Nedeliaková et al., 2019). Using a liner and sequential flow from raw materials to finished products minimizes waste in transportation. It is critical to reducing setup times by using smaller batches when there is overproduction. In addition to eliminating defects, it is possible to build procedures that discover abnormalities as they occur and repair them.  The following shows the data, process metrics, and control charts using the statistical process control. Using six sigma and lean management determines how the process might be improved. All formulas and calculations have been included.  From the calculations and charts, it is clear that process variations can come from diverse sources. They often arise due to changes in the process mean. Also, random effects also contribute to variations in the charts. Process capability during the statistical process can lead to a long performance of boundaries. With six sigma, there is a need to know the data types and deal with them as effectively as possible. A controlled check is vital in detecting variation causes. Hence, this process can benefit from six sigma concepts. |

References

Nedeliaková, E., Štefancová, V., & Hranický, M. P. (2019). Implementation of Six Sigma methodology using DMAIC to achieve processes improvement in railway transport. *Production Engineering Archives*, *23*(23), 18-21.