

Statistical quality control

Business



Statistical Quality Control June 30 Out of control' Process Variation exists in all types of processes no matter how small its magnitude is. Variation basically implies a deviation from the ideal process flow. In any process there can be two types of variation – common cause (or random variation) and special cause variation. Common cause variation cannot be removed completely and is found in almost all processes. Hence, a process exhibiting such variation is in control. However, a process which exhibits special cause variation is unstable and out of control (NHS). Statistical control charts are generally used to identify special cause variation. If one or more observations lie outside the control limits of the chart, the process is out of control. However, a process can be out of control even if all samples fall within the upper and lower control limits.

2. Control Limits - Not a sufficient criterion

2. 1 False specifications

A process can be out of control but may still fall within limits due to a false specification of limits. In such a scenario, the management will get an idea that the process is in control while actually it is out of control. This can be reduced by regular review of control limits.

2. 2 Trends

A process can be out of control but it may not be able to interpret the same from the control charts. The process may actually be following certain trend which is depicted in a better fashion by Run charts. The idea here is that there should not be too few or too many runs in a process. Run implies a series of observations on the same side of the centre line. The observations may lie within control limits but actually follow a zig-zag pattern (NHS).

2. 3 Cyclic pattern

<https://assignbuster.com/statistical-quality-control/>

It is also possible that there may be a seasonality effect in the observations which has no explanation. Also, one or two observations may be quite distinct from others and can easily be identified to understand the fault in a process.

3. Real life scenarios

In a real life scenario in a factory production line, it is possible that if the process variation is measured it is within limits. But if a day is broken into several hours and studied, possible trends are observed. These may be due to nature of working of machine at various times of the day, impact of wear and tear during the day, difference in the accuracy of tasks done by various workers, difference in availability of facilities such as light during various hours and so on. An experiment was conducted in a factory for two days to find out whether the process was in control. On the first day, it was noticed that during various hours in the day, the observations were within control limits. On the second day, when the process was studied after breaking the day into segments, trends were observed though the process was still under control limits.

Similarly, it is possible that there is a defect in a certain machine part due to which the parts produced are consistently of larger size and lie above the centre line but are within the control limits

4. Conclusion

Considering these real life examples, it can be said that it is essential to focus on control limits but they are not the only criterion to decide the control of a process. Also the control limits vary from process to process and industry to industry. They must be chosen very carefully and must be reviewed continually.

5. References

Tutorial Guide: Statistical Process Control, Monitoring Quality in Healthcare
Clinical Indicators Support Team, NHS, National Services Scotland, Retrieved
July 30, 2011 from http://www.indicators.scot.nhs.uk/SPC/Statistical_Process_Control_Tutorial_Guide_010207.pdf