Green computing research project part 5 case study examples

Environment, Nature

In any industry, the quality of goods and services, either received or produced, are always on top priority. These outputs are dependent on processes; they should be capable of operating with little variability to meet and maintain the standards set by the organization. A very powerful yet simple set of tools for assessing process quality is called the statistical process control (SPC), which comprises of seven basic quality tools, or the “ magnificent seven.” These are the: (1) histogram or stem-and-leaf plot; (2) Check sheet; (3) Pareto chart; (4) Cause-and-effect diagram; (5) Defect concentration diagram; (6) Scatter diagrams; and (7) Control chart (Montgomery, 2005). Proper deployment of the SPC aids in the creation of an environment where in the whole organization aims for improvement of quality and productivity.

Among the seven tools, the Shewhart control chart is the most technical (Montgomery, 2005). It is based on Shewhart’s theory of variability; that a process operating with only chance causes of variation is said to be in statistical control, while those operating in assignable causes of variation are out-of-control processes (Montgomery, 2005). Due to its technical nature, most organizations use control charts extensively compared to the other 6 tools.

For the Green Computing Research Project, the control charts shall also be used for the Project Quality Management. Since Matt, one of the team members, and I, are proficient users of Microsoft Excel, we decided to adapt this statistical tool for assessing the quality of our output in the project. The main products our team will create are research reports—one for each green computing technology. Ben, the CIO and the project’s sponsor, also asked us

to develop at least 20 different project ideas. Using one of the quality tools would ensure that these outputs and ideas are feasible and up to the standards of We Are Big, Inc. Moreover, using the control charts for assessing the project outputs would make it easier to present to the panel for the next monthly review, especially to Ito who is very critical and detail oriented.

One scenario that the control charts would be very much applicable is the quality assessment of telecommuting, as, according to Ben, some research had already been done on increasing its use. Also known as telework, telecommuting allows employees to work outside the workplace and communicate with superiors, subordinates and colleagues using telecommunications or other computer-based technologies (Bailey and Kurland, 2002; Duxbury and Neufield, 1999). In a study by Duxbury and Neufield (1999), telework arrangements have little impact on intra-organizational communications, Moreover, it has a potential to improve upward, downward, and lateral communication. However, it may have a negative impact, more on the psychological aspects, as it can result to awkwardness and discomfort, and may be a breach of privacy between superior and subordinate, or between colleagues.

Control charts will come into use when assessing various factors that should be taken into consideration during telecommuting: time of the day, nature of the work, and other related variables. These are evaluated via surveys (e. g., “ In a scale of 1-5, rate your telecommuting experience”), projected on a control chart. Processes that are out-of-control are dealt with accordingly.

Of course, the other quality tools, most specifically the cause-and-effect

diagrams, would be more suitable as it does not require much statistical work and is quite straightforward. However, use of the control chart allows pinpointing of problems in telecommuting and dealing with them in a technical manner as well. Superiors and subordinates who rated their telecommuting experience “ POOR = 1” may mean that there is a problem on the “ working factors” such as time of the day. This will be seen in the control chart as a value out of range of the upper and lower limits, which makes it easier to see and interpret.

References:

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Duxbury L and Neufield D. (1999). An empirical evaluation of the impacts of telecommuting on intra-organizational communication. Journal of Engineering and Technology Management 16, 1 – 28.

Montgomery, D. (2005). Introduction to Statistical Quality Control. Hoboken, New Jersey: John Wiley & Sons, Inc. p. 148.