Statistical quality control essay

ASSIGN BUSTER

Printer. Many of us have struggled to assemble a product the manufacturer has indicated would need only “ minor” assembly, only to find that a piece of the product is missing or defective.

As consumers, we expect the products we purchase to function as intended. However, producers of products know that it is not always possible to inspect every product and every aspect of the production process at all times. The challenge is to design ways to maximize the ability to monitor the quality of products being produced and eliminate defects. One way to ensure a quality product is to build quality into the process.

Consider Steinway & Sons, the premier maker of pianos used in concert halls all over the world. Steinway has been making pianos since the 1880s. Since that time the companys manufacturing process has not changed significantly. It takes the company nine months to a year to produce a piano by fashioning some 12, 000-hand crafted parts, carefully measuring and monitoring every part of the process. While many of Steinways competitors have moved to mass production, where pianos can be assembled in 20 days, Steinway has maintained a strategy of quality defined by skill and craftsmanship.

Steinways production process s focused on meticulous process precision and extremely high product consistency.

This has contributed to making its name synonymous with top quality? In Chapter 5 we learned that total quality management (TQM) addresses organizational quality from managerial and philosophical viewpoints. TQM focuses on customer-driven quality standards, managerial leadership,

continuous improvement, quality built into product and process design, quality identified problems at the source, and quality made everyone’s responsibility.

However, talking about solving quality problems is not enough. We need specific tools that can help us make the right quality decisions. These tools come from the area of statistics and are used to help identify quality problems in the production process as well as in the product itself. Statistical quality control is the subject of this chapter.

Statistical quality control (SQC) is the term used to describe the set of statistical tools used by quality professionals. Statistical quality control can be divided into three broad categories: 1 . Descriptive statistics are used to describe quality characteristics and relationships.

Included are statistics such as the mean, standard deviation, the range, nd a measure of the distribution of data. Marketing, Management, Engineering Statistical quality control (SQC) The general category of statistical tools used to evaluate organizational quality. Descriptive statistics Statistics used to describe quality characteristics and relationships.

173 2. Statistical process control (SPC) involves inspecting a random sample of the output from a process and deciding whether the process is producing products with characteristics that fall within a predetermined range.

SPC answers the question of whether the process is functioning properly or not. .

Acceptance sampling is the process of randomly inspecting a sample of goods and deciding whether to accept the entire lot based on the results. Acceptance sampling determines whether a batch of goods should be accepted or rejected. The tools in each of these categories provide different types of information for use in analyzing quality. Descriptive statistics are used to describe certain quality characteristics, such as the central tendency and variability of observed data.

Although descriptions of certain characteristics are helpful, they are not enough to help us evaluate whether there is a problem with quality.

Acceptance sampling can help us do this. Acceptance sampling helps us decide whether desirable quality has been achieved for a batch of products, and whether to accept or reject the items produced. Although this information is helpful in making the quality acceptance decision after the product has been produced, it does not help us identify and catch a quality problem during the production process. For this we need tools in the statistical process control (SPC) category.

All three of these statistical quality control categories are helpful in measuring and evaluating the quality of products or services.

However, statistical process control (SPC) tools are used most frequently because they identify quality problems during the production process. For this reason, we will devote most of the chapter to this category of tools. The quality control tools we will be learning about do not only measure the value of a quality characteristic. They also help us identify a change or variation in some quality characteristic of the product or process.

We will first see what types of variation we can observe when measuring quality. Then we will be able to identify specific tools used for measuring this variation. Variation in the production process leads to quality defects and lack of product consistency. The Intel Corporation, the world’s largest and most profitable manufacturer of microprocessors, understands this. Therefore, Intel has implemented a program it calls “ copy-exactly’ at all its manufacturing facilities.

The idea is that regardless of whether the chips are made in Arizona, New Mexico, Ireland, or any of its other plants, they are made in exactly the same way.

This means using the same equipment, the same exact materials, and workers performing the same tasks in the exact same order. The level of detail to which the “ copy-exactly’ concept goes is meticulous. For example, when a chipmaking machine was found to be a few feet longer at one facility than another, Intel made them match. When water quality was found to be different at one facility, Intel instituted a purification system to eliminate any differences.

Even when a worker was found polishing equipment in one direction, he was asked to do it in the approved circular pattern.