

Histograms: A Valuable Tool for Quality Evaluation

The world of business is dynamic and fast-paced. Because of this constant evolution, there is an increasing importance on efficiency and quality. All companies in the 21st century must be aware of this role that quality plays in ultimate success.

Although some companies have already reached a relatively high level of quality, there is always room for improvement. In order to make these improvements, a corporation needs to be able to measure and evaluate its current level of quality. One tool, which has been implemented by companies to help evaluate quality, is the histogram.

Kaoru Ishikawa, one of Japan's most renowned experts on quality improvement, first developed the histogram. It is a variation of a bar chart, in which data values are grouped together and put into different classes. This grouping allows the company to see how frequently data in each class occur in the data set. The higher bars represent more data values in that class, while lower bars represent fewer data values in a certain class. By collecting data and arranging it in the form of a histogram, companies can pinpoint any areas that need improvement.

There are several different uses for histograms. First, they can be used to display a large amount of data values in a relatively simple chart form. Next, they can be used to find any patterns that the data might reveal. From a histogram, a company can also tell relative frequency of occurrence for certain data values. They can also be used to see the distribution, or any variations in the data values. One other use would be to make

predictions regarding the future based on the way the data values pan out. These are just a few of the many uses of the histogram, as a tool for quality evaluation.

Measured against its' usefulness, the histogram is a relatively simple tool to implement. First, you have to pick a process that you would like to measure. This can be anything from number of items output per week, to the number of calls incoming per day. Basically, anything that occurs over an extended period of time. You need to be able to collect a whole lot of data for a histogram, at least 100 data values. The more data values, the better. After you collect all of your data, you need to assemble a table of data values. The important thing here is that you must take into account the frequency of data values. The next part in using a histogram is to calculate some statistics so that you can make a chart. You need to calculate the mean, minimum, maximum, standard deviation, class width, number of classes, skewness, and kurtosis. Mean is the average of all values. Minimum is the smallest value. Maximum is the biggest value. Standard Deviation is how widely spread the values are around the mean. Class Width is the x-axis distance between the left and right edges of each bar in the histogram. Number of Classes is the number of bars in the histogram. Skewness is the alignment of the Histogram. Kurtosis is a measure of the pointiness of the distribution. After you calculate these statistics, you can create the actual histogram. After completing the histogram, its' use as a tool for quality improvement can be seen. You can look at the completed histogram and analyze its' shape. Along with the statistics that you calculated, you can get a good idea of where any problems might be, or where to make any changes to the process.

One clear-cut example of where a histogram could be used is at a telemarketing firm. They can chart the amount of sales made, and the times of each sale. They could

then assemble these sales with their times, in a histogram form. By analyzing the times where the most sales are made, the company could make a decision on when to make more calls, and when to make fewer calls. This is just one simple example of where a histogram could be implemented.

The histogram is an extremely useful tool in the field of quality evaluation, and eventual improvement. Corporations must use histograms, along with the many other tools, in order to make continuous improvements. Without continuous improvement, there is no possible way to keep up with the competition, and the company will undoubtedly fail. For more information on histograms, check out http://www.usfca.edu/histogram_explorer/he.html. This a great exercise which would help you to better understand what a histogram is all about.