

Jake Hillbery

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Mini-tutorial

Consumer and Producer Risk

In this brief tutorial, I will explain the concepts known as consumer and producer risk. I will establish the basic concepts of acceptance sampling and other concepts necessary to understanding consumer and producer risk such as acceptance sampling techniques, the various measures, and applications.

I will first provide a general definition of these two types of risks and by elaborating on acceptance sampling later, their true significance will become more apparent. Producer risk is most simply described as the risk associated that after performing an acceptance sample on a lot, a producer determines that a lot has an unacceptable number of defects and the lot must be subjected to complete inspection. When, in reality, the sample has a larger percentage of defects than the actual lot does. Consumer risk is the risk associated as a consumer of a product, that after performing acceptance sampling, you determine that the lot has an acceptable number of defects, but, in reality, the lot has a percentage of defects above the acceptable level, more than the sample you took does.

Acceptance sampling is frequently used as a method of reactive quality assurance, it eliminates the time and labor associated with performing 100% inspections on lots of products that are produced or received. Acceptance sampling is often used where the cost of missing a defective product is relatively low, large lots are present and inspectors become complacent, there is a fast production rate, or inspection demands destructive inspection. 1 By using statistical techniques, firms can determine what sample size and

acceptable defect percentage they will apply to their sampling techniques to minimize the risk of consumer and producer risk. Acceptance sampling is a particularly cost effective means of controlling quality when you start producing new products or institute new processes, when you restart a production line, when you deal with fragile products, when dealing with a new supplier, or when dealing with perishable products.²

There are several important terms associated with acceptance sampling and limiting the possibility for consumer and producer's risk. The normal distribution is a basic statistical principle, which describes how most samples when charted against the number of standard deviations of the characteristic of interest from the mean value, the most fall closest to the mean and decrease symmetrically in a bell shape. This is a basic explanation of how the distributions should fall in most samples. In general if a sample deviates too much from this shape, there appears to be some anomaly in the production or shipping that mutates the symmetry of the bell shape. Furthermore we can set a maximum number of standard deviations from the mean and if an unacceptable number of items fall outside these limits, this means there is an excessive risk that the lot exceeds quality standards. OC Curves (Operating Characteristic Curves) estimate the likelihood that a lot will be accepted by the customer given your quality sampling calculations. ² Acceptable Quality Level (ACQ) is the largest number of defective products in a lot that is still acceptable. ²

Many companies go to great lengths to encourage these and other techniques used both by themselves and their suppliers. For instance, Pacific Bell trains its management in these techniques and offers free training to its suppliers as well as offering a reward program to these suppliers for outstanding quality levels.

Consumer and producer risk are just two elements of the many sampling measures for insuring quality that are becoming ever more recognized in firms. For more information, check out [HYPERLINK "http://backofficesystems.com"](http://backofficesystems.com)
<http://backofficesystems.com> .

Bibliography

- 1 Back office systems. Acceptance Sampling. Retrieved from the WWW on 2/7/2001 from [HYPERLINK "http://backofficesystems.com/tips/planning/sampling.html"](http://backofficesystems.com/tips/planning/sampling.html)
<http://backofficesystems.com/tips/planning/sampling.html>
- 2 Foster S. Thomas., Managing Quality: An Integrative Approach. Prentice Hall, NJ, 2001.