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Statistical Quality Control

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A product is regarded as acceptable to the consumers when it coincides with the manufacturer's description and satisfies the consumers need. Manufacturers always give emphasis to improve the quality and design of their product now running in the market or just entering into it. Generally there prevails a competition among the manufacturers of some product to be reliable to the consumer's want for superior quality and confident supplier. Thus when a manufacturer possesses a superior quality product, he then tries to maintain uniformity in his production. This uniformity is necessary as a guarantee for the product as described by the manufacture regarding the quality characteristics. It is obvious that uniformity must be demanded by consumers for all goods and services. A manufacturer who fails to meet this demand will lose the consumers confidence and hence, lose his business. So the statistical quality control is designed to detect departures from product specification and to indicate the need for remedial action in the manufacturing process. There are two types of variables occurring in the production process. Out of these one can be controllable and the other cannot be. The associated variations for these variables are called controllable and random respectively. Factors like machine wear machine adjustment and the operator's skill may contribute to the controllable variation and may be measured by the quality control device. If such controllable variation can be detected and remedial action be taken, then the variation in the manufacturing process reduces to only random variation. The process is then said to be in a state of statistical control.

A product quality is generally monitored by a control chart. And this control chart is usually constructed on the basis of sample information either measurable or qualitative, extracted during different times of the processing hour. If the product is measurable by length weight, volume, cost and so forth, its quality can be monitored by designing control charts to plot means and ranges on standard deviations of the sample information. A control chart prepared to monitor a process with measurable characteristics is called control chart of variables. A sample process whose characteristics are not measurable is called an attribute sample. Sampling industrial products for defectives is the most common type of attribute sampling. Control charts designed to monitor such qualitative data are called control charts for attributes, the most common of which is the P—chart.

It is worthy to mention here that a manufacturer always desires to run his plant under complete statistical control because only in such a way he can produce his product upto the standard satisfying the charateristics as per specification given earlier to the consumers. So we see the best way to have superior products is to make the process statistically controlled during manufacturing hour. Though there remains the problem with random (uncontrollable) variation yet to be solved, the statistical control over the manufacturing process has wide scope to give guarantee to the outcoming products with superiorty.

A product when fails to satisfy the specification characters, may be rejected by the consumers previously accustomed in using the better quality products. Thus if a manufacturer cannot set the process in the state of statistical control, it would be impossible for him to produce a quality product as desired. Only an efficient management has capability to run the process under statistical control Similarly a strong statistical cell can monitor such control charts most effectively.

Now in our country some of the nationalised idustrial enterprises are running at losses due to the consumers reluctance to buy their low quality products which are unable to fulfil the consumer's requirement. When a product is refused by the consumer that is when it fails to prove its charateristics as per specification, it would be justified to think that either the manufacturer is not aware of quality control device or he fails to set the process in correct state of statistical control. So for the national interest we are to create immediately a strong and efficient statistical cell in each industry or enterprise where it does not exist. Only such a statistical cell can shoulder the responsibilities of finding uniformity in outcomng products with superior quality for wider market.

This quality control technique may also be used in every manufacturing enterprise to minimize internal waste and maintain a uniformly high quality product. Furthermore applications are not limited to manufacturing processes. They can be applied to assist in controlling error within any process involving a continuous operation.