

# A Survey: Quality Control Tool in Auto Parts Industry

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**Abstract** - In business, engineering and producing, Quality features a pragmatic interpretation because the non-inferiority or superiority of something; it is also outlined as fitness for purpose. Quality may be a sensory activity, conditional, and somewhat subjective attribute and should be understood otherwise by totally different folks. Shoppers might specialize in the specification quality of a product and repair, or however it compares to competitors within the marketplace. Producers may live the correspondence quality, or degree to that the merchandise and repair was created properly.

**Key Words:** QMS; Quality Control; Auto Industry

## 1. INTRODUCTION

Quality control along the utilization of statistical methods is a large area of concern. It is medium to accomplishment in now-a-days industry along with its attention on deducting costs and at the same time enhancing quality. In modernistic times, the Japan people are extraordinarily prospering at applying applied mathematics ways to industrialized quality control and have acquired a major benefit than many of their other competitors. One want solely consider the prominence appreciated by Japanese motor, photographic camera, television, broadcasting services, optical disc and normally natural philosophy makers via comprehend simply however prospering they need become. It's attributable to the worldwide attributes of contemporary industrialized struggle that quality control, or a lot of exactly, applied mathematics quality control has turn into a section of basic significance to engineers. Producing a output that the general civil wish through shop for isn't longer adequate, the merchandise should be of adequately top quality and adequately struggle pricewise that it is most well-liked to its competitors. While not applied mathematics quality control ways it's extraordinarily troublesome, if not possible, to either acquire or preserve a really struggled position.

A quality management scheme (QMS) can be a firm of protocols, systems and agendas necessary for intriguing and rub out (manufacture/development/duty) inward the basis trade space of a community. (I.e. region which will shock the institution's capability to accomplish consumer needs.)

The word "quality" contains an analogous definition. This is often given through the ISO meaning: "The sum of options and aspect of a output or duty that tolerate on its capability to satisfy declared as a choice inexplicit requirements". In easier contention, one will mention that an output has sensible character once it "adheres with the necessities given

by the consumer". Once proposed on systematical task, quality is outlined Justas "deliveries of honest details at intervals in agreement span of your time underneath in agreement conditions, at in agreement prices, and with mandatory responsibility". The "permitted conditions" ought to embody a condition on the exactness and certainty of the information that is straightly associated with "strength of utilization" and which can disagree for various operations. So far, in several cases the authenticity regarding knowledge isn't interrogated and therefore the appeal for stipulations overlooked. Several labs work in line with published ways and methods that don't seem to be without delay modified and have inherent blemish specifications. Furthermore, not all future utilization of the info and details is foretold so stipulations regarding needed exactness and certainty can't even tend. Therefore, this facet of quality is sometimes remained to the discretion of the lab. However, only also usually the embarrassing scenario exists that a lab can't appraise and narrative for its quality just by virtue of the required documentation is depriving. In the succeeding debate varied actions geared toward continuing the assembly of quality area unit forbidden. In essence, 3 zones of institution of those movements are acclaimed. From the highest down these zones are:

1. Quality Management (QM)
2. Quality Assurance (QA)
3. Quality Control (QC)

### 1.1 Seven Basic Tools of Quality

These seven basic tools of quality is selected in such a way to provide hard and fast graphical techniques set called as most excellent method to correct the problems regarding quality. They are result of folks with less coaching in statistics and they will solve the bulk of quality regarding problems. These seven tools are as follows.

**1. Cause-and-effect diagram** (also known as the "fishbone" or Ishikawa diagram. The main uses of Cause-and-effect diagram is product style which is of high quality defect, it will spot some potential factors which inflict impact. The basic reason or cause for state will be supply of changes. But sometimes cause were major classes and classification of these changes.

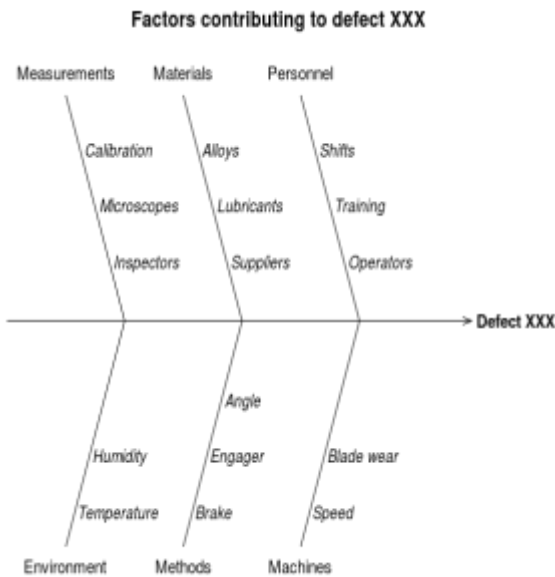


Figure 1: Cause-and-effect diagram

**2. Check sheet:** It is a kind of document in which real time knowledge is collected of that situation so that information can be generated. This way of capturing information could be qualitative or quantitative. If the data is quantitative then check sheet is known as tally sheet. This check sheet consists of seven basic tools of quality control.

Motor Assembly Check Sheet								
Name of Data Recorder: <u>Leibel E. Itago</u>								
Location: <u>Rochester, New York</u>								
Data Collection Date: <u>10/1 - 10/2</u>								
Defect Types (Select Occurrence)	Dates							TOTAL
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Soaked parts noted								20
Misaligned weld								5
Improper tool procedure								0
Wrong part issued								3
Fits on parts								0
Welds in casting								5
Incorrect dimensions								2
Adhesive failure								0
Welding insufficient								1
Spray failure								3
<b>TOTAL</b>		10	13	10	3	2		48

Figure 2: Check sheet

**3. Control Chart:** This control charts also known as Shewchart charts or process-behavior charts and this tool is a applied mathematics method of management help to check the producing or business method is in state of management.



Figure 3: Control chart

**4. Histogram:** The proper distribution of numerical knowledge can be illustrated graphically and correctly with the help of a bar chart. It is just the estimation of the quantitative variable whether they are distributed properly or not. It was formed by Karl Pearson. It is a kind of charts. To form bar charts, the first step is to bin certain values which are changed means whole values should be divided into intervals that should be in series, they will count it so that we can know what percentage can form interval. The bin units are that variables whose intervals are consecutive and non-overlapping. These bins or also known as intervals are to be in the form of adjacent and should be of equivalent size.

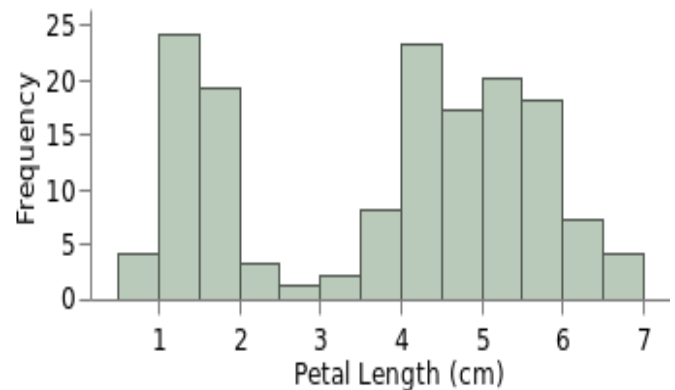


Figure 4: Histogram

**5. Pareto Chart:** The Pareto chart was named as Pareto because it is a type of chart which includes every lines graph and bars in it. And values are explained in the form of digressive order. Hence the sum of additive explained by road.

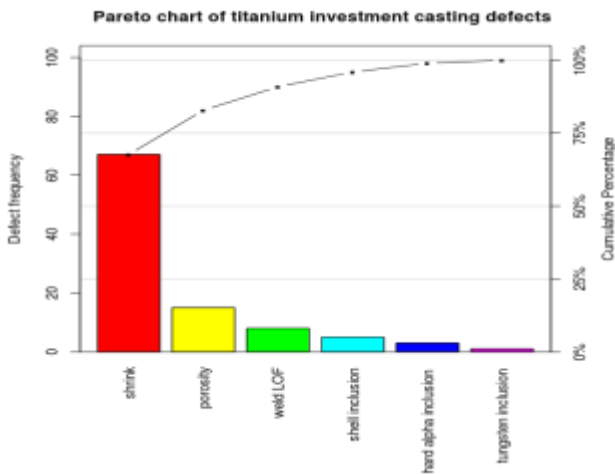


Figure 5: Pareto chart

**6. Scatter Plot:** The scatter plot also known as scatter graph, scatter gram, scatter diagram, scatter chart and it is in the form of mathematical diagram or plot in which exploitation of mathematics coordinates is done so that values for two variables can be shown for the knowledge group. When points are coded in the form of color then some extra variables will be shown or displayed. Some information is shown in the form of some points, then one variable will decide the horizontal axis position. In this way, position of vertical axis can be decided by opposite variable value.

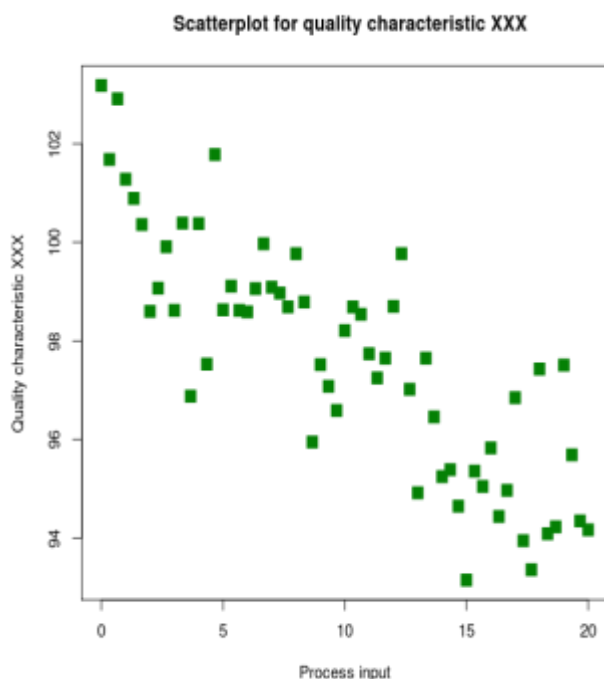


Figure 6: Scatter Plot

**7. Stratification:** In mathematics statistics, representative sampling is one of the methods of sampling done from population. In the survey of mathematics, overall population

changes when association of subpopulation of intervals is done. It is beneficial to sample the universe or stratum. Hence stratification is technique of population to divide the members in subgroups before sampling is done. The strata are exclusive reciprocating that is every part in the population will be assigned to one stratum. It will be put exhaustive together means population should not be excluded. Systematic sampling applied to each stratum according to intervals. It will improve the sample representativeness when sampling error will be reduced. Weighted mean will have less change compared to mean of random sample of population.

### Stratified Random Sampling

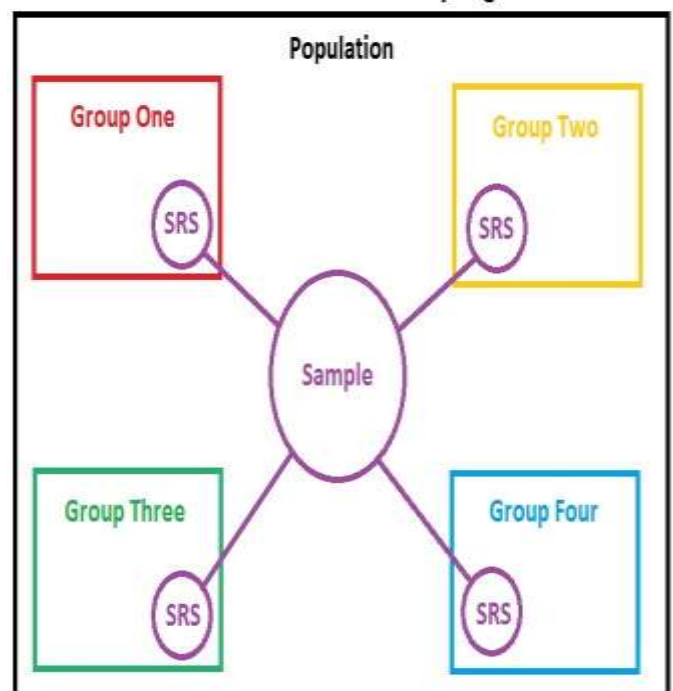


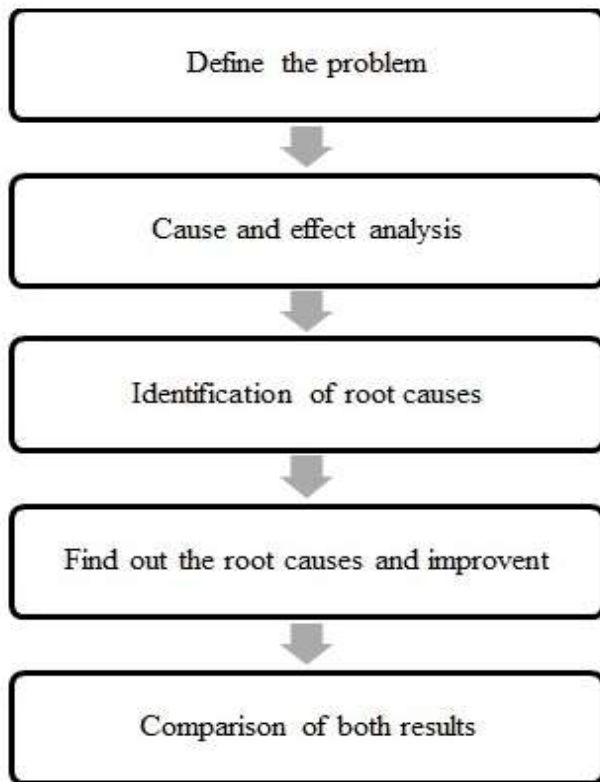
Figure 7: Stratification

## 2. PROBLEM STATEMENT

All industries irrespective of their status and size want to be in competition. Industries can only be competitive if they do more production and have the best quality products. Industries are going through many types of qualities problem in the manufacturing system and are getting benefited by using different quality improvement approaches. ABC enterprise facing problem of in XX truck, when open and close the door the check strap moves upwards and downwards rapidly then check strap fouls with upper & lower flange of check strap mounting bracket, creates a huge tuck noise. The Objectives of the study are:

1. To identify the problem of noise.
2. To improve the noise problem with quality improvement approaches.

### 3. METHODOLOGY



### 4. CONCLUSION

This study an attempt has been made to identify and eliminate unnecessary voice with the application of quality control tools in an automobile parts manufacturing industry. The company is engaged in the manufacturing of various types of automobile four wheeler trucks. In this case study xx truck selected due to their door noise problem. The Quality control tools such as Ishikawa diagrams, Histogram are proposed for productivity improvement. After the implementation, door noise reduction may be achieved up to 7% in case study by utilizing different types of quality control tools and techniques.

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