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Improve the Quality of Tablets by Statistical Tools

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Abstract: *The purpose of this study is improved the quality by improving the weight variation and the productivity of tablets by using the 7 Q.C tool. 7 Q.C tool is one of the important tools that are used in any industry or services provider organization. 7 Q.C tool helps to identify the root causes of the problems and helps to rectify them. Check sheet, Pareto chart, histogram, cause and effect diagram, Control chart, scatter diagram these tools are used for identification of cause of defect. Once the cause become identify can rectify the defects by using this tools. The quality creates the huge impact over the productivity and customer's satisfaction. Quality also creates the effect over the cost of rejection. So the one of the important purpose is save the cost of rejection.*

Key Words: *Control Chart, Defect, Histogram, Pareto Chart, Quality*

I. Introduction

The word Quality mean is reduction in the variability or we can say that Quality is inversely proportional to variability. Every business given high importance to quality because of quality any organization get customer satisfaction easily .Now the high quality provides the competitive advantages to the organization over other organization which provide the same service or product. Now the question raises that why quality is very important for organization? This is because high quality product increases the customer satisfaction and demand of product as the demand of high quality product increase the organization business increase.

Quality in product or services can enhance by using different approaches like application of statistical quality control tool or 7 Q.C tools. These tools help to identify problems by which quality of product go down. And also tell how to improve the quality in the product. There are many benefits of quality. Some of the benefits are given blow.

1) Rejection cost reduces by increase the quality.
2) Customer satisfaction achieved by the improvement in the company.
3) Help to improve the productivity.

The main objective of this study is to improve the quality by improving the weight variation problem and productivity of tablets in pharmaceutical company. The main purpose is to identify the defect in the tablets resolve this problem and improve the productivity. For this study 7 Q.C tool used.

All the data from the selected machine has gathered, studied and analyzed. The defect show the high frequency is the main point which is to be improved. After the application of seven quality control tool compare the pervious data with current data that show us that how much improvement done in quality and productivity.

1.1 Objective:

1) To implementation of Seven Quality control tool.
2) To identity the defect having high frequency.
3) To improve the productivity of tablets.
4) To improve the quality of tablets.

1.2 Scope:

The main scope of this study is given blow.

1) Complete focused over the defect having the high frequency
2) Not all seven Quality control tools applied
3) Compare the improvement in quality before and after the implementation of 7 quality control tools

II. Research Methodlogy

2.1 Study Objective:

The weight variation is the one of the important and critical parameter of the tables. On this parameter tablets batch can hold by drug inspector and claim as the sun standard drug. Company can face the huge lose in form of batch rejection, money, reputation in pharmaceutical market.

2.2 Study Population:

M-Low Tablet

2.3 Sampling Design:

Sample shall be taken from 3 consecutive batches and previous data of 3 consecutive reject batches.

2.4 Sampling procedure:

Samples of 10 tablets are collected after each an hour from 3 concoctive batch.

2.5 Sample Size:

80 tablets from each batch .240 tablets from 3 consecutive batches.

2.6 Research Instruments:

Weighing balance and tablets manufacturing machine.

2.7 Data Collection Procedure:

Primary data collection from the experimentation and secondary data collection done by reviewing the previous data

III. Result And Disscusion

Seven quality control tools are most famous tool using for control and monitor the process and also improve the quality with production. Seven quality tools improve the quality by reducing the cost of rejection. Every company wants to improve the process and wants to reduce their rejections and also rework. Quality is inversely proportional to the rejection. As the quality improves the rejection goes down and also reduces the cost of rejection. Seven quality control tools shows that the process goes toward the mean or away from mean. If the process goes toward means its means that the process goes toward mean. If the process goes away from the mean its mean that the process goes away from means .Quality improve the productivity. Making the product right the first time the total cost goes down and improves the productivity.

In the present study done for the process and quality improvement of M-Low tablet. For the improvement of quality we have to compare the data before and the application of seven of quality control. We check the data of 3 consecutive batches before the application of seven quality control tool through histogram.

Figure-1 (Histogram of 1st Batch)

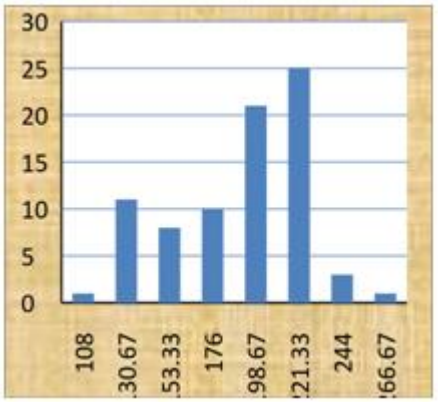


Figure-2 (Histogram of 2nd Batch)

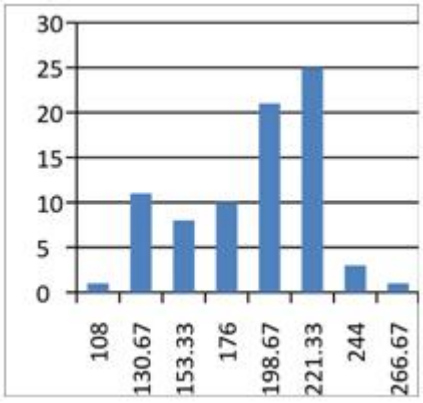
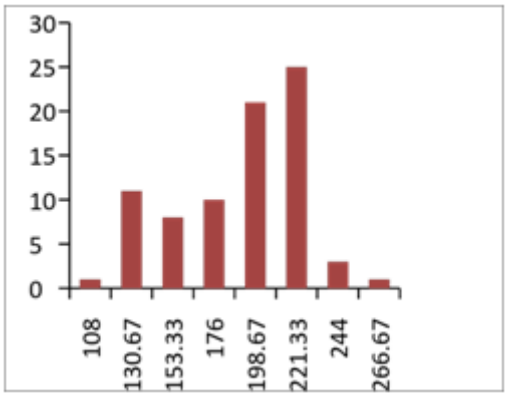


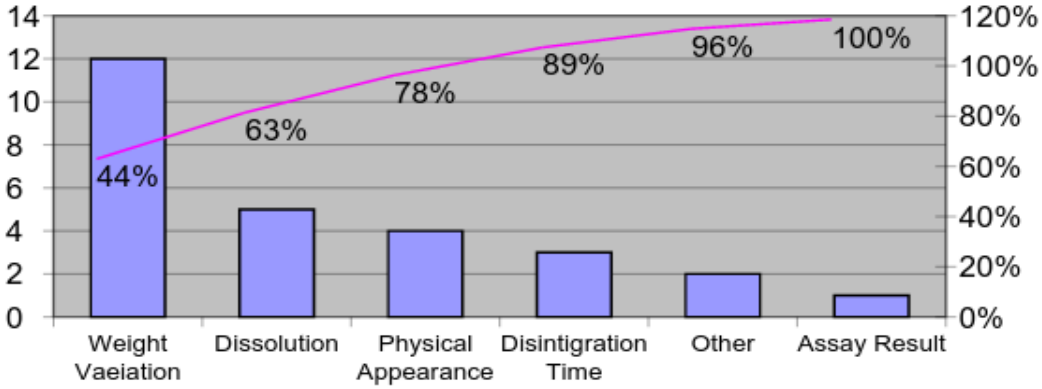
Figure-3 (Histogram of 3rd Batch)



These histograms are of M-Low tablets shows that the process spread and away from the mean value. The mean value of 180 mg and the limit start from 166 mg to 193 mg. These histogram shows that the process goes away from mean toward higher side. The weight variation is the one of the important parameter in the tablet. If the tablets not lie in the above mentation limits consider as sub-standard.

When the application of 7 quality control tools first tofind the defect of high frequency by using praetor chart .Pareto chart is the one of the important tool in the quality improvement.

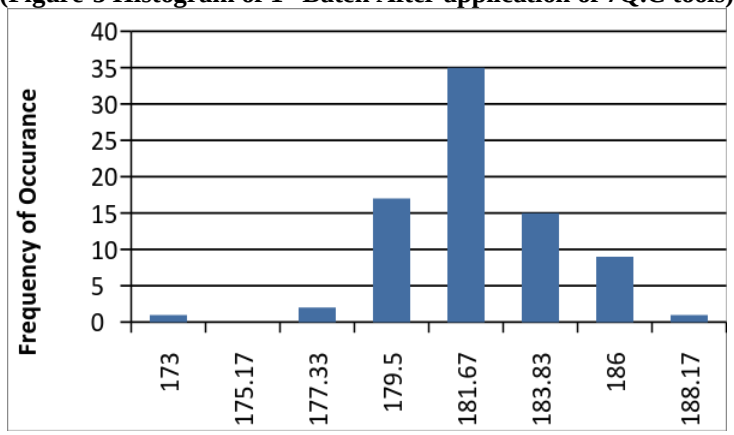
Figure-4 (Pareto Chart)



The Pareto chart shows that weight variation problem has high frequency as compared to other problems. Now we have to rectify this problem by using seven quality control tools.

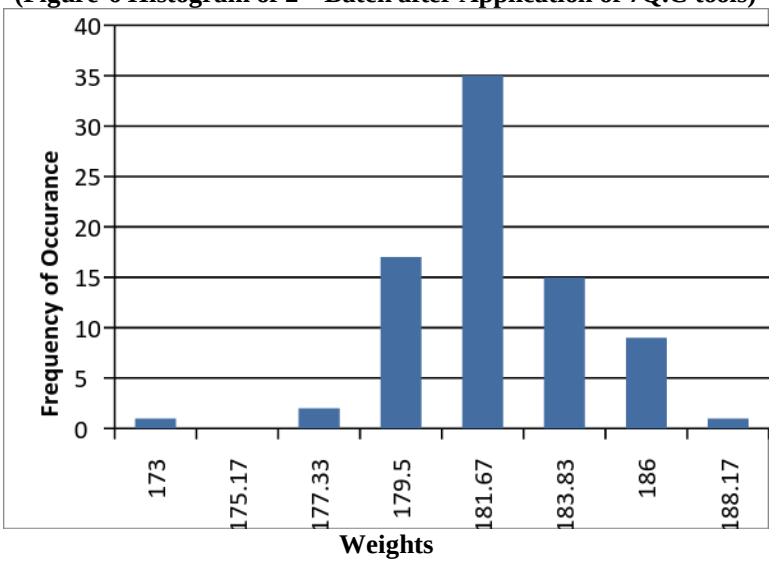
When seven quality control tools applied the weight variation problem reduce and the process goes toward mean and the rejection of tablets goes down. After the application of quality control tools the quality of tablets become batter and also increase the productivity. When plot the histogram of weight variation of three consecutive batches show that process goes toward mean.

(Figure-5 Histogram of 1st Batch After application of 7Q.C tools)

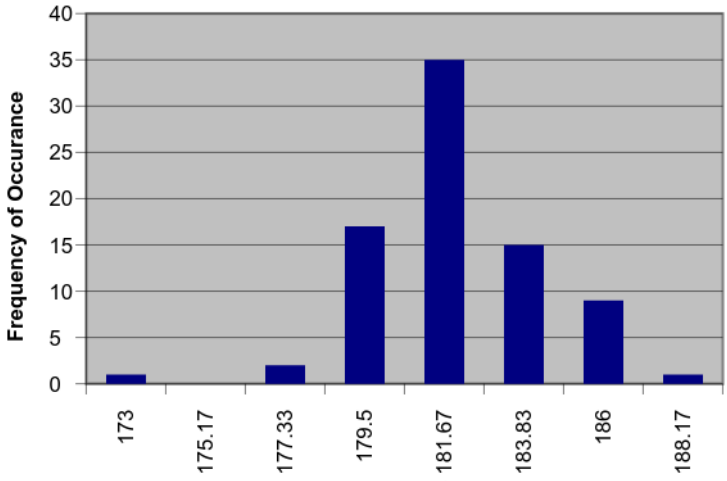


Weight

(Figure-6 Histogram of 2nd Batch after Application of 7Q.C tools)



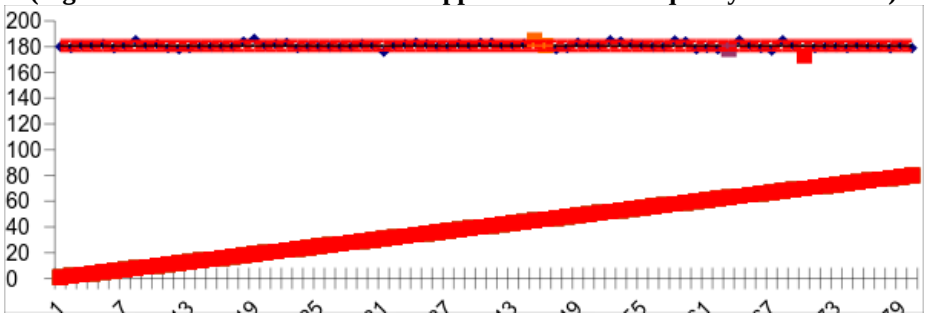
(Figure-7 Histogram of 3rd Batch after application of 7 Q.C Tools)



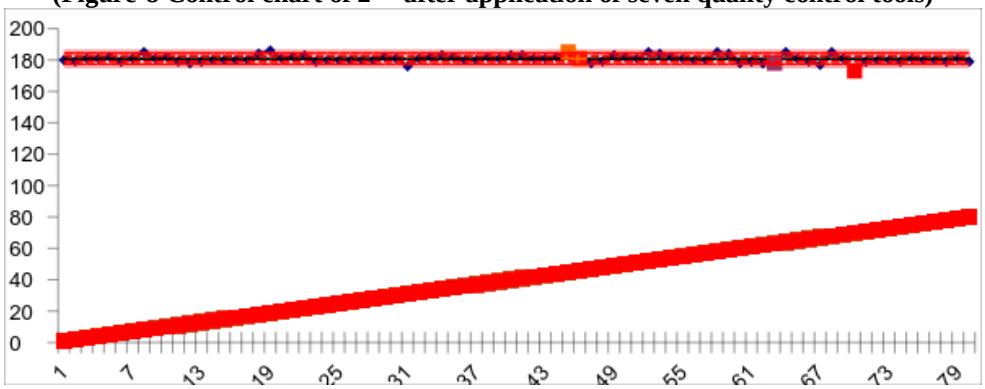
After the application of seven quality control the above histograms Figure-5, Figure-6, Figure-7 shows that the process spread reduces and the process goes toward mean. The weights are lie in the range 166-193. The most of the weights lies around the mean value which is 180mg.

Control chart is another important statistical tool use for monitor the ongoing process in under control or out of control. Control chart has central line and lower and upper limits. Control chart of weight variation range is 166-193. After the application of statistical quality control tools process is statically control and all the values of weight variation are within the limits and near the mean value which is 180mg. The data of 3 consecutive batches are given blow with control chart.

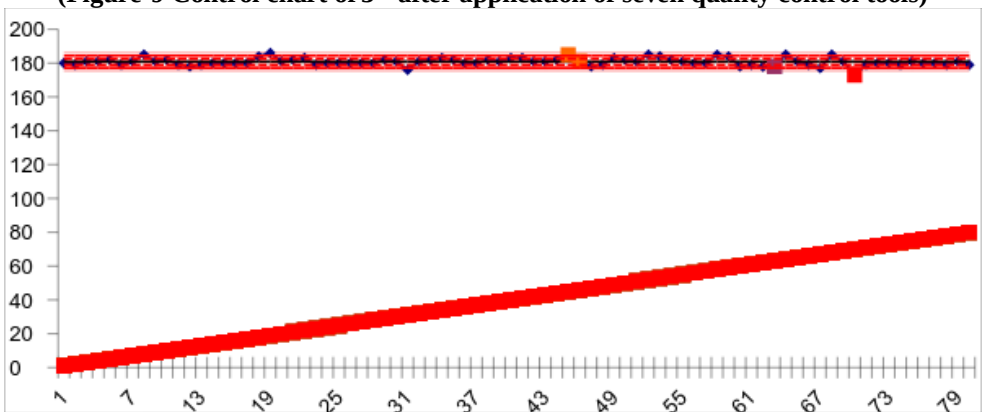
(Figure-7 Control chart of 1st after application of seven quality control tools)



(Figure-8 Control chart of 2nd after application of seven quality control tools)



(Figure-9 Control chart of 3rd after application of seven quality control tools)



The control chart of 1st, 2nd, 3rd consecutive batch shows that process is in under control all the values are in the range 166-193mg and the mean value is 180mg. Most of the values are near to mean value. Control chart is the also known as the management control tool.

IV. Conclusion

A statistical quality control tools is very useful tools for the improvement of quality. When quality improves the production also improve because of less rejection. When we compare the previous data before the application of statistical tools with the data after the application of statistical tools its shows that process was going out of control due which rejection of tablets increase and quality of tablets goes down. Due to this rejection cost increase. This present work shows the improvement in the quality and the productivity of tablets. By using the statistical tools we control the process spread show by the histogram. The histogram show that the process is going out of control and away from the mean value. Then we concentrate the defect of high frequency by using Prato chart. Then we apply

the statistical tools and gather the data of 3 consecutive and plot the histogram show that the process is in under control and near to the mean and also compare with 3 consecutive batch before the application of statistical tools the process spread is very high and away from the mean and goes toward higher side. Control chart is ongoing monitoring tool of process. When the data of 3 consecutive batch polt over the control chart we find that all the values is in range 163-193mg most of the values around mean value which is 180mg.

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