Project Quality Management

PJM 6135

Assignment 2

Title: Quality Analysis on M&M

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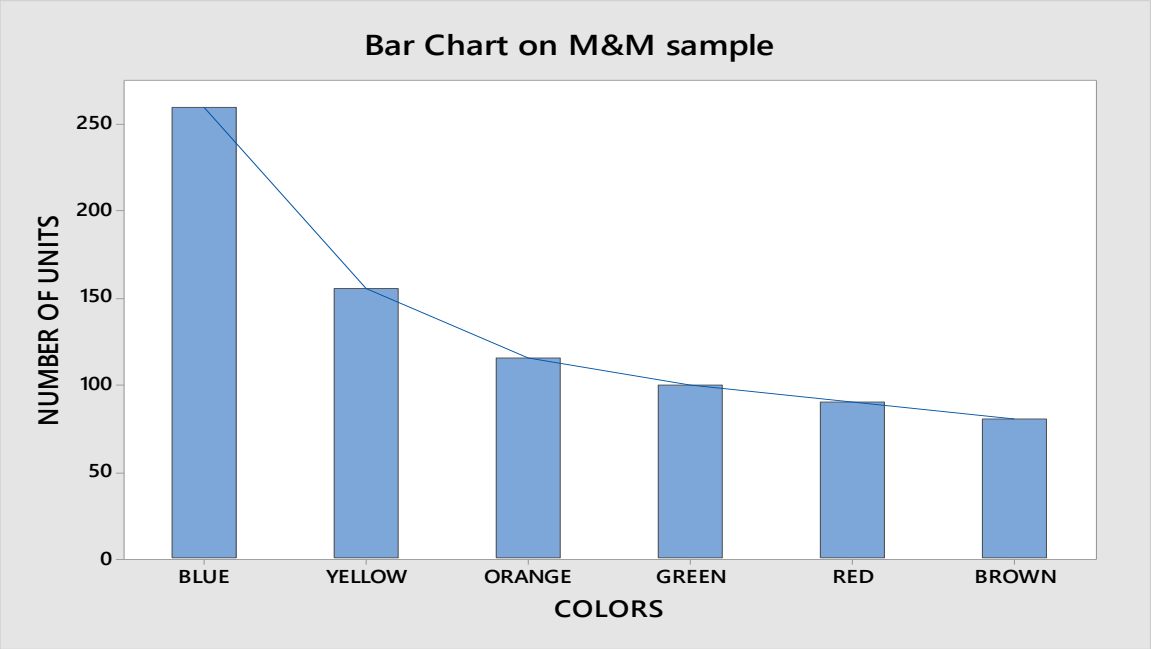
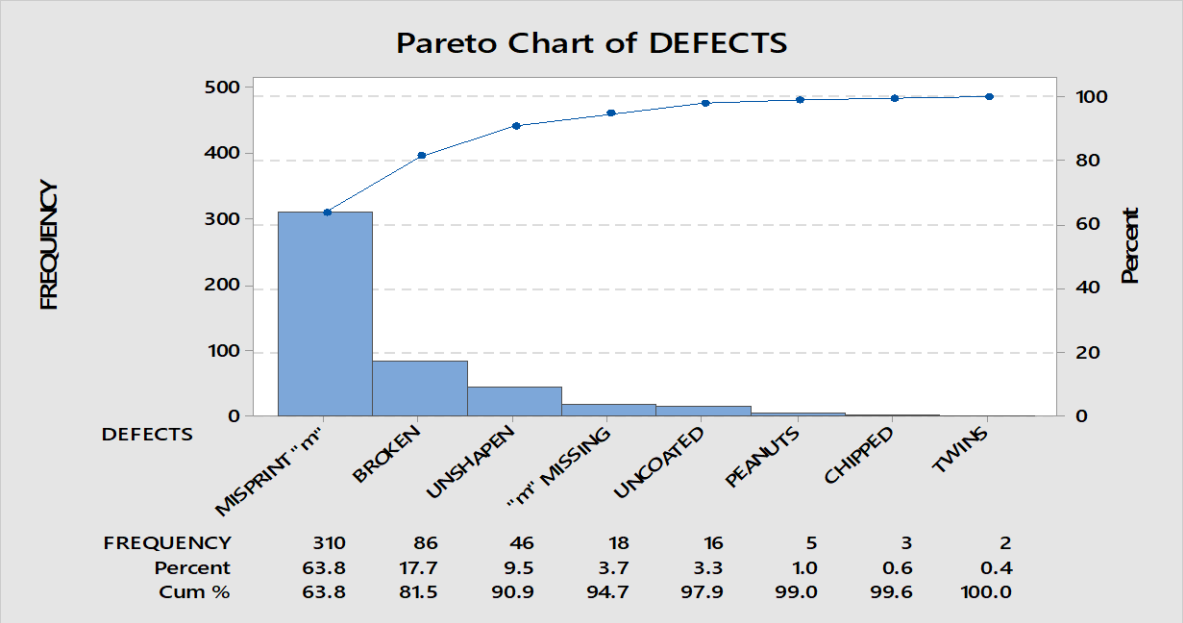
1. CLASSIFICATION OF M&M SAMPLE BASED ON COLORS



The above diagram represents a bar chart on the M&M sample. It categorically displays the frequency (number of units) in the sample of M&M based on the colors.

I found Blue colored M&Ms as the most frequently appearing color in my sample which was approximately 70% more than its yellow counterpart. Yellow was followed by orange with a smaller decrease (about 45%) in frequency. Further, green colored M&Ms were slightly fewer than the orange ones. Red followed green by a tiny negative margin. Finally, brown was the least occurring color in this sample of M&Ms.

2. DEFECTS AND THEIR FREQUENCY



The above figure displays different categories of defects and their corresponding frequency with the help of a Pareto Chart.

I found 310 defects containing misprint “m” which accounts for almost 64% of the total defects. Broken and unshapen constitute 17.7% and 9.5% of the defects respectively. 3.7% of the defects had the missing “m” while 3.3% had M&Ms uncoated. Only 1% of the defects contained peanuts in the sample. Chipped and twins accounted for 1% of the total defect frequency with each contributing 0.6% and 0.4% respectively.

According to Pareto Principle (80-20 law), 80% of the problems or defects are caused by 20% of the reasons. Therefore, in the M&M sample, 80% defects include misprint “m” and broken M&Ms as they(together) contribute 81.5% of the defects. These issues may be linked to only 20% of the possible causes for all the defects. Giving attention to this and fixing the 20% first is important as it would eliminate this 80% of the defects.

3. TYPES OF DATA IN THE SAMPLE OF CANDY

3.1 Color in the sample of candy

The color of a sample of candy is categorical data because the data does not contain any numeric values, rather it is divided into different colors, namely, blue, green, yellow, orange, red and brown. For example, colors cannot be used as numbers/variables for addition, subtraction, multiplication or division

3.2 Number of defects in the sample of candy

The number of defects in the sample of candy is numeric or quantitative data. It is numeric data because the value has a mathematical meaning attached, it can be compared with other values of relevant data. Further, this type of data comes under discrete data as the values are finite and from a fixed range. The defects in a sample of candy containing fixed M&Ms can take up a value only between zero and that fixed value. All these values would be whole numbers. It cannot take up fractional values such as 7/2 or decimal values such as 3.5. Therefore, the number of defects in a sample of candy is discrete numeric data.

3.3 Weight of each M&M candy bag

Although each M&M candy bag says it weighs 12.6 oz (360 grams), this weight data is continuous because the weight depends on the machine or mechanism used to fill these M&Ms in the bags and the weight of each M&M individually. Variation shall be associated with these weights. For instance, the exact weight of one bag could be 12.59996 oz and another could be 12.6064214 oz. However, these weights are usually rounded off as 12.6 oz to maintain ease while recording. Since, there are infinite possibilities for the weight of each M&M candy bag, this data is continuous.

4. MOST FREQUENTLY OCCURRING DEFECT

The most frequently occurring defect is the “misprint m”. This defect may be caused due to either defect/error associated with the printing machine that provides the white-colored, lower case print of “m” with the help of an edible ink. The second possibility of this defect could be the result of the weather conditions during storage or transportation. Climatic conditions may have influenced the print to fade away due to rain or perhaps heat might have caused certain part of the chocolate to melt and lead to such an inconsistency.

5. BEST QUALITY TOOLS TO ANALYZE THE CAUSE OF MOST FREQUENT DEFECTS

Check sheets and Pareto charts would the most apt quality tools to analyze the cause of the highest frequency defect.

Pareto charts follows the 80-20 rule which states that 80% of the defects/problems are caused due to 20% of the same reasons/issues. Fixing this 20% would mean eliminating the 80% defects. It is more practical in the quality world because high priority defects are identified which makes the process simpler and worthwhile.

Check sheets prove to be the easiest and most convenient form to collect/record data. Further, classification checksheet or a defect location checksheet would be particularly useful in the case of identifying M&M defects that need most priority. Either of these would help in linking the defects to the root cause.

6. ROLE OF A CHECKSHEET IN DATA COLLECTION

Checksheets are uniquely designed to obtain the best interpretation of the results in the most concise form. A lot of thinking goes into creating this check sheet as it is custom-made based on the purpose of data collection or it may be developed to suit an industry.

Generally, checksheets are used regularly at different intervals within the project- at the completion of a process or midway into it. Checksheets may be used to identify defects in different situations. It may pertain to a particular manufacturing line, operator, process. The results obtained could be used to interpret different information depending on the design of this checksheet such as defect location, frequency, causes and other elements.

Reference:

Cleary, B. (2009, June 16). Using Check Sheets to Improve Data Analysis. Retrieved September 28, 2018 from https://www.qualitydigest.com/inside/twitter-ed/using-check-sheets-improve-data-analysis.html