SIX SIGMA - DEFECT METRICS

Before we go ahead, let us define two terms:

- A Six Sigma defect is defined as anything outside of customer specifications.
- A Six Sigma opportunity is the total quantity of chances for a defect.

This chapter provides a list formulae normally used to measure different metrics related to Six Sigma defects.

Defects Per Unit - DPU

```
          Total Number of Defects
DPU =     ------------------------
          Total number of Product Units
```

The probability of getting 'r' defects in a sample having a given DPU rate can be predicted with the Poisson Distribution.

Total Opportunities - TO

```
TO = Total number of Product Units x Opportunities
```

Defects Per Opportunity - DPO

```
          Total Number of Defects
DPO =     ------------------------
          Total Opportunity
```

Defects Per Million Opportunities - DPMO

```
DPMO =    DPO x 1,000,000
```

Defects Per Million Opportunities or DPMO can be then converted to sigma values using Yield to Sigma Conversion Table given in Six Sigma - Measure Phase.

According to the conversion table:

```
6 Sigma = 3.4 DPMO
```

How to find your Sigma Level

- Clearly define the customer's explicit requirements.
- Count the number of defects that occur.
- Determine the yield-percentage of items without defects.
- Use the conversion chart to determine DPMO and Sigma Level.

Simplified Sigma Conversion Table

```
If your yield is:   Your DPMO is:   Your Sigma is:

     30.9%             690,000          1.0
     62.9%             308,000          2.0
     93.3               66,800          3.0
     99.4                6,210          4.0
     99.98                 320          5.0
```

99.9997	3.4	6.0