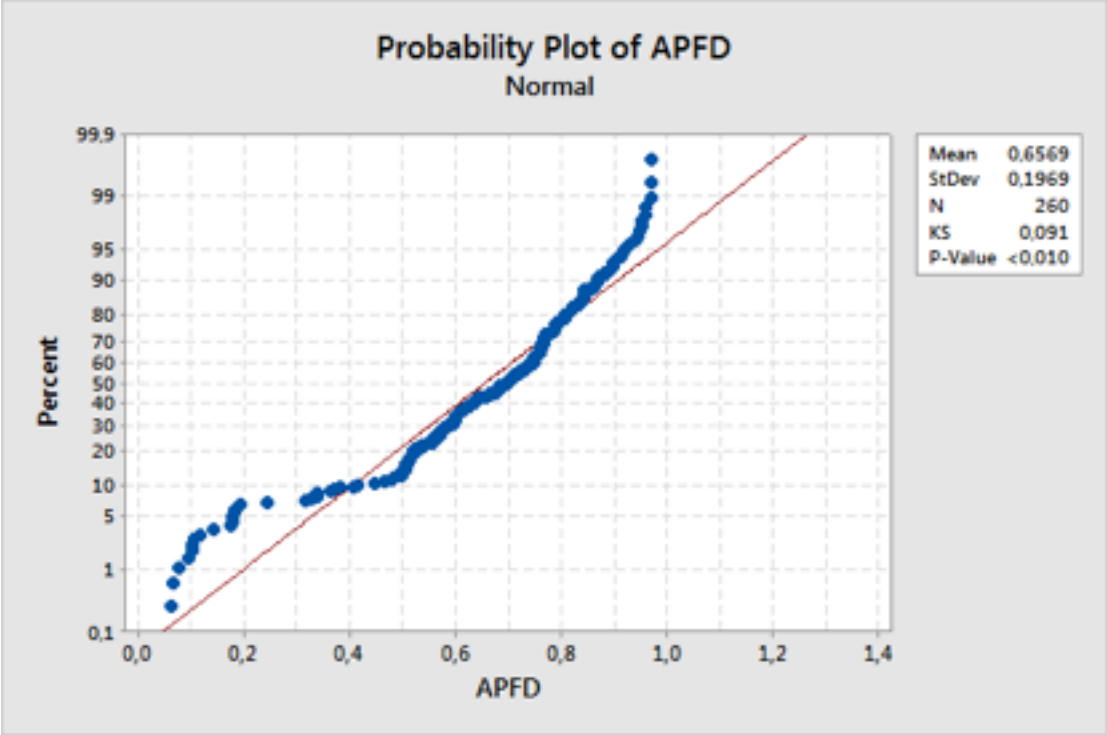
Analysis 6 – seeded fault type.
1 factor (seeded fault type) and 2 treatments (mutation or manual).

H0 – The means of TCP techniques execution results obtained using mutated and manually seeded faults are equal.
H1 – The means of TCP techniques execution results obtained using mutated and manually seeded faults are significantly different.

Data is available here.

Normality test:
As the sample has 260 values, Kolmogorov-Smirnov test is used.



Given that the p-value is < 0.010, which is less than the established level of significance 0.05, the sample has a non normal distribution.

As the distribution is not normal, a non-parametric hypothesis test is used. In this case, we use Kruskal-Wallis test.

Kruskal-Wallis Test: APFD versus SEEDED_FAULT_TYPE

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Kruskal-Wallis Test on APFD

SEEDED_FAULT_TYPE    N  Median  Ave Rank      Z
manual             160  0,6335     109,9  -5,59
mutation           100  0,7645     163,5   5,59
Overall            260             130,5

H = 31,29  DF = 1  P = 0,000
H = 31,30  DF = 1  P = 0,000  (adjusted for ties)
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A p-value of 0,000, which is less than the established significance level of 0.05, indicates that the null hypothesis can be rejected, thus, accepting the alternative hypothesis that seeded fault type has a significant effect on APFD results.