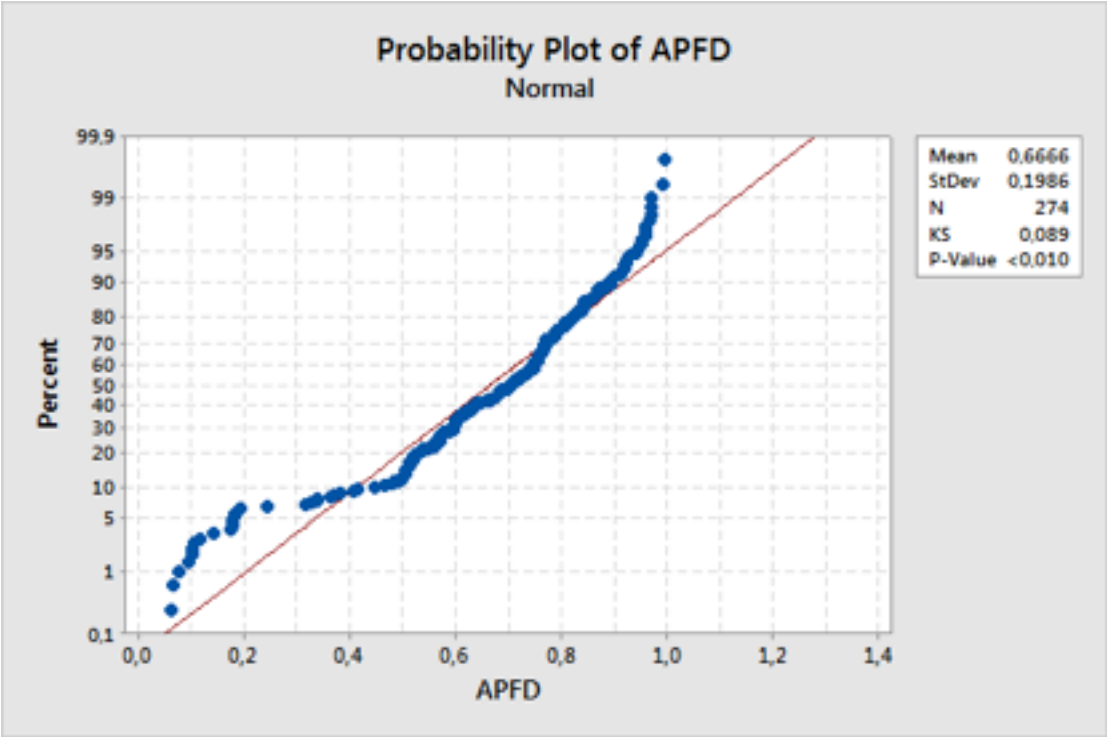
Analysis 3 – test case source effect on APFD.
1 factor (test case source) and 2 treatments (provided or generated).
Provided – test cases were constructed by the developers of the system under test.
Generated – test cases were constructed by researchers.

H0 – The means of TCP techniques execution results obtained using provided and generated test cases are equal.
H1 – The means of TCP techniques execution results obtained using provided and generated test cases are significantly different.

Data is available here.

Normality test:
As the sample has 274 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 TEST_CASE_SOURCE

```
Kruskal-Wallis Test on APFD

TEST_CASE_SOURCE     N  Median  Ave Rank      Z
generated          238  0,7195     141,5   2,14
provided            36  0,5800     111,1  -2,14
Overall            274             137,5
```

```
H = 4,59  DF = 1  P = 0,032
H = 4,59  DF = 1  P = 0,032  (adjusted for ties)
```

A p-value of 0,032, 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 source code source has a significant effect on APFD results.