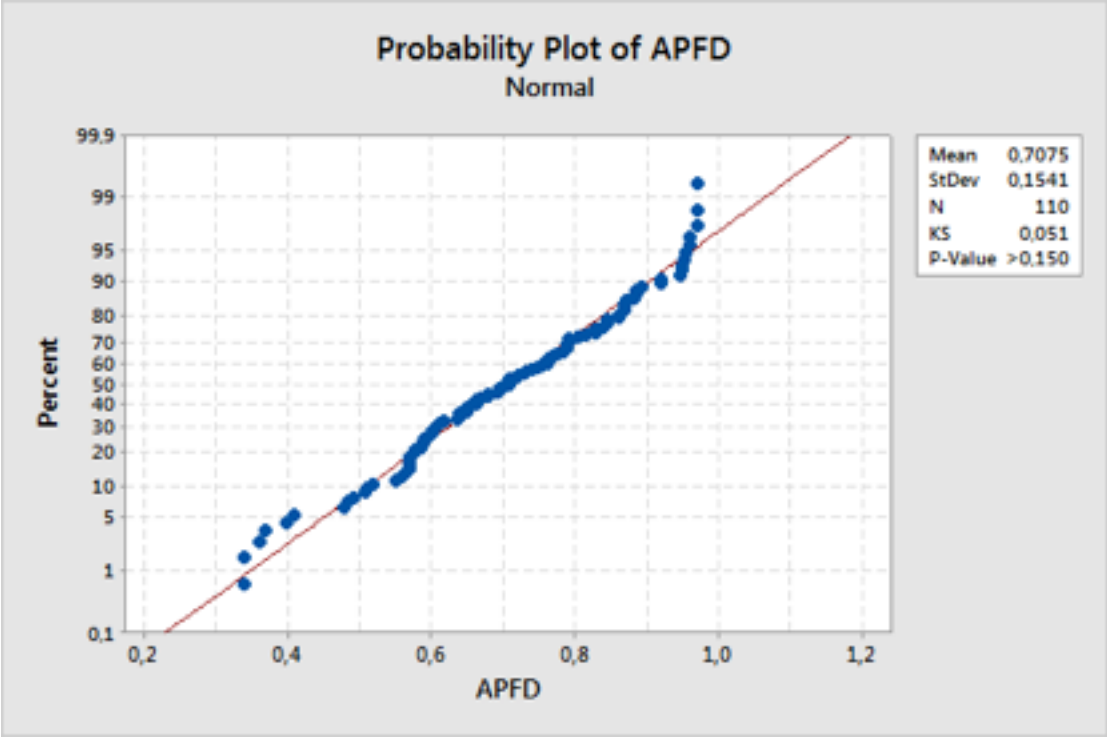
Analysis 8 – Test granularity.
1 factor (Test granularity) and 2 treatments (class level, method level).
We consider only results where the authors specify if the test suite is applied at a class or method level.

H0 – The means of TCP techniques execution results obtained using class level and method level test granularity are equal.
H1 – The means of TCP techniques execution results obtained using class level and method level test granularity are significantly different.

Data is available here.

Normality test:
As the sample has 110 values, Kolmogorov-Smirnov test is used.



Given that the p-value is > 0.150, which is bigger than the established level of significance 0.05. Thus, the sample has a normal distribution.

As the distribution is normal, a parametric hypothesis test is used. In this case, we use One-way ANOVA test.

One-way ANOVA: APFD versus TEST_GRANULARITY

```
Method

Null hypothesis         All means are equal
Alternative hypothesis  At least one mean is different
Significance level      α = 0,05

Equal variances were assumed for the analysis.
```

Factor Information

Factor	Levels	Values
TEST_GRANULARITY	2	class level; method level

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
TEST_GRANULARITY	1	0,1405	0,14048	6,20	0,014
Error	108	2,4472	0,02266		
Total	109	2,5877			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0,150530	5,43%	4,55%	1,89%

Means

TEST_GRANULARITY	N	Mean	StDev	95% CI
class level	55	0,6718	0,1405	(0,6315; 0,7120)
method level	55	0,7433	0,1599	(0,7030; 0,7835)

Pooled StDev = 0,150530

A p-value of 0,014, 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 test case granularity has a significant effect on APFD results.