



KEY WORDS

- ✓ Multivariate Paired Sample
- ✓ Type-I Error
- ✓ Multivariate Paired Hotelling T^2 Test
- ✓ Spatial sign test
- ✓ Permutation test
- ✓ Bootstrap

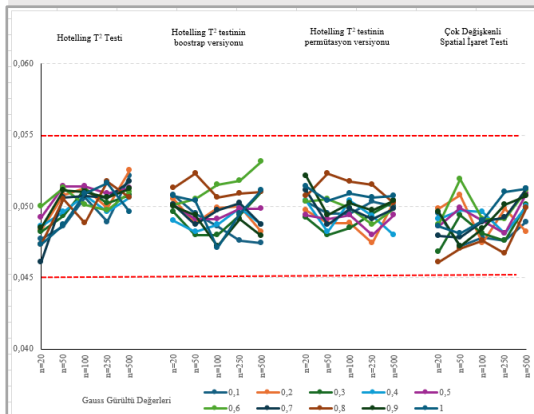
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COMPARISON OF ALTERNATIVE NON-PARAMETRIC TEST METHODS TO MULTIVARIATE PAIRED HOTELLING T^2 TEST

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THESIS ABSTRACT

The performance of several nonparametric alternative test methods to the Hotelling T^2 test, used for multivariate paired samples, was comparatively evaluated in terms of Type-I error control. Specifically, the study included the bootstrap version, the permutation version of the Hotelling T^2 test, and the multivariate spatial sign test, all of which were assessed through simulation studies. The comparison was carried out under various simulation scenarios generated by changing sample sizes, the number of variables, values in the variance-covariance matrix, and the degree of deviation from multivariate normality using different levels of Gaussian noise. Based on the results obtained, it is recommended that in situations where parametric assumptions are violated, the multivariate spatial sign test and the permutation version of the Hotelling T^2 test be preferred as more statistically robust and reliable alternatives.

APPLICATION AREAS OF THE THESIS RESULTS

In applied statistical research, if assumptions are violated, it would be appropriate to use alternative testing methods to obtain more reliable results.

ACADEMIC ACTIVITIES

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