International Journal of Applied Mathematics
& Statistical Sciences (IJAMSS)
ISSN(P):2319-3972 ; ISSN(E): 2319-3980
Vol. 5, Issue 1, Dec – Jan 2016; 49-62

International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations

A MULTIVARIATE EXTENSION OF SHAPIRO-WILK'S TEST AND POWER INVESTIGATION FOR MIXED ALTERNATIVES

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ABSTRACT

It is well known that even though many procedures are available for testing univariate normality, the procedure developed by Shapiro and Wilk (1965) is a very effective and powerful test to detect a variety of departures from normality. A generalization of the Shapiro-Wilk procedure to test for multivariate normality has been given recently by Alva and Estrada (2009). The present paper considers a different approach to extend the Shapiro-Wilk procedure for testing multivariate normality. An extensive simulation has been carried out to generate the critical values of the proposed statistic for dimensions 2 and 5. Power comparison of the new approach to the one given by Alva and Estrada (2009) is presented for a choice of mixed alternatives. The software for this work is developed in R Language.

KEYWORDS: Testing Multivariate Normality, Mixtures of Distributions, Monte Carlo Simulation