

ABSTRAK

Analisis Variansi Multivariat (MANOVA) adalah salah satu teknik analisis statistik yang merupakan perluasan dari Analisis Variansi Univariat (ANOVA). MANOVA digunakan untuk membandingkan vektor rata-rata dari I populasi normal multivariat di mana ada n_i pengamatan berdimensi d yang saling bebas dari populasi ke- i dan variabel-variabel tak bebasnya mempunyai matriks dispersi yang sama. Masalah pokok dalam MANOVA adalah uji hipotesis tentang kesamaan vektor rata-rata, yaitu $H_0 : \mu_1 = \mu_2 = \dots = \mu_I$ berdasarkan matriks galat

$$\mathbf{E} = (\mathbf{Y} - \mathbf{XB})'(\mathbf{Y} - \mathbf{XB})$$

dan matriks hipotesis

$$\mathbf{H} = (\mathbf{AB})'[\mathbf{A}(\mathbf{X}'\mathbf{X})^{-1}\mathbf{A}']^{-1}(\mathbf{AB}).$$

MANOVA dilakukan melalui tahapan-tahapan tertentu, diawali dengan pendugaan parameter model, pencarian matriks galat dan matriks hipotesis dan diakhiri dengan menguji hipotesis tentang kesamaan vektor rata-rata dari variabel-variabel tak bebas.

ABSTRACT

Multivariate Analysis of Variance (MANOVA) is one of the statistical analysis techniques, which is an extension of Univariate Analysis of Variance (ANOVA). MANOVA is used to compare the mean vectors of I multivariate normal population where there are n_i independent d -dimensional observations from the i th population and the dependent variables have the same dispersion matrix. The main problem in MANOVA is hypothesis testing on the equality of mean vectors, that is $H_0 : \boldsymbol{\mu}_1 = \boldsymbol{\mu}_2 = \dots = \boldsymbol{\mu}_I$ based on error matrix

$$\mathbf{E} = (\mathbf{Y} - \mathbf{XB})'(\mathbf{Y} - \mathbf{XB})$$

and hypothesis matrix

$$\mathbf{H} = (\mathbf{AB})'[\mathbf{A}(\mathbf{X}'\mathbf{X})^{-1}\mathbf{A}']^{-1}(\mathbf{AB}).$$

MANOVA is carried out through certain steps, started from estimate the model parameter, finding the error matrix and the hypothesis matrix and finally testing the hypothesis of the equality of mean vectors of the dependent variables.