

ABSTRACT

THE CHARACTERISTICS OF THE MAXIMUM LIKELIHOOD ESTIMATOR OF LOADING FACTOR IN FACTOR ANALYSIS

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The main process in factor analysis is the extraction towards a group of variables so that it shapes one or more than one factor that is called loading factor. Loading factor is a quantity of correlation between the variable (indicator) and the latent construct (factor). Some of methods in loading factor estimation are principal component method, maximum likelihood method, and principal factor method. In this study, the result shows that maximum likelihood estimation of loading factor $(\hat{\Psi}, \hat{L})$ is $\hat{\Psi} = \text{diag}\{S - \hat{L}\hat{L}'\}$ and $\hat{L} = \hat{\Psi}^{1/2} P (\Delta - 1)^{1/2}$. In this study we generate mathematically the characteristics of the maximum likelihood estimator of loading factor, the result shows that maximum likelihood estimation loading factor $(\hat{\Psi}, \hat{L})$ is unbiased, minimum variance and consistent.

Keywords: factor analysis, loading factor, parameter estimation, maximum likelihood estimation