

## ABSTRAK

### PEMBANDINGAN ANTARA METODE *MAXIMUM LIKELIHOOD*, *WEIGHTED LEAST SQUARE* DAN *UNWEIGHTED LEAST SQUARE* DENGAN BEBERAPA UKURAN SAMPEL PADA MODEL PERSAMAAN STRUKTURAL (MPS)

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Model persamaan struktural (MPS) adalah metode analisis multivariat yang digunakan untuk menggambarkan hubungan linear secara simultan antara variabel indikator dan variabel *laten*. Pemodelan struktural yang sering digunakan adalah berbasis koragam (covarian) dikenal dengan LISREL (*Linear Structural Relationship*). Pada LISREL terdapat tujuh metode pendugaan yang dapat digunakan dan sebagian besar menggunakan proses iteratif. Pada penelitian ini digunakan tiga metode pendugaan parameter yaitu *Maximum Likelihood* (ML), *Weighted Least Square* (WLS) dan *Unweighted Least Square* (ULS). Penelitian ini bertujuan untuk membandingkan metode *Maximum Likelihood*, *Weighted Least Square* dan *Unweighted Least Square* pada beberapa ukuran sampel dan ingin mengetahui model terbaik dari masing-masing metode dengan beberapa ukuran sampel yaitu  $n=50$ , 100 dan 150 dalam Model Persamaan Struktural (MPS).

Hasil dari perbandingan metode *Maximum Likelihood*, *Weighted Least Square* dan *Unweighted Least Square* dengan ukuran sampel  $n=50$ , 100 dan 150 menunjukkan bahwa metode *Maximum Likelihood* lebih baik dalam menduga model dari semua ukuran sampel dibandingkan dengan metode ULS dan WLS. Pada metode *Maximum Likelihood* ukuran sampel  $n=100$  memiliki model yang lebih baik daripada ukuran sampel  $n=50$  dan  $n=150$ . Pada metode ULS dan metode WLS pada ukuran sampel  $n=50$  memiliki model yang lebih baik daripada model ukuran sampel  $n=100$  dan  $n=150$ .

**Kata kunci** : Model Persamaan Stuktural (MPS), LISREL (*Linear Structural Relationship*)

## **ABSTRACT**

### **COMPARISON BETWEEN MAXIMUM LIKELIHOOD, WEIGHTED LEAST SQUARE AND UNWEIGHTED LEAST SQUARE METHOD WITH SOME SAMPLE SIZE IN STRUCTURAL EQUATION MODEL (SEM)**

**By**

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Structural Equation Modelling (SEM) is a multivariate statistic analysis that is used to describe linear relationship simultaneously between indicator variable and latent variable. Structural modelling that is commonly used is covariance base known as LISREL (Linear Structural Relationship). In LISREL, there are seven estimation methods that is used and mostly using iterative process. This research used three parameters of estimation methods : Maximum Likelihood (ML), Weighted Least Square (WLS) and Unweighted Least Square (ULS). The aim of this research was comparing between Maximum Likelihood, Weighted Least Square and Unweighted Least Square Method for some different sample sizes and examining the best model among each methods toward those different sample sizes of  $n=50$ , 100 and 150 in structural equation modelling (SEM).

The results of comparing between Maximum Likelihood, Weighted Least Square and Unweighted Least Square method toward the sample sizes of  $n=50$ , 100 and 150 show that Maximum Likelihood method was the best estimation modelling above all different sample sizes than ULS and WLS methods. Maximum Likelihood method for sample size  $n=100$  had been the best modelling than the sample size of  $n=50$  and  $n=150$ . WLS and ULS method for sample size  $n=50$  had been the best modelling than the model for sample size of  $n=100$  and  $n=150$ .

**Key words:** Structural Equation Modelling (SEM), LISREL (Linear Structural Relationship)