Fini Rizki Amaliah, 2019. **Modelling of Bank Health Level Based on Multilevel Mixed-Effects Ordered Logistic Regression.** This research is under supervised Drs. Suliyanto, M.Si and Drs. Sediono, M.Si, S-1 Statistics Major, Mathematics Department, Faculty of Science and Thecnology, Airlangga University, Surabaya

ABSTRACT

A bank is a business entity that aims to satisfy credit needs both with its own means of payment or obtained from other people. Banking has a very important role in the economic activities of a country. The more advanced a country is, the greater the banking role of a country. Therefore, bank health is an important thing that must be considered. The correlation between the soundness of the bank and the factors that influence it will be examined so that the mathematical model is obtained. The mathematical form will show the factors that significantly influence. Factors that are thought to affect the soundness of the bank are Non-Performing Loans (NPL), Good Corporate Governance (GCG), Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), and Return On Assets (ROA). In this study, the data used is panel data which is a combination of cross section data and time series which can also be applied to the multilevel model approach in this case time is considered as the incidence level and includes level 1, while level 2 is Conventional Commercial Banks in Indonesia that chosen. The data used in this study is secondary data obtained from the annual reports of each bank accessed from the official website of the Indonesia Stock Exchange, www.idx.co.id. The statistical analysis used in this study was multilevel mixed-effects ordered logistic regression. Multilevel mixed-effects ordered logistic regression is a multilevel logistic regression that contains fixed effects and random effects. Fixed effects predictor variables are Non-Performing Loans (NPL), Good Corporate Governance (GCG), and Capital Adequacy Ratio (CAR) while random effects predictor variables are Net Interest Margin (NIM) and Return On Assets (ROA). In logistic regression, normal assumption and homosedasticity is not applied like linear regression. Parameter estimation of multilevel mixed-effects ordered logistic regression using the method of maximum likelihood estimation (MLE) with Gauss-Hermitte Quadrature iterations. Based on the best model obtained from STATA software, the factors that influence the health level of banks in Indonesia are Non-Performing Loans (NPL) and Good Corporate Governance (GCG). The Likelihood Ratio Test results state that the ordinal logistic regression model on panel data with random effects is better than the standard ordinal logistic regression model. The classification accuracy in multilevel mixed-effects ordered logistic regression is 80%.

Keywords : Bank Health Level, Ordered Logistic Regression, Multilevel, Mixed Effects.