Two Parameter Logistic Model with Lognormal Response Time for Computer-Based Testing.

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- **Abstract:** In addition to the information on response pattern/accuracy, Computer-Based Testing (CBT) can also generate information on response time. This research contributes to develop two-parameter logistic model with random variables of response time for CBT power test. Based on that model, the probability of the test taker answering the test questions correctly is influenced by the test taker's ability, the test question's discriminating power, the question's level of difficulty, the delay due to the test question's factors and response time. The development of this model aims to improve the parameter estimation of the logistic model on Item Response Theory (IRT) which does not consider the response time of the model. This model is simultaneously developed using joint distribution concept, by multiplying the conditional distribution of response accuracy (two-parameter logistic model) by response time with marginal distribution of response time. The marginal distribution chosen in this study is lognormal distribution because it has positive value in the form of positive skewed according to the characteristics of the response time. To prove the model is suitable for power test, is tested using CBT data. The study found that the simultaneous model generated from the multiplication between the twoparameter logistic model integrated with response time and the lognormal response time model is an appropriate model for CBT power test.

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