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KEYWORD: POLYNOMIAL REGRESSION/ 2 INDEPENDENT VARIABLES/
INTERACTION/ WELL-FORMULATED MODEL

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IN POLYNOMIAL REGRESSION IN CASE OF 2 INDEPENDENT VARIABLES
HAVING INTERACTION. THESIS ADVISOR : ASSOC.PROF.THEERAPORN
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The purpose of this research is to compare the method of model building in polynomial regression in case of 2 factors having simple interaction. The four comparison on model building are model building by ordinary least square method (OLS) , model building by backward elimination method (BE), model building by stepwise regression method (SW) and model building by well-formulated model method (WF). The criteria employed for the comparison are mean square error (MSE) and use ratio of different average mean square error (RDAMSE) to support decision. The distributions of random errors are normal distribution with mean equal to 0 and standard deviation equal to 5,10,20 and 25. This study used sample size of 35,50,75 and 100 , significant level of 0.05 and 0.10 , highest degree of independent variables for fit dependent variable building (MU) of 2,3,4,5 and 6 , highest degree of independent variables for dependent variable building in beginning model (ME) of 2,3,4,5 and 6. The data of this experiment are generated through the Monte Carlo simulation technique with 500 repetitions. The following are the results of this research :

The factors that effect MSE of the four methods are highest degree of independent variables for fit dependent variable building , standard deviation of error , sample size and highest degree of independent variables for dependent variable building in beginning model. The results of these factors can be summarized as followed:

1. In case of low MU (MU \leq 3)

If standard deviation of error is low ($\sigma \leq 10$), BE's method is the best when sample size is low ($n \leq 50$). WF's method is the best when sample size is high ($n > 50$) or MU near to ME. But if standard deviation of error is high ($\sigma > 10$), BE's method is the best in general.

2. In case of high MU (MU $>$ 3)

If standard deviation of error is low ($\sigma \leq 10$), WF's method is the best in general. But if standard deviation of error is high ($\sigma > 10$), BE's method is the best when sample size is low ($n \leq 50$). WF's method is the best when sample size is high ($n > 50$).

ภาควิชา.....

ลายมือชื่อผู้คิด.....

สาขาวิชา.....

ลายมือชื่ออาจารย์ที่ปรึกษา.....

ปีการศึกษา.....

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....