

พิมพ์ต้นฉบับบทความวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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STATISTICS

## : MAJOR

KEY WORD: FACTORIAL DESIGN / ROTATED DESIGN / RESPONSE SURFACE

ORATAI YODNIL : A COMPARISON ON THE EFFICIENCY OF FACTORIAL EXPERIMENTS AND ROTATED DESIGN. THESIS ADVISOR : ASSOC.PROF. SUPOL DURONGWATANA, Ph.d. 155 pp. ISBN 974-636-722-6.

The purpose of this research is to compare two experimental designs those have continuous factors those two designs are Factorial experiments and Rotated Design. This study used data generated from first order model and second order model. The criteria employed for the comparison is the average noncentrality parameter (LA). The distribution of random errors are normal distribution with mean equal to 0, 5, 10 and 20 and standard deviation equal to 5, 10, 15, 20, 25 and 30. This study used sample size of 7, 8, 9 and 10. The data of this experiment are generated through the Monte Carlo simulation technique with 1,000 replications. The following are the result of this research :

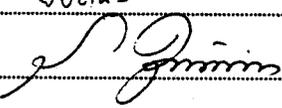
1. Rotated Design is better than Factorial experiments in almost every case in this study. Rotated Design has the average noncentrality parameter greater than Factorial experiments in almost every case in this study. But when the sample size and the standard deviation of error are increase the average noncentrality parameters of both experimental designs were closed.
2. The factors that effect (LA) of two experimental designs are standard deviation of errors, mean of errors, the sample size at center point and the function of  $y(i)$  and  $x(i)$ .

ภาควิชา.....สถิติ

สาขาวิชา.....สถิติ

ปีการศึกษา..... ๒๕๕๑

ลายมือชื่อนิติ..... อ.พงษ์ วรรณ

ลายมือชื่ออาจารย์ที่ปรึกษา..... 

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....