

378.1

R61

2007

COMPARATIVE ANALYSIS ON THE PERFORMANCE OF C&SU
ENGINEERING STUDENTS ON THE QUALIFYING
EXAMINATION FROM A.Y. 2002-2006

SPECIAL PROBLEM

LHEO S. RODIL

College of Arts and Sciences
CAVITE STATE UNIVERSITY
Indang, Cavite

April 2007

✓
**COMPARATIVE ANALYSIS ON THE PERFORMANCE OF CvSU
ENGINEERING STUDENTS ON THE QUALIFYING
EXAMINATION FROM A.Y. 2002-2006**

A special problem submitted to the
Faculty of the Physical Science Department
Cavite State University
Indang, Cavite

In partial fulfillment
of the requirements for the degree of
Bachelor of Science in Applied Mathematics
(with specialization in Statistics)

LHEO S. RODIL
April 2007

ABSTRACT

RODIL, LHEO SALVACION, “Comparative Analysis on the Performance of CvSU Engineering Students on the Qualifying Examination from A.Y. 2002 – 2006”. Special Problem, Bachelor of Science in Applied Mathematics (with Specialization in Statistics), Cavite State University, Indang, Cavite, March 2007, Adviser: Renelyn R. Cordial.

The study was conducted to: (1) determine which among the subjects included on the qualifying examinations highly affect the results of the examination; (2) compare each academic year and determine which performs best and which performs least based on the results of the qualifying examination; (3) formulate the logistic regression equation between the examination results (dependent variables) and the grades on the different subjects on the examination (independent variables). The independent variables considered were the different subjects included on the qualifying examination such as Algebra (X_1), Trigonometry (X_2), Analytic Geometry (X_3), Differential Calculus (X_4), Integral Calculus (X_5), Chemistry 1 (X_6), Chemistry 3 (X_7), Physics 1 (X_8), and Physics 2 (X_9).

It was found out that there were six subjects included in the qualifying examination which affected the result of the qualifying examination with the use of point-biserial correlation coefficient. These were Algebra (X_1), Trigonometry (X_2), Analytic Geometry (X_3), Differential Calculus (X_4), Integral Calculus (X_5), and Chemistry 3 (X_7). Among these subjects, Trigonometry (X_2) with t – value of 4.036, highly affected the result of the qualifying examination while the subject Physics 1 (X_8) with t – value of 0.357 had the least effect on the result of the qualifying examination from the critical value of the t – test statistics of 1.96.

Among the performances of each academic year on the qualifying examination, A.Y. 2001 – 2002 had the best performance after taking the qualifying examination with 41 (87.23 %) students who passed and six (12.77 %) students who failed while the least performance on the qualifying examination was recorded during A.Y. 2003 – 2004 with 28 (50.91 %) students who passed and 27 (49.09 %) students who failed on the said examination.

The derived logistic regression model was:

$$\text{logit}(Y) = 7.632 - 1.097 \times \text{Algebra}(X_1) - 1.357 \times \text{Trigonometry}(X_2)$$

The logistic regression model showed that Algebra (X_1), and Trigonometry (X_2) were the predictors which highly affected the probability of the students to pass the qualifying examination in College of Engineering and Information Technology.

TABLE OF CONTENTS

	Page
BIOGRAPHICAL DATA.....	iii
ACKNOWLEDGMENT.....	iv
ABSTRACT.....	vii
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xiii
LIST OF APPENDICES.....	xiv
INTRODUCTION.....	1
Statement of the Problem.....	2
Hypothesis.....	3
Objectives of the Study.....	3
Significance of the Study.....	3
Scope and Limitation of the Study.....	4
Definition of Terms.....	4
Conceptual Framework.....	6
REVIEW OF RELATED LITERATURE.....	7
Overview of Logistic Regression Analysis.....	7
Application of Logistic Regression Analysis.....	8
METHODOLOGY.....	11
Sources of Data.....	11
Categorization of Variables.....	11
Data Gathering Procedure.....	12

Sampling Procedure and the Respondents.....	12
Statistical Analysis.....	12
Point – Biserial Correlation Coefficient.....	12
Descriptive Statistics.....	13
Logistic Regression Model.....	13
Test for Significance of the Coefficients.....	14
Goodness-of-Fit.....	14
Association of Predictable Probabilities and Observed Responses.....	15
Assessing Model Fit.....	15
Estimation and Interpretation of Parameters.....	16
Classification Functions.....	16
RESULTS AND DISCUSSION.....	18
Number of Samples.....	18
Descriptive Statistics.....	18
Point – Biserial Correlation Coefficient.....	20
Logistic Regression Analysis.....	23
Association of Predicted Probabilities and Observed Responses.....	25
Assessing Model Fit.....	25
Classification Results.....	26
SUMMARY, CONCLUSION, AND RECOMMENDATION.....	28
Summary.....	28
Conclusion.....	30

Recommendation..... 30

BIBLIOGRAPHY..... 31

APPENDICES..... 33

LIST OF TABLES

Table Number		Page
1	Summary of Variables.....	11
2	Percentage Distribution of Qualifying Examination Results....	19
3	Point-Biserial Correlation Coefficient between the Grades and Performances on the Qualifying Examination.....	23
4	Logistic Regression Model for the Qualifying Examination Results.....	25
5	Association of Predicted Probabilities and Observed Responses.....	25
6	Criteria for Assessing Model Fit.....	26
7	Classification Results.....	27

LIST OF FIGURES

Figure		Page
1	Conceptual Framework in analyzing the performance of Engineering Students in the qualifying examination.....	6
2	CvSU Engineering Students who took the Qualifying Examination from A.Y. 2002 – 2006.....	18

LIST OF APPENDICES

Appendix		Page
A.	Letter of Request.....	34
B.	Course Description of the Subjects included on the Engineering Qualifying Examination.....	37
C.	Raw Data.....	41
D.	Classification Data for Logistic Regression Model.....	48
E.	Curriculum Vitae.....	55

**COMPARATIVE ANALYSIS ON THE PERFORMANCE OF CvsSU
ENGINEERING STUDENTS ON THE QUALIFYING
EXAMINATION FROM A.Y. 2002-2006^{1/}**

LHEO S. RODIL

^{1/}A special problem submitted to the faculty of the Physical Science Department, College of Arts and Sciences, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Applied Mathematics (with specialization in Statistics). Prepared under the supervision of Prof. Renelyn R. Cordial.

INTRODUCTION

Quality education is the best thing that an institution or school can give to produce best students and become the best professionals in the near future. However, in order to have these best professionals, the school needs to produce best students. This is the reason why Cavite State University, one of the premiere universities in the historic province of Cavite, has a way of choosing these best students in their program. The College of Engineering and Information Technology in this institution conducts qualifying examination every year to determine who among the incoming third year engineering students are allowed to continue the degree of their interest or choice such as BS Electronics and Communications Engineering, BS Civil Engineering, BS Electrical Engineering, BS Agricultural Engineering, BS Industrial Engineering and BS Computer Engineering. To pass this examination, the examinee should get at least 70 percent of correct answers. However, the college also gives incentives like exemption in taking the qualifying examination. If a sophomore student has a Grade Point Average (GPA) of 2.25