LATENT STRUCTURE ANALYSIS OF TWO-WAY CONTINGENCY TABLE: A COMPUTER IMPLEMENTATION

SPECIAL PROBLEM

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A Special Problem
Submitted to the Faculty of the
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ABSTRACT

SANGRIA, ELMER DIEZ and VICEDO, ROMEL TAPIA. **"Latent Structure Analysis Of Two- Way Contingency Table : A computer Implementation".** Bachelor Of Science in Applied Mathematics. Physical Sciences Department, College of Arts and Sciences, Cavite State University, Indang, Cavite. April 2003.
Adviser: Ms. Analiza S. Pacia.

Latent Structure Analysis is a tool measuring unobserved or immeasurable variables. It also used to find an existing latent variable that would explain the relationship of the measurable or observed variables. With the existing latent variable defined by the observed variable, the related observed variables become independent. A program was created using SPSS (Statistical Packages For Social Sciences) that conducts latent structure analysis for a two- way contingency table. The program defines a latent variable with two and three latent classes. The significance of the model is tested using chi-square statistics. The ten significant variables (course, college, gender, registration status, high school award, preference in studying, choice of the course, affiliation to organization, number of students in the class, and high school GPA) are applied to test the success of the program.

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[1/]An undergraduate special problem presented to the faculty of the Department of Physical Sciences, College of Arts and Sciences, 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). Under the supervision of Miss Analiza S. Pacia.

INTRODUCTION

Many concepts in the social sciences often encounter the problem of estimating some special variables which cannot be measured directly, but for which a host of observable (manifest) variables is available, which are more or less strongly related to the unobservable (latent) variable of interest and so can serve as indicators for it. Often there are several groups of variables, each of which is related to a particular phenomenon of interest, which is not directly observable. The variables within each group will typically be highly correlated, as they are indicators of the same (unobservable) phenomenon. In addition, there will be correlations between variables of different groups indicating certain causal relations between these groups. The object then is to measure these causal relations by finding suitable latent variables for each group of manifest variables and by representing the relations that may exist between groups by corresponding relations between the latent variables.