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# SOME DETERMINANTS OF STUDENT PERFORMANCE IN THE FIRST COLLEGE-LEVEL IS COURSE

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## Abstract

*Recruiting and developing information systems professionals is consistently identified as one of the key issues facing information systems managers (Brancheau, Janz, & Wetherbe, 1996). The information systems (IS) profession is one of the fastest growing occupations and the demand for IS professionals is expected to continue growing over the next several years (Bureau of Labor Statistics). However, many sources report a growing gap between the demand for IS workers and the supply of such workers (Bureau of Labor Statistics.) Further exacerbating this gap is the fact the number of women in the field has declined since 1986 (Carver, 2000.) In order to adequately staff the IS profession, we need to make sure that an adequate number of students are completing information systems degrees. One of the ways to ensure students complete an information systems degree is to assure success in the early information systems classes.*

*This paper proposes a way to predict academic performance in the first college-level information systems course. We are developing a model to measure performance in this course based on models used in Accounting classes. This model will be compared for male and female students. We hope to show what determines performance and thus better understand how students can be successful in this course.*

## Prior Research

What determines academic performance? Prior research has shown that prior academic performance, standardized measures of aptitude (e.g., SAT scores), and effort or motivation explain a significant portion of the variation in class performance (e.g., Eskew & Faley, 1988; Grabe & Latta, 1981). Eskew and Faley (1988) developed a more complete model to explain student performance in the first college-level financial accounting course, which showed that previous accounting experience in high school and college also explained some of the variance in academic performance. We plan to follow Eskew and Faley model of student performance modified to the first college course in IS. We will focus on the introductory IS course and student performance in that course.

## Measures

The independent variables being used in this study are summarized in table 1. The academic aptitude and past and present academic performance measures are straightforward and are based on prior such studies (e.g., Eskew & Faley, 1988; Grabe & Latta, 1981.) A measure of effort or motivation is being developed based upon scores on early homework assignments in the first IS course. Homework in this course is assigned weekly, with the two lowest homework grades dropped. Wolfe (1981) used a similar measure of effort or motivation in using weekly quiz grades as a measure for effort. She found that the grades on the first five quizzes (out of fifteen) were highly predicative of final grades. Eskew and Faley (1988) used the number of quizzes taken for a measure of effort and motivation. We intend to use homework grades (following Wolfe) but will compare that measure with number of homework assignments completed (as used by Eskew and Faley).

**Table 1. Independent Variables and Measures**

Independent Variable	Measure
Academic aptitude	SAT score
Past academic performance	High school grades in math and English
Present academic performance	Collegiate GPA
Effort/motivation	Grades on homework assignments completed
Previous exposure to same subject material	Yes or no
Exposure to generally related subject areas	Number of programming classes in high school or college

The measure of previous exposure to same subject area will be a student self report and could be based on a high school course, community college course or other university for transfer students. A list of generally related subject areas is being developed and includes programming classes and computer tool classes.

Our dependent variable, academic performance in the first college-level IS course, will be determined by final course grade and will be reported by the instructor of the course.

## Objectives of this Study

The objective in this study is to predict academic performance in the first college-level IS course. The first hypothesis is that the model will be similar to the model used in other disciplines.

**Hypothesis 1:** Academic aptitude, past academic performance, present academic performance, effort/motivation, previous exposure to the same subject material, and previous exposure to programming classes will relate to academic performance in the first college-level IS course.

The second hypothesis is stated as a null hypothesis. The proposed model for student performance will be the same for males and females.

**Hypothesis 2:** The model for academic performance will not be affected by the individual's gender.

## Methodology

The participants for this survey include students enrolled in a required introductory information systems course at a single university. Data is being collected in three ways:

- (1) Students are surveyed about prior computer classes using a written questionnaire.
- (2) Motivation data and performance data is being collected from the professors' grade sheets for the classes.
- (3) SAT scores, high school and college grades are being collected from the registrar's office.

Participation is voluntary and students are assured that their participation or lack of participation would not influence their course grades. Students are asked to give their written permission for data collection from the professors and the registrar.

The data will be analyzed using regression analysis to check the model and check for gender moderating effects. SPSS statistical package will be used for data analysis.

## Contributions

One of the ways to ensure students complete an IS degree is to assure success in the early IS classes. This study can help by making sure that students who are interested in IS as a career are not discouraged by poor grades in their first college-level IS course. We propose a model to measure performance in this course. This model will be compared for male and female students and hope to show what determines performance and thus better understand how students can be successful in this course.

For IS faculty, this study can indicate which students might be at risk for failure in their first college-level IS course. If the independent variable, Effort/Motivation, is a strongly associated with success in this course, failure to turn in the first few assignments can serve as an early warning indicator for potential failure and a signal that the professor should use early remediation.

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