

Proposed Model for Analyzing Employer and Student Perceptions of Information System Internships.

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INTRODUCTION

The Metropolitan State College of Denver is a comprehensive state supported four year college in the heart of the city of Denver. It is located on a non-residential campus that is shared by the University of Colorado at Denver and the Community College of Denver. The campus was carved out of a residential neighborhood in the late 1960s and is completely enclosed by the surrounding urban area. The boundaries of the physical campus cannot be extended. Unprecedented growth over the past fifteen years has placed stresses on the campus. Almost 19,000 students attend Metropolitan State College with another 20,000 attending the other two schools. Parking is at a premium. Classroom usage is at capacity from early morning to late evening five days per week. Metropolitan State College of Denver is a modified open enrollment college that has been given the mission of educating all those who seek higher education studies. To effectively fulfill this mission, the College must continue to accept new applicants. During the past fifteen years, the College has embarked upon an initiative to deliver many of its courses in alternative formats to the conventional classroom setting. Many courses are now delivered online and non-classroom formats such as internships have become popular.

The Computer Information Systems Department supports a highly successful internship program that allows qualified students the opportunity to work in the information systems industry under the supervision of an experienced professional. Students are allowed to take the internship for academic credit with the course being treated as an upper division elective within the Department. This paper proposes a model for analyzing the perceptions of employers and students in the delivery of internships.

Background for Internship Program

A Cooperative Education Internship allows a student to work at a job outside of the college environment and receive academic credit for it. The job is subject to the approval of a faculty supervisor from within the CIS department. The student, the employer, and the faculty supervisor agree on a set of objectives that must accomplish by the student during a specified period of time. After the student is employed and the internship agreement is signed, the student will register for academic credit just like registering for any other course. At the end of the semester, the student must turn in documentation proving that the objectives of the internship have been met. The faculty supervisor will then assign a grade for the course.

The internship will provide a variety of benefits to the students including:

- an opportunity to use state-of-the-art technology.
- allowing students to share knowledge with others
- the possibility of a genuine employment opportunity upon graduation
- allowing students to demonstrate skills to employers
- providing a source of income to finance education
- providing students an opportunity to expand classroom skills
- providing students an opportunity for on-the-job experience

The School of Business also benefits in many ways from the internship program including:

- offering a more attractive curriculum
- providing an opportunity for more faculty interaction with the business community
- allowing faculty to share expertise with students in a more meaningful way providing a means to position MSCD students as a first choice for employers.

Any student enrolled at Metropolitan State College of Denver who meets the following requirements is eligible to participate in the internship program. The student must:

- be current enrolled at MSCD as a degree-seeking student with a declared major. (Enrolling only in a certificate program does not count.)
- have sophomore standing (at least 30 credit hours).
- have completed one full semester at Metro State.
- have at least a 2.5 overall GPA to be in a compensated internship position. be enrolled at MSCD for a minimum of 12 credit hours **per year** to be in a compensated internship position.
- be related to information systems and must be approved by a faculty supervisor in the CIS department.

Although not a formal requirement, the CIS department strongly recommends that CIS majors and minors should have completed at least 60 credit hours and have taken the sophomore level CIS core courses (CIS2010 and CIS2110) before enrolling in an internship.

A student can complete an internship in any information systems area. The faculty supervisor always has the final say on whether an internship is acceptable. Below are some guidelines on what is acceptable and what is not.

Some examples of acceptable positions include (but are not limited to) the following:

- Writing substantial programs in any commonly recognized computer language.
- Playing an important role in designing any significant information system.
- Conducting problem-solving and troubleshooting activities.
- Developing and writing managerial reports.
- Installing computer hardware and software.
- Playing an important role in the administration of a network.
- Playing a significant role in the design and implementation of a network
- Designing and implementing a database (or a significant revision of a database)..
- Playing an important role in the administration of a database.
- Playing an important role in the administration of a web site.
- Designing, developing, significantly revising, and/or implementing a web site.
- Playing an important role in the decisions for major acquisition of hardware and/or software including writing RFPs.
- Providing technical training to employees of an organization.
- Working directly with students in an instructional capacity in an academic environment.

Some examples of unacceptable positions include (but are not limited to) the following:

- Simply entering data and/or generating standardized reports.
- Working at the desk of an academic computer lab.
- Answering help desk calls and simply assigning the problems to others for resolution.
- Any position that involves onsite supervision by a person who is deemed unqualified by your faculty supervisor.

Internships are designed to provide students with the opportunity to learn new skills under the guidance of experienced professionals. They are not a reward for past experience or previously acquired knowledge. If someone has been at the job for a relatively short period of time (generally one year or less) the student can use the current job without question. If someone has been on the job for a longer term, he or she still may be eligible for an internship if the responsibilities have changed significantly in the past year. CLEP exams, credit-by-examination, and portfolio review are used to provide academic credit for prior knowledge.

An internship, by definition, requires the student to secure a position (either paid or unpaid) with an employer. Internship placements may occur in one of three ways:

- a placement through the MSCD Cooperative Education Office.
- a position secured independently by the student.
- In rare circumstances, ongoing employment in a current position.

Regardless of how the placement is obtained, if the student desires credit, the student must follow the procedures for applying for academic credit as detailed in *the Student Handbook of the Cooperative Education Center*. All students seeking academic credit must register with the Coop Education Office, enroll in CIS3980, and be under the supervision of a faculty member in the department in which they enrolled for credit.

The student, the employer, and the faculty supervisor will all sign an agreement that clearly states a set of objectives. These objectives must be detailed and measurable. The agreement will also contain a due date and a description of items that must be submitted. To complete the internship, the student must accomplish all of the agreed upon objectives and provide convincing evidence in the final submission that everything agreed was accomplished. The student must be employed for a minimum of fifty hours for each hour of academic credit earned up to a maximum of three credit hours. The student must submit the following material to the supervising faculty member at the conclusion of the internship.

- A formal report written in narrative form which clearly demonstrates that the student has meet the agreed upon objectives.
- A journal written concurrently with the described activity.
- An evaluation form completed by the student.
- An evaluation form completed by the employer.

Survey Instrument

Student interns and employers are both required to complete an evaluation form that assesses the learning of the intern. The relevant section of the evaluation form that is completed by the employer is shown below. The student completes a self-evaluation form that asks the same fourteen questions shown below. Both the student and the employer complete the forms independently.

Listed below are several qualities and skills which have been found to be important in assessing student performance. Please place an X on the line to indicate where you feel your student's behavior is best reflected. Please rate those areas applicable to your student.	
	Low High
Knowledge	.....
Dependability	.....
Interpersonal relations	.....
Initiative	.....
Ability to work independently	.....
Creativity	.....
Ability to make decisions	.....
Organizational skills	.....
Adaptability	.....
Enthusiasm & positive outlook	.....
Ability to accept directions	.....
Communication skills	.....
Competence	.....
Resourcefulness in seeking information.	.....

The above form attempts to measure the perception of a variety of characteristics including competencies, expectations, problem-solving skills, service learning skills, and communication (interview and presentation) skills. Using cluster analysis described in Theil (1971), Pindyck & Rubinfeld (1981), and Judge, et al (1981), the number of categories and the characteristics included in each category will be determined. The perceptions of the employers and the interns will be analyzed in terms of the following data dimensions.

Data Dimensions

The application for the internship contains a great deal of demographic data. Using the application, several dimensions may be defined. The characteristics of the internship may be divided into the following dimensions. First, the internship could be PAID or VOLUNTEER. There are many different possible TYPES of internships but a review of the data indicates that almost all could be placed into one of the following six categories:

- Programming
- End User Support
- Database Development
- System Analysis and Design
- Networking
- Web Page Development

The ORGANIZATION that hires the intern can be categorized into one of the following three:

- Private For Profit Company
- Government Organization (including Federal, State, and Local Government)
- Private Not For Profit Volunteer Organization

The ACADEMIC STANDING of the intern is readily available. This includes the intern's academic class as measured by the credit hours earned and the grade point average the student has attained.

Data Set And Matched Pairs

The data set consists of the internships offered by the Computer Information Systems Department for the years 1998 to 2010. The number of internships has varied significantly during that period. During the late 1990s until about 2002, the CIS Department supervised about fifty internships per year. That number dropped dramatically during the mid 2000s and began to rise again in about 2008 to about thirty internships per year. The data points between the perceptions of the employers and the interns are matched pairs that will be analyzed with a t-test following the methodology found in several sources including Milke & Berry (1982).

Conclusions

This paper presents a framework for the analysis of the perceptions of the employers and the interns on the value of the internship experience. Most of the data have been entered and preliminary analysis is complete. The data may be massaged in a variety of different ways to analyze the perceptions of employers and interns. Among the important factors are the types of internships, the types of organizations that hire the interns, and if the internship is volunteer or paid. Since there is a significant time frame of data available, one could also look the changes in the perceptions over time.

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