

# A Comparative Analysis Of Student Job Placement In Management Information Systems: An Exploratory Study

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## Abstract

*Due to the recent economic recession and the significant reduction in Information Technology (IT) expenditures of corporate America, job opportunities have become very scarce for college graduates, especially in the field of Management Information Systems (MIS). Both MIS students and faculty have to start finding ways to improve the full time job opportunities for students by helping students do better in their studies and GPAs, adding internship experience, obtaining more majors, taking extra technical courses, etc. in addition to their regular course work. However, little research has been conducted to investigate the relationships between these factors and a full time job opportunity in this field. The current study intends to explore those important issues by conducting a survey among more than 200 MIS seniors in three big universities in USA. The implication of the survey findings is discussed in the final section of the paper.*

## Introduction and Literature Review

The shortage of full time jobs for college students is evident in almost every field in recent years. The U.S Labor Department forecasts 18 million graduates will be competing for the 14 million college-level jobs in 2005. As former Secretary of Labor Robert Reich pointed out, 80 % of these jobs will require some vocational (on-the-job) training [22]. It is not surprising that students and their families are increasingly concerned about undergraduate preparation for employment after four years of increasingly expensive tuition [6]. The job market situation for the new MIS graduates is even worse than other areas due to the unexpected phenomenon in the field such as dramatic corporate IT budget cuts and the offshore outsourcing trend. There is an urgent need for conducting a field study to investigate the job placement problem in this field, especially under the current economic conditions.

An intern experience is defined as a structured and career-relevant work experience obtained by students prior to graduation from an academic program [14, 20]. Internship is known as an effective aid in improving job opportunities [6, 9, 14, 20, & 22] and has often been used by recruiters as a long-term strategy for maintaining a strong presence on campus during economic downturns and other periods of limited hiring [6]. The percentage of new hires that had internship experience has been steadily increasing [14]. As a matter of fact, respondents to NACE's 1999 Employer Benchmark Survey ranked "offering internships and co-op" as the most effective technique for hiring technical talent. About 85 percent of respondents typically hire co-ops, interns, and/or summer employees from the same set of schools each year [11]. Colleges have responded to this industry demand. According to the American Counsel on Education, 9 out of 10 four-year colleges now offer some sort of structured work experience related to a student's major or career interest [19].

Literature [9, 17] also suggests that college internships offer a variety of other benefits to students, such as reinforcing the skills learned from courses, having a better understanding of organizations and career focus, etc. In addition, an internship softens the shock of transitioning from the world of academics to the working world; provides students with a means of bridging the gap between career expectations developed in the classroom and the reality of employment in the real world; benefits universities in their corporate fund-raising efforts by creating personal connections [6, 9].

There has been no agreement about the impact of Grade Point Average on the first job employment. Based on the study done by Albrecht et al [1], 80.5 percent of all recruiters reported a preferred minimum GPA. In particular, business recruiters held true to their emphasis on grades: 77.2 percent reported a preference of more than 3.0. The results of the study indicate that employers value both high grades and high involvement in career development activities, although the value placed on grades is somewhat higher. However, the results of the study [15] indicated that no significant differences between GPAs of employed and unemployed graduates. In other words, based on the evidence of this study, the assumption that students with high grades have a better chance of obtaining employment is not valid. This study also found that there are numerous factors that could be valid predictors of success in obtaining initial employment. Another interesting finding was that involvement in campus activities was an indicator of success, but only for women.

Other studies have examined the impact of internship, not on job placement but on academic performance and other areas. English and Koeppen [3] found that internship assignments made available to students in their earlier academic careers can significantly and positively affect grade performance. A similar finding was shown in the study done by Healy and Mourton [7].

Gault et al [6] studied the effects of an internship experience on career skill preparation and success by using recent business alumni of a mid-sized northeastern U.S. public university as subjects in the study. The results demonstrated significant early career advantages for undergraduates with internship experience. Advantages included less time to obtain a first position, increased monetary compensation, and greater overall job satisfaction.

Although there have been many studies of employment opportunities for college students, none have focused on the field of MIS; most are somewhat outdated and do not consider the current economic condition. In addition, prior studies rarely controlled for potential confounds on full-time job offers, such as the nature of the internship, multiple majors, gender differences, the timing of the MIS major declaration. Further research is needed to examine how these various factors can be translated into job opportunities, particularly in the field of MIS.

This field survey is designed to investigate the current MIS job market and the various factors that can affect MIS students' job offers. The data collected from the participating students in the MIS senior classes are divided into two groups, one group with one or more job offers (hereafter called the *job offered group*) and the other group with no job offer (hereafter called the *no job offered group*). The factors addressed above, which potentially influence job offers, are examined between those two groups in an effort to find significant differences and unique patterns. The results of this study will provide useful information and guidance to students, teachers, advisors, and recruiters in conducting and preparing for job search-related activities in the field of MIS. Although the main focus of this study is the field of MIS, this research framework can be applied to any discipline.

## **Methodology**

For the collection of data, six MIS students participated in the pilot test in 2001. Based on the feedback from the pilot test, the authors, with the assistance of three statisticians, refined the questionnaire. Seniors from three AACSB-accredited business schools were participants in the empirical study during the spring of 2002. Two of the schools were in the mid-west region, and the other school is located in a metropolitan area in the mid-south region. 213 seniors participated in the survey. Information about demographic background, the nature of MIS internships, and information about full time job offers were solicited in the questionnaire. Student participation in 2002 was optional and anonymous. Of the 213 participants, 82 percent of the participants majored in MIS; 18 percent majored in other business disciplines.

Demographically, 52 percent of the subjects were male, 48 percent subjects were female. 64 percent of them had a single major; 34 percent subjects pursued double majors, and two percent had three majors. Among subjects who had double or triple majors, the percentages corresponding to non-MIS majors were as follows: marketing (37%), finance (35%), accounting (16%), decision science (10%), and management (2%). 48 percent of the MIS major participants declared their major in the first two years of college, while 50 percent did so during the last two years of college (two percent did not respond). 35 percent of participants reported that they did not have MIS internships. 41 percent participants had one MIS internship experience and 20 percent of the participants had more than one MIS internship experience. 4 percent of the subjects did not respond to this question. Of the 213 subjects, the sample size of the job offered group was 137 and the sample size of the no job offered group was 76.

**Analysis and Interpretation**

*Characteristics of job offers received in 2002:*

Relationship between internship and full time job offer: One of three students who had a job offer said the offers came from firms where they had interned. It supports the idea that the firms often use the internship period as a screening and hiring opportunity.

**Table 1: Internship Job offer**

<b>A job offer from the interned firm</b>	<b>Job Offered Group</b>
Yes	<b>32%</b>
No	<b>36%</b>
Blanks	36%

MIS related job offers: The majority of job offers (62%) came from the firms where students interned. 11 percent of students said the jobs offered were not MIS jobs.

**Table 2: MIS Job Offer**

<b>An MIS related job offer</b>	<b>Job Offered Group</b>
Yes	<b>62%</b>
No	<b>11%</b>
Blanks	30%

Industry distribution of full-time job offers: MIS job offers were widely spread among different industries. Consulting firms are no longer a major MIS employer.

**Table 3: Industry of Job Offer**

<b>Industry of full-time job offer</b>	<b>Job Offered Group</b>
IT Consulting Firms (Big 4)	7%
IT Consulting Firms (Non-Big 4)	7%
Computer Tech. Vendor	1%
Manufacturing Firms	7%
Retail Firms	8%
Financial Firms	<b>16%</b>
Health Care related Firms	5%
Delivery Service related Firms	5%
Others	4%
Blanks	43%

Number of full time job offers per student: The majority (53%) of students with job offers received only one job offer. Only 16% of students received multiple offers.

**Table 4: Number of Job Offers**

Number of full-time job offers	Job Offered Group
0	0%
<b>1</b>	<b>53%</b>
2	11%
3	5%
4	0%
Blank	32%

Salary of MIS full-time job offers: The wide salary ranges for MIS job offers shown between \$30,000 and \$55,000. The salaries of 34% of the job offered group were in the range of \$40,000-\$50,000.

**Table 5: Salary Range**

Salary ranges of job offers	Job Offered Group
Below \$30,000	3%
\$30,000-34,999	7%
\$35,000-39,999	11%
<b>\$40,000-44,999</b>	<b>14%</b>
<b>\$45,000-49,999</b>	<b>20%</b>
\$50,000-54,999	9%
Over \$55,000	1%
Undecided yet	4%
Blanks	36%

*Comparative Analysis between the Job Offered Group VS. No Job Offered Group:*

The following factors were compared between the job offered group and the no job offered group to determine whether there was a significant relationship between a specific factor and a MIS job offer:

Gender difference: There was little difference between the percentages of males and females. The percentage of male students was slightly higher than that of females and this trend was consistent in both groups.

**Table 6: Gender**

Gender	Job Offered Group	No job offered group
Male	53%	52%
Female	47%	48%

Number of majors: There was no significant difference in the percentage of the number of majors held by a given student. Interestingly, though, the job offered group seemed to have a smaller percentage of students with double majors than the no job offered group. Further study is needed for the explanation.

**Table 7: Number of Major**

Number of Majors	Job Offered Group	No job offered group
1	70%	61%
2	25%	36%
3	1%	3%
4 or more	3%	0%

Areas of double majors: Those MIS students with double majors in accounting seemed to have the highest percentage in the job offered group and the least percentage among the no job offered group.

**Table 8: Type of Major**

<b>More majors</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Accounting	<b>12%</b>	<b>4%</b>
Marketing	<b>12%</b>	<b>18%</b>
Finance	<b>11%</b>	<b>17%</b>
Management Science	5%	4%
No response	63%	55%

Timing of MIS major declaration: It is interesting to note that 5% of no job offered group declared an MIS major in their senior year. However, there was no important difference between the two groups in terms of the time when a student declares his/her MIS major.

**Table 9: Major Declaration Time**

<b>Timing of MIS major</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Freshman	24%	26%
Sophomore	54%	47%
Junior	17%	20%
Senior	<b>0%</b>	<b>5%</b>

Perception of the economic outlook: There seemed to be no significant difference in the pattern of data about the economic outlook in the two groups. However, a majority of students, 86% in the job offered group and 83% of the no job offered group, were pessimistic about the future economic outlook.

**Table 10: Economic Outlook**

<b>Economic Future</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Much worse	64%	71%
Worse	<b>22%</b>	<b>12%</b>
Same as this year	8%	6%
Better	<b>5%</b>	<b>9%</b>
Much better	0%	2%

Number of Intern Work Experiences: A much higher percentage of students in the job offered group had one or more intern experiences as compared to the no job offered group. It is noteworthy, however, that about 59% of students in the no job offered group did have an internship experience in 2002.

**Table 11: Number of Internship**

<b>Number of Intern Work Experience</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
0	<b>25%</b>	<b>41%</b>
1	<b>50%</b>	<b>36%</b>
2	18%	12%
3	1%	4%
4	4%	2%

Sources of Internship opportunity: It is interesting to note that the job offered group sought an intern opportunity from the school’s career office and intern fair, while the higher percentage of the no job offered group

sought internships from relatives and friends. Further investigation is needed to examine how the sources of employment information influence the job opportunity.

**Table 12: Source of Internship**

<b>Source of Internship</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
School’s Career Office	<b>21%</b>	<b>5%</b>
Internship Fair	<b>17%</b>	<b>10%</b>
Internet Search	5%	2%
MIS Department office	7%	3%
Relative/Friend	<b>24%</b>	<b>34%</b>
Instructor’s Recommend	4%	1%

Natures of Internship Experience: A higher percentage of students in the job offered group had an intern work experience in the areas of analysis and design, networking, and database than the no job offered group. Interestingly enough, a higher percentage of the no job offered group had a programming internship compared to the job offered group. It is inconclusive at this time how the nature of the internship work experience influences full time job offers.

**Table 13: Nature of Internship**

<b>Nature of Internship</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Analysis & Design	<b>25%</b>	<b>13%</b>
Clerical	3%	2%
Database related	<b>14%</b>	<b>9%</b>
IT help desk	5%	8%
Networking related	<b>16%</b>	<b>7%</b>
Programming	<b>11%</b>	<b>15%</b>
Non-MIS related work	<b>3%</b>	<b>7%</b>

Industries of Internship: Two large differences were found between the two groups in terms of the types of industry where students had their internships. Interestingly, a large portion of students in the job offered group had internship at consulting firms, while those in the no job offered group had internships in manufacturing firms and financial firms. Considering that only 7% of consulting firm interns received full-time job offers from such firms (table 20 below), the authors presume that the intern experience at the consulting firms were valued by other types of firms for a full-time job placement.

**Table 14: Industry of Internship**

<b>Industry of Internship</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
IT Consulting Firms (Big 4)	<b>13%</b>	<b>3%</b>
IT Consulting Firms (Non-Big 4)	<b>12%</b>	<b>2%</b>
Computer Tech. Vendor	4%	4%
Manufacturing Firms	8%	12%
Retail Firms	8%	3%
Financial Firms	13%	17%
Others	1%	3%

Internship compensation: It was interesting to note that the job offered group received higher intern compensation (categories over \$14) than the no job offered group. The trend is reversed in lowest compensation category (\$10 or below per hour). Further research is indicated.

**Table 15: Compensation of Internship**

<b>Intern compensation</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
<b>\$10 or below per hour</b>	<b>9%</b>	<b>18%</b>
\$11-13	17%	17%
\$14-16	<b>24%</b>	<b>18%</b>
\$17-19	<b>8%</b>	<b>4%</b>
\$20-22	<b>7%</b>	<b>1%</b>
\$23 or more	<b>3%</b>	<b>0%</b>
Others	%	0%
Blanks	36%	42%

Types of full-time job offers: Among the jobs offered, analysis, programming, web-design/development, and net working were the most popular areas, in that order. It is interesting to note that traditional areas such as analysis and programming were shown as the top two areas of job offers.

**Table 16: Nature of Job Offers**

<b>Nature of the full-time job offers</b>	<b>Job Offered Group</b>	<b>Ranking</b>
<b>Analysis</b>	<b>24%</b>	<b>1</b>
Database related	3%	6
IT Help Desk	4%	5
<b>Programming</b>	<b>18%</b>	<b>2</b>
Networking	8%	4
<b>Web-Design/Development</b>	<b>11%</b>	<b>3</b>
Others	0%	7

Impact of internship on MIS course work: In terms of the impact of the intern experience on their post-intern MIS course work, a larger percentage of the job offered group responded that the internship had a positive effect. A similar finding was shown in the negative effect; a lower percentage of the job offered group said that the internship experience had a negative effect on MIS course work.

**Table 17: Impact of Internship to MIS Course work**

<b>Impact of Intern to MIS coursework</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
No help at all	<b>5%</b>	<b>9%</b>
A little help	<b>12%</b>	<b>18%</b>
Some help	<b>20%</b>	<b>15%</b>
A great amount of help	<b>34%</b>	<b>20%</b>

Impact of the course work on internship work: No significant differences were found between the groups. Students' responses were neutral.

**Table 18: Impact of MIS Coursework on Internship**

<b>Impact of MIS coursework to Intern</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
No help at all	9%	9%
A little help	26%	23%
Some help	26%	26%
A great amount of help	8%	9%

Impact of GPA on the full-time job offers: Research shows no significant difference between the two groups in terms of the effect of GPA. This finding is similar to that of the prior study [15]. Although about 69 percent of students in the job offered group had a GPA over 3.0, a large percentage (68%) of students, whose GPAs

were higher than 3.0 (23% even over 3.5) were not offered a job in 2002 before they graduated. The finding is not conclusive.

**Table 19: GPA**

<b>GPA (out of 4 scale)</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
3.5 or above	<b>30%</b>	<b>23%</b>
Higher than 3.0 but lower than 3.5	<b>39%</b>	<b>45%</b>
Between 2.5 and 3.0	<b>12%</b>	<b>26%</b>
Lower than 2.5	0%	0%
Blanks	22%	7%

Key factors affecting an MIS full-time job: Both groups rated the intern work experience as the most important factor for finding an MIS full time job offer. Groups disagreed about the next most important factor, with communication skills chosen by the Job offered group and technical skills chosen by the no job offered group. It is interesting to note that the job offered group perceived communication skills as more important than the technical skills, while the no job offered group had a dramatically opposed view. Both groups rated GPA as the fourth, with management skills and teacher recommendations of much lesser importance. It is also interesting to note that GPA was not rated highly by either group. The authors think that the data from industry recruiters can further enrich the study of this factor.

**Table 20: Key Factors in MIS Full-time Job**

<b>Key factors MIS full-time job</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Communication Skills	<b>25%</b>	<b>21%</b>
High GPA	8%	8%
Intern Work Experience	37%	36%
Management Skills	4%	1%
Teacher Recommendation	4%	1%
Technical Skills	<b>14%</b>	<b>27%</b>
Others	5%	6%

**Table 21: Key Factors Ranking**

<b>Key factors MIS full-time job Ranking</b>	<b>Job Offered Group Ranking</b>	<b>No job offered group Ranking</b>
<b>Communication Skills</b>	<b>2</b>	<b>3</b>
High GPA	4	4
<b>Intern Work Experience</b>	<b>1</b>	<b>1</b>
Management Skills	6	6
Teacher Recommendation	6	6
<b>Technical Skills</b>	<b>3</b>	<b>2</b>
Others	5	5

Key factors affecting an MIS internship opportunity: The question about key factors in finding an internship was asked separately from the full-time job offers, since the situations pose different circumstances and different purposes. The two groups rated both communication and the GPA as the two most important factors, but the job offered group perceived the communication skills are more important factor than any other factors; the percentage is twice that of GPA, the second rated item. For the full-time job offer question above, GPA was not highly rated by the both groups. Key factors change depending whether the job is for full-time employment or internship. Little difference was found between the two groups' assessment of other factors.



**Table 22: Key Factors to MIS Internship**

<b>Key factors MIS intern job</b>	<b>Job Offered Group</b>	<b>No job offered group</b>
Communication Skills	<b>41%</b>	<b>34%</b>
High GPA	<b>21%</b>	<b>33</b>
Intern Work Experience	4%	3%
Management Skills	1%	1%
Teacher Recommendation	5%	2%
Technical Skills	18%	19%
Others	8%	7%

**Table 23: Key Factors in MIS Internship Ranking**

<b>Key factors MIS intern job Ranking</b>	<b>Job Offered Group Ranking</b>	<b>No job offered group Ranking</b>
Communication Skills	<b>1 (41%)</b>	<b>1 (34%)</b>
High GPA	<b>2 (21%)</b>	<b>2 (33%)</b>
Intern Work Experience	6	5
Management Skills	7	7
Teacher Recommendation	5	6
Technical Skills	3	3
Others	4	4

**Summary**

In recent years, the MIS field is experiencing an unprecedented job market shortage due to the IT budget cuts and hiring freezes in the industry. The ideal time -- just a few years ago -- when students had multiple job offers and enjoyed almost 100% placement, is past. MIS professors and students need to study this matter more seriously than ever to offer better advising and guidance in the current job market. The authors believe that this study provides helpful information and future research ideas.

The findings of this study are not conclusive, but rather more exploratory as it investigates and points out the differences of data between the two groups surveyed. Yet this study presents very revealing information, such as factors affecting job offers and, more importantly, how those factors differ between the two groups; the group that received job offers and the group that did not.

In addition, the two groups behave differently in several factors, which accordingly suggest interesting future research ideas. Again, the point of this paper has been on identifying major differences instead of analyzing causes and proving them empirically.

There are no significant differences between the job offered group and the no job offered group in the following areas; gender difference, number of majors in their undergraduate degree programs, the timing of MIS major declaration, GPA, and the economic outlook factor. These factors do not have an important affect on an MIS job offer, as we can find no significant differences between the two groups.

However, we found several interesting differences. Both the groups rated the intern work experience as the most important factor for obtaining a full-time MIS job, but disagreed in the second-most important factor; the job offered group chose the communication skills and the no job offered group chose technical skills. The third most important factor is reversed from the second factors between the groups. Students often viewed GPA as a single most important factor influencing full-time job offers for students before but not within the top three most important factors as reported in the current survey finding. Instead, internship experience, communication skills, and technical skills are more important in obtaining full-time job offers for MIS students. The MIS curriculum may need to be revised by supporting students' intern work experience, to increase course components that provide more training in communication skills, to add or strengthen technical course work.

However, there was a difference in key factors for obtaining an MIS *intern* job offer versus obtaining an MIS full-time job offer. The two groups perceived both communication and the GPA as the two most important factors. However, the job offered group perceived communication skills as the clearly most important factor, whereas the no job offered group rated communication skills almost the same as GPA. This finding presents important information to MIS program advisors: different sets of requirements are needed for full-time job offers and intern work.

Although a large number of students, who had an intern experience, were not offered a full-time job offer, the highest percentage (50%) of the students in the job offered group had an intern experience while the highest percentage (41%) of students in the no job offered group did not have an intern experience. It seems obvious that intern work has a positive impact on obtaining a full-time job offer.

It is interesting to note that the job offered group tended to find an employment opportunity from a school's job placement resource such as a job placement office and a job fair, while the no job offered group tended to find the opportunities from their relatives and friends.

It is also interesting to note that there is a difference among the types of intern work experiences. The higher percentages of the job offered group were found to have intern work experiences of analysis and design, database, and networking. On the other hand, the higher percentage of students in the no job offered group had programming related intern work experience.

The higher percentage of students in the job offered group responded positively about the impact of intern work experience over the post-intern course work than the no job offered group. On the other hand, there is little difference between the two groups in terms of the impact of the MIS course work on the intern work experience.

Regarding the MIS job market, it is interesting to note that 25% of the job offered group had an intern experience in a consulting company, although only 14% of full time job offers were made in the consulting area. It seems that at present consulting firms do not offer as many full time jobs, but still offer internship opportunities to MIS students; the highest percentage of students were offered internships in the consulting field. In order, analysis, programming, and web design/development are shown as the three most popular types of full-time job opportunities. One-third of the students in the job offered group received a full time job offer from the companies in which they interned. About two-thirds of the students of the job offered group stated that the job offers they received were MIS-related job offers. The highest percentage of full time job offers came from the financial industry. The wide salary ranges for MIS job offers were shown; it ranged between \$30,000 and \$55,000. About 34% of salaries offered are in the range of \$40,000-\$50,000.

The findings of this study, exploratory in nature, can help both the academia and recruiters understand the factors at work for students in obtaining a full time job and an internship in the field of MIS. We hope that this study would improve both the students' career development and the MIS program design.

### **Implication and future study**

For the next phase of this study, the authors plan to increase the sample size across geographically diverse areas, and to run a multivariate correlation statistical analysis between the factors described above with a job opportunity. Collecting data from the MIS recruiters is also planned, to investigate recruiters' viewpoints in hiring new MIS graduates. A comparative analysis between the recruiters' and students' perspectives on this topic can further strengthen and add more value to future study.

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