Information Systems Internships: Student Perceptions and Outcomes

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INTRODUCTION AND BACKGROUND

It is not difficult to find sources that espouse the virtues of internships (e.g. Anonymous, 2006).   However, little valid data can be found to demonstrate the positive outcomes that are generally assumed for internships in any portion of the business curricula. In addition, there is little information available to describe students' perceptions of internships and their decision process associated with making the decision to pursue (or not to pursue) an internship as part of their academic experience.

This research is an attempt to illuminate this issue. During the spring and summer of 2006 an online survey was administered to all business students at a large Midwestern university concerning internships. This research focuses on describing information system (IS) students' perceptions and outcomes related to internships. In addition, it will investigate differences in perceptions and outcomes of IS students when compared to their non-IS business student colleagues.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) was determined to be the most appropriate means of modeling the process of students forming the intention to participate in an internship (see Figure 1). The TPB was simplified so that only students who had not yet engaged in the behavior were included in this model and actual behavior was, therefore, not measured. The relationship between intention and future actual behavior is presumed in our analysis. This is well supported by many TPB studies though the conversion rate of intention to behavior varies according to various factors. This conversion rate is unknown and left to future research (this would most likely require a longitudinal study to determine this rate). It is certainly reasonable to suggest that, if one has the goal of increasing the percentage of students who undertake an internship, developing students' intent to engage in internships is a necessary step. However, the need to encourage and facilitate the student in following through on the intent should not be underestimated. Other general questions were also incorporated into the questionnaires to determine what tools students utilize to find internships, where and when they participated in internships, whether they did or will take other coursework during the term of their internship, what skills were most developed, and what the most positive and negative aspects of their internships were, among others. Finally, demographic and employment information were gathered.

METHODOLOGY

Two surveys were designed. The first was designed for those who had not participated in an internship. The second was designed for those who had completed or were currently engaged in an internship. The survey instruments were created by a committee responsible for managing and promoting IS internships at the university. This committee was composed of the faculty internship coordinator, three industry representatives (IS/IT managers), and two members of the university's career services center (placement). This broad set of views created representative instruments that were then validated by presenting the questions to an oversight committee composed of approximately 30 industry and faculty representatives (approximately 70% industry). Valuable suggestions for improvement were gained and used to augment the instruments. Finally, the instruments were pilot tested on a single class of undergraduate students. The pilot test was completed by 27 students. Most of the instruments' constructs were adapted from pre-validated

Figure 1. Theory of planned behavior with bivariate correlations for IS students (n=48)
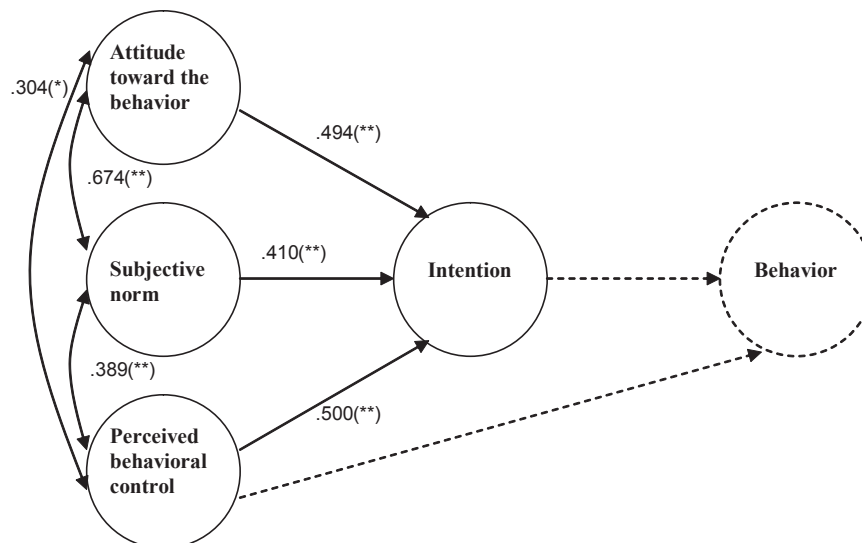
* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 1. TPB individual items (1=Very Strongly Agree, 7=Very Strongly Disagree)

IS Students Only (n = 48)

Questions	Mean	Sig. (2-tailed) - that students are *indifferent* (=4.00).
I believe that participating in an internship would be a positive experience. (ATT)	1.646	.000
I believe that participating in an internship would be stressful.	3.417	.000
I believe that participating in an internship would be beneficial to my education. (ATT)	1.563	.000
I believe that participating in an internship would be enjoyable. (ATT)	2.563	.000
I believe that participating in an internship would be challenging.	2.229	.000
I believe that participating in an internship would be beneficial to me in achieving my career aspirations. (ATT)	1.688	.000
Fellow students would encourage me to participate in an internship.	2.917	.000
My instructors would encourage me to participate in an internship. (SN)	2.417	.000
My family and friends would encourage me to participate in an internship.	2.583	.000
People I admire would encourage me to participate in an internship. (SN)	2.500	.000
If I decide I want to participate in an internship I will be able to. (PBC)	2.833	.000
Finding and obtaining an appropriate internship position would be easy. (PBC)	4.125	.322
There are factors beyond my control that could keep me from participating in an internship.	3.833	.415
I intend to participate in an internship. (INT)	2.604	.000
I would participate in an internship if an appropriate opportunity presented itself.	1.875	.000
I intend to actively seek out an internship position. (INT)	2.563	.000

sources (TPB) and the pilot test was used to confirm these measures. The committee review and pilot study demonstrated good face, content, convergent, and discriminant validity.

The data collection was completed via an online web-based survey utilizing email with a link to the survey as the means to solicit responses. This research endeavor received unusual special permission to solicit students via email since experiential learning has been identified as a strategic direction of the university. A total of 387 valid responses were obtained. Of these, 65 responses were from majors or minors enrolled in the information systems (IS) curriculum. The number of responses to the survey for students who had not had an internship were 277 total with 48 IS students. The survey for those who had engaged in internships yielded 110 total and 17 IS students. The sample size for IS students, especially those who had completed internships, does limit the types of analyses that can be performed. However, we believe useful information has been obtained from the available data. The results reported here are only for IS students. Those interested in the full study are referred to Brandyberry (2007).

RESULTS AND ANALYSIS

The TPB items analyzed are from the survey of students who had not completed an internship. The latent variables utilized in the analysis were validated through a confirmatory factor analysis utilizing structural equation modeling (SEM) for the entire sample of business students. Conservative respecification of the model resulted in a good fit (X^2=39.029, DF=31, P≥.152, GFI=.970, CFI=.979, RMSEA=.031) (see Brandyberry, 2007). The results reported for IS students utilized these measures validated for the larger group. A SEM analysis for only IS students was not possible due to sample size limitations, however, bivariate correlations suggest that there are significant positive relationships between the three independent variables (attitude toward the behavior (ATT), the subjective norm (SN), and perceived behavioral control (PBC)) and the dependent variable (intention to pursue an internship (INT)). These correlations are shown in Figure 1.

Table 1 shows the individual items included in the measures as well the results of testing the hypothesis that the students are not indifferent (=4.00). In addition, the items that were included in the TPB latent variables after model respecification are designated by having the item followed by the latent variable abbreviation. Each of the individual items was also tested for differences between IS students and other business students in the overall sample. The results showed no significant differences between these two groups on any of the variables.

Other selected results from the survey for students who have not had an internship will now be summarized. The students reported preferences for tools that they would use to find an internship. In order of preference these were: the university career services center job postings (64.6%), faculty assistance (60.4%), university sponsored job fair (50.0%), internship or employment websites (45.8%), family/friends (45.8%), and newspapers (22.9%). Students had a strong preference for receiving course credit for their internship in addition to the work experience (75%). Only 6.3% reported no desire for course credit while the remainder was uncertain. Students also thought an internship should be required for the major (47.9% required, 20.8% not required, 31.3% uncertain or not answered). Additionally, students are willing to commute to their internships with 100% reporting they would travel 15 miles and 68.9% reporting they would travel up to 30 miles.

For the students who completed internships selected results will now be summarized. Students used the following tools to locate their internships: internship or employment websites (29.4%), the university career services center job postings (23.5%), faculty assistance (17.6%), family/friends (17.6%), and the university sponsored job fair (5.9%). The majority of students took other courses during the time of their internship (70.6%) and 58.8% received academic credit for their internship.

Students were asked to list up to five skills that their internships helped develop. In rank order of occurrence, these were:

1. Technical/programming skills (82.4%)
2. Ability to work as a contributing/cooperative member of a team (70.6%)

3. Professionalism (58.8%)
4. Oral communication skills (58.8%)
5. Problem solving skills (52.9%)
6. Initiative and self-directed work habits (47.1%)
7. Ability to learn (47.1%)
8. Ability to adapt to organizational rules, policies, and culture (41.2%)
9. Dependability (41.2%)
10. Written communication skills (35.3%)
11. Ability to work accurately and with attention to detail (23.5%)
12. Research abilities (23.5%)
13. Creativity (17.6%)
14. Leadership abilities (11.8%)

DISCUSSION AND CONCLUSION

Some of the most important results of this research could not be reported here due to space limitations. These include the open-ended question results concerning the most positive and negative aspects of their internships as well as what information interested students would like to have available and what the internship program should offer to best serve students. These will be discussed in the associated presentation and are included in the full paper.

The results presented here show that IS students' perceptions and interest in internships is not significantly different from other business students. Modeling the intention to pursue internships with the Theory of Planned Behavior was supported for business students as a whole in a separate related study and correlations from the present study also suggest that TPB would hold for IS students as well. Individual TPB item analysis show that these IS students have positive attitudes towards internships, believe that others are supportive of the value of internships, but are less certain that they have control of whether they can successfully find and acquire an internship. Students that have completed internships report very positive skill sets being developed. In addition to the expected technical skills they also report frequent development of teamwork, communication, professionalism, and problem-solving skills among others.

Note: This paper is a significantly reduced version of the complete paper due to conference word count restrictions on research-in-progress submissions (2000 words). The complete paper is available from the authors.

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