

A Preliminary Comparison of Student and Professional Motivations for Choosing Information Systems

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Abstract

Demand for qualified information systems professionals continues to rise. Additionally, over the past decade, enrollment in information systems-related educational programs has declined. In order to understand why and to better understand how to position information systems undergraduate programs to recruit and retain students, this study provides a preliminary examination of the motivations of undergraduate students in choosing information systems as their major. As part of the analysis, student motivations were directly compared to motivations of individuals currently in the profession. Results indicate that students are highly motivated by a general love of technology. Additional motivating factors included job security and gratifying work provided by the profession. These factors closely mirrored those of individuals in the profession, providing additional insight into opportunities for positioning IS programs and enhancing curriculum to highlight why students chose the major. Implications for future research, recruitment, and retention are provided.

Keywords: student motivation, IS undergraduate education, recruitment, retention

1. INTRODUCTION

Today, more so than at any other time, universities and colleges are facing unique pressures related to recruiting and retaining students. Competition is intense. The field of

information systems is uniquely positioned to thrive in this environment due to demand for qualified professionals in the field (US Department of Labor, 2012); however, enrollments have declined greatly over the past decade (Lenox, Jesse, and Woratschek, 2012).

Research has been provided that examines everything from high school math and science scores as determinants of choice to major in a technology-related field to drivers for choosing majors once in a college or university environment (e.g. Wong, Fieldler, and Liu, 2007).

Additionally, it has been noted that there is evidence suggesting "a substantial gap between what the students are looking for in their future career paths and what they perceive to be attainable by choosing IS to be their major of study" (Wong, et al., 2007 p. 202). Because of this, we need to examine the idea of student motivation from a broader perspective. The approach taken in this research is to examine student motivations and compare them to motivations of individuals currently in the profession. To accomplish this task, we have collected preliminary data from traditional undergraduate students based on motivations from research presented in the IS literature (McKinney, Wilson, Brooks, O'Leary-Kelly, and Hardgrave, 2006). As a first step in meeting these goals, it was necessary to examine what we already know about student motivations for choosing information systems as a major.

2. LITERATURE REVIEW

Several studies across disciplines have examined student motivations in determining their choice of study. From these, a handful focused on IS-related programs. Our focus will be on the most recent studies as they provide a summary and foundation beyond what we can cover in this paper.

Wong, et al. (2007) used Schein's career anchors to examine perceptions of business majors related to their field of choice. The primary purpose was to determine if there was a difference in what students saw in their major and what they expected from the profession. Findings indicated that there was a difference between what they expect in a career and what the information systems major can provide to them.

Research has also shown that undergraduate business students are not as knowledgeable about information systems as a major when compared to other key business areas: management, marketing, accounting, and finance. Stated another way, students knew what the other majors represented more so than

information systems. Students were surveyed in an entry-level business course and indicated "they are looking for majors that will be interesting, provide them with job security...and pay them well" (Walstrom, Schambach, Jones, and Crampton, 2008, p. 43).

Since we are examining information systems-related programs, we wanted to be sure and cover research related to other programs (e.g. computer science). In an article examining if there are differences between the student's choices of major in these two disciplines (information systems and computer science), it was found that the top motivators for both were interest in technology and financial compensation (Downey, McGaughey, and Roach, 2009). Interestingly, information systems students in the study were more concerned with perceptions of and desired more interaction with others when compared to computer science students.

In an effort to expand on what had been done related to student motivations, Ferratt, Hall, Prasad, and Wynn (2010) examined subject matter interests of information systems students. From this study we learned there is an interest in technical issues as well as linking business and technology. Additionally, it was found that students want to know the practical implications of the coursework – how does it prepare them for what they will be doing in the actual field of IS. The authors also provided a succinct summary of previous research that indicates students in IS are motivated by a general interest in technology, success in the area (self-efficacy), job prospects, and potential income.

More recent studies have continued to examine why individuals choose to major in information systems. Lenox, Jesse, and Woratschek (2012) noted that across the majority of studies in the area of motivation is the idea that students choose information systems, or conversely do not, due to certain perceptions. These included individual opinions of earning potential, self-efficacy, and the likelihood of earning a good salary.

The consistency seen across these various studies provides an interesting place to begin to examine the importance of such factors with a slightly different twist. Our goal is to take what we know about motivations of students in

general and compare that to the motivations of individuals working in the field of IS.

In an effort to cover a broad range of issues, we chose to use the items provided by McKinney, et al. (2006) as a basis for our initial comparison with students. In this article, the authors are focusing on factors that might differ between males and females in information systems. As part of this comparison, a list of motivational items (provided by an extensive review of the literature) was given to the participants. These items were pulled from a variety of key resources (see Appendix 1 for summary). A discussion of how we used these items and compared them generally to students is provided in the proceeding section.

3. RESEARCH METHODOLOGY

Data for this preliminary study was collected as part of a larger study aimed at better understanding students' perceptions and attitudes related to information-systems related professions overall and to the major. Data was collected from one university in the Northeast United States.

Contact was initially made through course instructors in information systems-related programs. It was decided to include programs that were considered feeders to information systems jobs (computer science and information systems). Students were asked to respond to the survey related to their major of choice. The researchers determined it would be better, for this preliminary study, not to define the major or profession by using specific characteristics. We felt it was important for students to answer survey items related to what they perceived about their chosen major and subsequent choice of profession. Participation in the study was completely voluntary. A web-based survey was used to collect the data.

Overall, thirty students responded to this preliminary data collection. While this is a small sample, it provides insight into understanding motivating factors for students and provides a foundation on which to expand research and collect additional data from other institutions.

Measures for this preliminary study were pulled from previous research on motivation. Specific items used are provided in Appendix 1 along with original references for the items. All items were measured using a likert-type scale with a

range of 1 – 7 (strongly disagree – strongly agree). The majority of the students in the sample were male (90%) and the average age was 20.3.

4. RESULTS

Table 1 provides information on the means of students' responses to the motivation items. The item found to motivate students the most in relation to choosing information systems as a major was the love of technology.

Motivation	Mean
Love of technology	5.77
Job security	5.57
Gratifying work	5.50
Level of income	5.28
Using state of the art equipment	5.20
Opportunity for task variety	5.03
Freedom in how work is done	4.97
Ease of entry	4.57
Flexible working hours	4.53
Prestige of IT	4.40

Table 1: Student Motivation Items
Mean Responses

These results were then compared to the results of a survey given to professionals in the information systems field related to what motivated them (McKinney, et al., 2006). The mean results are provided in Table 2.

After comparing the results from both studies, it can be seen that four of the top five motivators are the same. For these groups of individuals, students and professionals, motivating items include job security provided by the profession, gratifying work, level of income, and a love of technology. Interestingly, the prestige associated with the profession or major was at the bottom of the list. Often it is expected that students pursue majors due to the importance of the major to referent others (e.g. parents). This finding indicates that the overall view of the field

is not as important to this group of students as other factors. For students specifically, it appears that the love of technology drives their interest. For professionals, there is a continued importance of this factor, but it seems that issues related to income and job security take over. We can only speculate, but it would seem obvious that as individuals move into their careers, responsibilities increase (family, financial, etc.).

Motivation	Mean
Level of income	5.73
Job security	5.58
Gratifying work	5.50
Opportunity for task variety	5.44
Love of technology	5.18
Freedom in how work is done	5.13
Using state of the art equipment	4.63
Flexible working hours	4.63
Ease of entry	4.11
Prestige of IT	4.06

Table 2: Professional Motivation Items
Mean Responses

5. DISCUSSION

The student pipeline needs to be maintained and managed to properly supply the needs of the profession. Information systems exist across all organizations, public and private, and serve to improve efficiency and effectiveness in countless ways. As such, researchers have maintained interest in understanding why students choose majors (Wong, et al. 2007, Butterfield and Crews, 2012). While this study is certainly exploratory in nature, we can begin to make important connections between what motivated students in choosing their major in information systems-related programs and what motivated individuals in the profession. This strengthens our ability to understand and foster the success of individuals entering undergraduate majors in information systems fields.

Additionally, this study helps those in higher education understand the potential for influencing students in major courses by adjusting the curriculum to focus on those items that are found to motivate students in the first place. This is especially impactful if the items motivating and driving students are the same as those that motivated individuals in the field. If we, as educators, can bridge these groups more directly, it provides the ability for students to feel they are part of the profession while in an undergraduate program. Accomplishing this would enhance and strengthen the student's identity with the profession.

In a related area, Mbuva (2011) focuses attention on the importance of retention in higher education in general. The fact that enrollments have been down for information systems only provides for a heightened reason to do whatever is possible to improve recruitment and retention of students. The fact that universities and colleges are facing expanding competition points to the realization that we must begin to more thoroughly understand the population in general.

As noted by Walstrom, et al., (2008), "it is important that program administrators examine their curriculum to assess whether it meets current needs and whether the intro course includes a focus on capturing youthful relevance, interest, and engagement" (p. 50). We would argue that it is not a "youthful relevance" that drives our students; it is a general love of technology and hope for a positive and prosperous future. There is an inherent value in the applicability of what is happening in the learning environment to the student and where he or she is headed in their actual job (Ferratt, et al., 2010). This brings about the question - how do we as educators foster this in our classrooms?

Based on the findings presented here, it is obvious that we should focus on integrating technology into the classroom. The love of technology is an important factor in the student choosing their major. By adding more technology components to the classroom, we could potentially enhance both recruitment and retention efforts. It is important that students have experiences with the systems and technologies we cover in our courses. While this is not always possible due to budget constraints, etc., we do have the opportunity to incorporate

virtual environments using Internet tools as well as multimedia experiences.

Factors related to the profession in general (job security, gratifying work, and income) are not typically in control of educators; however, we are in control of what we communicate to our students. It is important that students have an accurate view of the profession and that they are aware of the opportunities the profession affords them. Potential avenues for accomplishing this include appropriately marketing the major and profession, highlighting current trends in the job market, honestly discussing opportunities in the field, fostering a connection with technology at many levels (not just programming), expanding the general perception of what an information system major or professional is, and building a solid foundation and reputation by successfully working with industry and placing students in beneficial roles. Granger, Dick, Jacobson, and Van Slyke (2007) summarized these issues into distinct approaches to addressing misconceptions of the field: 1) curriculum-oriented and modifications to courses and 2) marketing and promotional.

Additional research should be conducted to expand the motivation items to cover a larger group of students and a larger range of research on information systems professional motivations. It is also important to acknowledge limitations of this study related to the demographics and sample used. One university was targeted in this preliminary study in which 90% of the sample was male. As much of the research in this area focuses on not just understanding what we know about students' major choice but also on the gender differences in information systems-related fields (e.g. Butterfield and Crews, 2012), it is important to have a more diverse sample of students.

Furthermore, since the love of technology was indicated as the top reason students are motivated to major in the field of information systems, additional research should include a more detailed investigation into the type(s) of technology that motivate students. For example, when students think of their love of technology what types of technology are they considering and do they have different reactions to different types of technology? Specifically, do students "love" hardware, software, specific applications, such as social media, programming, systems, etc.?

6. CONCLUSION

An interesting realization from this study, as noted in the literature review section, is the fact that the factors motivating individuals in an IS-related major or in an IS position in the profession mirror factors that non-IS students say keep them from majoring in information systems-related fields in other studies. This points to a major discrepancy in the perceptions of students. It seems that if you are already in the field, you recognize these factors as being positive defining characteristics. If you did not choose information systems as your major or profession, it is these very factors that are cited as the reason keeping you from the field altogether. Research should explore potential reasons for this difference. Aside from the obvious motivations, such as "love of technology", the other factors could easily translate to other fields. A deeper exploration into students' personality traits, motivations for entering higher education, and factors that drove the choice of major would potentially help clarify the differences.

In an examination of why enrollments have been down in information systems, Granger, et al., (2007) note that the lack of jobs, outsourcing, debate related to H1-B visas, low salaries, and a perception of a useless IS degree are the myths keeping the field from growing at the needed rate. Findings from this study indicate that conceptualizations related to opportunities and salaries in IS are in fact myths. Individuals in the profession noted that these are motivators – key reasons for the choice of information systems. Therefore, students are likely not informed that these are myths and unaware of the opportunities available in the field of information systems. Future research would be beneficial to explore in more detail student perceptions related to these myths and investigate whether these myths continue to be dominant factors in dissuading students from majoring in IS, or whether other factors are having a more significant impact such as the potential negative social image associated with technology degrees or students not believing they have the aptitude for the degree (Kumar and Kumar, 2013).

While the authors recognize that individuals will tend to view factors that potentially define their identity as more favorable, it is interesting that the "facts" can be interpreted so differently. Previous research and statistics from the Bureau

of Labor Statistics support the fact that information systems jobs are among the most desired and well paid – two of the top five motivators for students and professionals. This misconception is precisely what provides the information systems discipline a great opportunity.

Any chance to understand our students at a deeper level assists in creating a productive and supportive learning environment. Through this examination of general motivating items of students that chose IS-related majors, we can begin to change our classrooms to provide a richer educational experience.

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Appendix

Survey items were adapted directly from previous research.

Survey Item	Original Item if Changed	Source
Level of income	Above average income	Schambach and Chrisman, 1997; Shipp, 1999.
Freedom in how work is done	Autonomy	McLean, Smits, and Tanner, 1991
Opportunities for task variety	Changing work environment / new challenges	McLean, Smits, and Tanner, 1991
Ease of entry into the IT profession	Ease of entry	Shipp, 1999
Gratifying work		McLean, Smits, and Tanner, 1991; Schambach and Chrisman, 1997; Zawacki, Scott, and Zawacki, 1988
Job security		McLean, Smits, and Tanner, 1991; Schambach and Chrisman, 1997; Zawacki, Scott, and Zawacki, 1988
Love of technology / computers		Breidenbach, 1997
Prestige of the IT profession	Prestige	Shipp, 1999
Using state of the art equipment		McLean, Smits, and Tanner, 1991
Flexible working hours	Working hours / flexibility	Lacy, Bokemeier, and Shepard, 1983