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# MIS-Understood: A Longitudinal Analysis of MIS Major Misconceptions

Hala Annabi

*The Information School, The University of Washington, hpannabi@uw.edu*

Sean T. McGann

*The Information School, The University of Washington, mcgann@uw.edu*

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## MIS-UNDERSTOOD: A LONGITUDINAL ANALYSIS OF MIS MAJOR MISPERCEPTIONS

Hala Annabi  
The Information School, The University of Washington  
[hpannabi@uw.edu](mailto:hpannabi@uw.edu)

Sean T. McGann  
The Information School, The University of Washington  
[mcgann@uw.edu](mailto:mcgann@uw.edu)

### Abstract:

IS enrollment continues to present a threat to IS programs and pose a serious problem to companies in desperate need for IS professionals. The research attributed low enrollment and shortage of IS talent to misperceptions of the nature of IS programs, IS careers, and job prospects. Recent research [Bailey, 2012] suggests that enrollment is still low despite the improved perceptions of the IS job market. This begs the question of whether the misperceptions of IS careers and IS programs still exist and whether that is the main factor in why students do not pursue the IS field. This paper provides a longitudinal view of the misperceptions of IS, how they have changed, and ways in which to combat this problem meaningfully.

**Keywords:** Information Systems Enrollment, Information Systems Curriculum

### I. Introduction

As we all know, MIS Program enrollment has seen a significant decline since the dotcom bust. What many may not know is that recently enrollments have grown, but not nearly fast enough to meet the positive job growth in the IS field [Akbulut-Bailey, 2012]. As figure 1 indicates, the decrease in IS graduates in the US has fallen from roughly 18,000 in 2002 to slightly above 7000 in 2013. Since 2010, we have started to see an average annual increase in enrollment of about 2%. This slow enrollment recovery is insufficient to meet the significant increase in projected demand for IS professionals [Akbulut-Bailey, 2012]. Case in point: The U.S. Department of Labor expects IS-related jobs to grow by 22% by 2020 [Thibodeau, 2012].

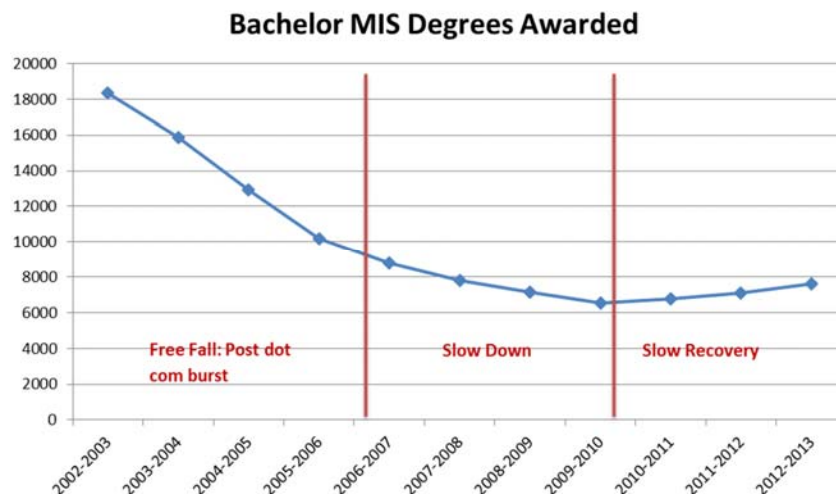


Figure 1: Number of U.S. Undergraduates Receiving Bachelor's Degrees in MIS [Data Source: U.S. Department of Education National Center for Education Statistics, 2014 obtained in 2015]

This gap between supply and demand for IS professionals presents significant challenges to the US economy and MIS programs alike. To the US economy, IS professionals (a sector of STEM professionals) are important to our innovativeness and competitiveness in the global marketplace [Langdon, McKittrick, Beede, Khan, and Doms, 2011]. To the IS community, enrollment numbers are essential to the livelihood, growth and credibility of its IS programs and departments [Benamati and Rajkumar, 2013]. IS program vitality and independence in the academic enterprise are threatened when there is low enrollment. Accordingly, in the last decade the IS community has seen numerous IS programs marginalized, omitted or merged with other departments due to low enrollment [Firth, King, Koch, Looney, Pavlou, and Trauth, 2011].

Low enrollment in IS programs has been attributed to a variety of factors over the last 15 years [Akbulut-Bailey, 2012; Firth et al., 2011]. Abysmal economic conditions and lowered demand for IS jobs after the Dot com bust were two environmental factors cited as causing lower enrollment in IS in the early 2000s [Dick et al., 2007; George et al.; 2005]. Some studies cited curriculum quality and relevance to industry as reasons why students stopped choosing MIS as their major [Firth, Lawrence, and Looney, 2008; Scott, Fuller, MacIndoe, and Joshi, 2009]. Others cited individual factors such as students' self-efficacy, attitudes, outcome expectations, social support, and social norms as the main determinants of why students did choose MIS as a major [Benamati and Rajkumar, 2013; Joshi and Kuhn, 2011]. Perhaps the most often investigated and cited factor influencing MIS enrollment is student misperceptions of MIS [Benamati and Rajkumar, 2013; Akbulut-Bailey, 2012; Walstorm and Schambach, 2012]. In the last 12 years students held highly negative misperceptions about the MIS major, related professions and jobs available [e.g. Scott et al., 2009; Benamati and Rajkumar, 2013]. Despite the efforts of IS programs and the Association for Information Systems (AIS) to combat these "MIS-perceptions", we still see low enrollment and misperceptions persist. To address this issue, this study focuses on gaining a deeper understanding of MIS-perceptions; inquiring whether we are truly making headway in debunking the perceptions of the MIS major and related professions, and whether the enrollment crisis is indeed still an issue of MIS-perception.

The purpose of this study is to explore the changes in perceptions of the MIS major between 2006 and 2014. The goal of the study is to understand how perceptions have evolved over time, to highlight what MIS-perceptions still exist, and to offer a way forward for struggling MIS programs. To this end this longitudinal study investigates the following research questions:

1. What were the MIS-perceptions of MIS Programs between 2006 and 2014?
2. Which MIS-perceptions changed during that period?
3. Which MIS-perceptions did not change and why?

The paper includes two components: 1) a detailed analysis of related literature over four distinct phases of enrollment change between 2000 and 2014 and 2) a longitudinal case study of a top MIS program that has reversed its negative enrollment trend from 90 to over 400 students between 2006 and 2014. The paper concludes with a discussion that presents a systematic approach to addressing the enrollment challenge we face in IS.

## II. Literature Analysis: The Four Phases of MIS Enrollment and MIS-Perception

The decline in enrollment experienced once the Dot com bubble burst drew the attention of many IS researchers and a new stream of research emerged exploring the reasons for this crisis. Research exploring the enrollment crisis focused on four central themes. **First**, research explored the misperceptions of IS programs and careers held by students and faculty from other business disciplines [e.g. Benamati and Rajkumar, 2013, Granger, Dick, Luftman Van Slyke; and Watson 2007, Lee and Lee, 2006, Walstrom and Schambach 2012]. The **second** stream focused on exploring student preferences, how and why they choose their major within business colleges [e.g. Li and Thomson, 2011; Lee and Lee, 2006; Zhang, 2007; Akbulut-Bailey, 2012; Downey,

2011]. A **third** stream explored the broader issue of the identity of the discipline and its relevance and credibility within the IS industry and the IS academy [e.g. Grange et al., 2007, Firth et al. 2011]. The **fourth** stream focused on curriculum design and program best practices [e.g. Abraham; Beath; Bullen; Gallagher; Goles; Kaiser; and Simon, 2006; Street, Wade, Bjørn-Andersen, Ives, Venable, and Zack, 2008; Firth et al, 2008; Westfall, 2012; McGann, Frost, Matta, and Huang, 2007]. The remainder of this review will focus on literature relevant to MIS enrollment and MIS-perceptions. The goal of the review is to gain a better understanding of the perceptions of the MIS program and how they have evolved between 2000 and 2014.

### **The Rise: The Dot-com Boom Era (1995-2000)**

The 1990s brought about rapid and fundamental changes to IS professionals [Farwell, Lee, and Trauth, 1995]. As information technology became the backbone of organizations, the profession experienced tremendous job growth, a diversity of career paths and thus MIS/CIS degree programs [Farwell et al. 1995]. In the late 1990s IS enrollment was at its highest due to the Dot-com boom [Zhang, 2007; Firth et al., 2011]. During this period MIS programs were forming, growing, and maturing as independent departments and disciplines [Watson, Sousa, and Junglas, 2000; Sherer 2002]. Challenges in this era were defining the discipline and developing and delivering relevant and timely education [Watson et al. 2000; Sherer 2002]. Research published during this period reported on challenges regarding shortage of IS faculty, preparing faculty with limited IS background to teach IS, designing and investing in technology infrastructure, integration of IS curriculum within the business core, and creating relevant and timely curriculum aligned with industry needs [Watson et al., 2000; Maglitta ,1996; Farwell et al., 1995].

Perhaps the most critical themes in this literature were the rapid changes and growth of the IS field that led to disconnect between curriculum and industry. Farwell et al. [1995] discussed the diversity of skills required by industry as the career paths for IS professionals grows and diversifies and warned that IS curriculum relevance and timeliness were not meeting the needs of industry. This is of particular interest to our analysis, as we will show that this challenge persists. The divergence within the IS field evident in the diversity of programs, curriculum focus, and research gave way to lack of understanding and a hoard of misperceptions of the IS academic community and educational programs [Gorgone, Davis, Valacich, Topi, Feinstein, and Longenecker, 2002; Ives, Valacich, Watson, and Zmud, 2002]. In the Gorgone et al. [2002] study they identified thirteen names for IS programs in academic institutions. This led to misunderstanding and lack of credibility in the eyes of deans, faculty, and professionals [Ives et al. 2002]. Despite all of this, students continued to flock to the MIS classrooms. But was this growth sustainable?

### **The Free Fall: The Dot-com Burst (2000-2006)**

Once the Dot-com bubble burst and economic recession followed, enrollment of MIS students dropped dramatically (see figure 1) [George, Valacich, and Valor, 2005]. From 2001-2004 US IS jobs also decreased due to outsourcing/offshoring [George et al., 2005]. Despite the bleak economic environment, the job market turned around in 2002 and job growth for IS professionals started to rise again, albeit slowly. For example, George et al. [2005] pointed out that software engineer jobs were projected to increase by 179,000 from 2002 to 2012. Popular press however continued to sound the panic alarm that IT jobs were moving abroad [Granger et al.; 2007]. While IS job growth projections remained stable from 2005-2008, IS enrollment continued to fall [Abraham et al., 2006].

This sharp and lasting drop in enrollment despite the growth in IS jobs caused dramatic changes in IS programs; they were marginalized, omitted, or merged with other departments [Firth et al. 2011]. Towards the mid-2000s IS scholars turned their attention to the enrollment crisis, as was evident through feature panels in main IS conferences and the rise of publications addressing this issue [Lee and Lee, 2006].

### The Slow Down (2006-2010)

Despite the positive job growth projections between 2004 and 2014, enrollment continued to decrease [Granger et al., 2007] but at a slower rate (see figure 1). This continued decrease in enrollment between 2000 and 2006 prompted the IS research community to pursue two types of inquiry. The first type focused on the *relevance and nature of the IS* profession and the implications for IS curriculum [e.g. Abraham et al., 2006; Hirschheim, Loebbecke, Newman, and Valor, 2007; Abraham, Bullen, Gallagher, Simon, and Zwiag, 2009; Firth et al. 2008; Kuechler, McLeod, and Simkin, 2009; Koch, Van Slyke, Watson, Wells, and Wilson, 2010]. The second type probed *why students were not majoring in MIS* [e.g. Lee and Lee, 2006; Zhang, 2007; Scott et al. 2009; Ferratt, Hall, Prasad, and Wynn, 2010].

Scholars investigating the *nature of the IS profession* concluded that industry required a range of technical and social skills as well as business and management competencies from college graduates entering the workforce (Abraham et al. 2006; Abraham et al. 2009). Scholars identified the need to emphasize the business context and the importance of management in IS curriculum [McGann et al. 2007]. Koch et al. [2010] and Topi, Valacich, Wright, Kaiser, Nunamaker, Sipior, and de Vreede, [2010] stressed that technical curricula should be redesigned to include more practical experience for students. Topi et al. [2010] suggested that the curriculum must help students with skills that can be used outside of an academic environment. Dick, Granger, Jacobson, and Van Slyke [2007] and McGann et al. [2007] indicated the importance of curriculum integration to improve skill development and relevance to students' careers. Furthermore, scholars emphasized leadership courses, guest speakers, and mentoring to retain students [Topi et al., 2010; Koch et al., 2010]. Some IS programs experimented with innovative approaches to improving enrollment most significant of these took comprehensive and integrated approaches to recruitment of students, design and delivery of curriculum, and placement of students [Firth et al., 2008; McGann et al., 2007; Koch et al., 2010].

The second type of research during this time period focused on understanding student perceptions of the IS profession. As mentioned earlier in this section; the diversity of the IS discipline created lack of understanding. Of particular interest to the IS community was why, despite the recovery of the job market in the IS field, enrollment was still dropping [Granger et al., 2007]. A number of IS scholars set out to understand factors that influence students to not choose to major in IS programs. This research consistently identified that students have strong misperceptions of IS. These misperceptions can be summarized in three predominant themes:

1. **There are no IS Jobs:** studies reported that students still believed that there were no jobs in IT [Abraham et al. 2006; Lee and Lee 2007; Zhang 2007; Abraham et al 2009; Akbulut-Bailey, 2009]. Students' perceptions were that due to the dot-com burst and IT offshoring there are few current and future job opportunities in the field [Granger et al., 2007; Lee and Lee, 2007]. Furthermore, students thought that IT jobs did not pay well [Granger et al., 2007].
2. **IS jobs are too technical and thus, too hard:** studies indicated that students viewed IS majors as technical and hard [Granger et al., 2007; Dick et al., 2007; Walstrom et al., 2008] and not always relevant to industry. Perception of sitting at a computer all day also surfaced in the literature [Akbulut-Bailey, 2009]. Zhang [2007] also indicated that students often view IS professionals as "geekie" and do not want to associate with their co-workers.
3. **Fear of IT:** students self-efficacy regarding computers also came through in some of the studies [Zhang, 2007; Walstrom, Schambach, Jones, and Crampton, 2008]. These studies showed that students did not feel they had the aptitude for working with IT thus believe that they would fail if they majored in MIS.

### The Recovery (2010-2014)

In the late 2000s the Great Recession hurt recovering IS enrollment numbers [Koch et al., 2010]. But, in 2010 the enrollment decline stopped and for the first time in over a decade, enrollment was on the rise again. The growth in enrollment in this period was small but steady as indicated in figure 1. Job growth was projected to continue to increase, but the supply of graduates was only

slightly increasing [Benamati and Rajkumar, 2013]. The slow growth in IS enrollment was not a match for the job growth in IS/IT. This was of significant concern to the IT industry desperately seeking talent [Benamati, Ozdemir, and Smith, 2010]. An additional concern of the field in this most recent timeframe was the status of IS programs. In light of decreased education funding, IS departments with low numbers were prime candidates to be cut [Firth et al., 2011]. The continued struggles in the IS community to define the field and create consistent standards led the public to downplay the importance of IS [Firth et al., 2011]. Furthermore, research identified a mismatch between IS curricula and industry needs [Gefen, Markus, McLean, Ragowsky, Rivard, and Rossi, 2012]. The IS scholarly community continued its focus on the enrollment challenge.

Research focusing on student perceptions identified some consistent misunderstandings of the profession. In their most recent research on student perceptions of MIS, Joshi et al. [2011] and Benamati and Rajkumar (2013) indicated that students still hold the image of IS professionals as “geeky/nerdy” affecting the desirability of the profession. Students social network (peers and families) beliefs of IS careers were a significant influence as well (Joshi and Khun, 2011; Downey, 2011). Akbulut-Bailey’s [2012] research findings indicated that social support would help stimulate interest in the field as it enhances self-efficacy and play a role in recruitment (Akbulut-Bailey, 2012). Walstorm and Schambach [2012] conducted an interesting study of student perception to assess the impact of awareness of an MIS career path on student perceptions. Their findings indicated a positive impact of student perceptions once they become clearer on the details of the activities of the career rather than the conceptual understanding of the field.

### Summary

This review focused on the state of the IS profession, IS enrollment, and the perceptions students hold of the profession. Over the last decade and a half we have seen some dramatic changes in job market demands and IS enrollment causing great angst in the industry as many IS jobs go unfilled. The literature also reveals significant challenges:

1. The relevance of IS curricula continues to fall short of industry demands despite some of the headway made in the “Slow Down Era”. This could be explained by the economic and political challenges IS programs are facing in terms of faculty cuts and mergers with other departments.
2. Student misperceptions of IS programs/careers persist, despite efforts to manage and change them.

### III. Methodology

Our study aims to gain a deeper understanding of the nature of student perceptions of MIS and the changes in these perceptions over time. Our target population was students enrolled in business schools as this often is the target population of MIS programs. To this end we conducted an in depth longitudinal study of students enrolled in a College of Business that housed a top ranked MIS Program in the Midwest of the US. The use of a case study method is appropriate as we attempt to gain deeper understanding of student perception and the changes in student perceptions in a naturalistic setting over time [Yin, 1984]. The study collected data in three phases between 2006 and 2014.

#### Data Collection in Phase 1 (2006) & Phase 2 (2010)

In phases 1 (2006) and 2 (2010) we aimed to better understand and elaborate on themes from the literature regarding perceptions of MIS and MIS jobs. In each of the first two phases we utilized three focus groups of 8 to 11 business students enrolled in the Introduction to MIS course required for all business students. Focus group participants were self-selected. Focus group facilitators were upperclassmen in the college trained to conduct the focus groups. Focus groups also included a scribe that took detailed notes while recording the discussion. The focus groups were designed to elicit student input on themes identified in the literature listed below:

1. What is MIS?
2. What are the types of skills required by MIS professionals?
3. Describe the types of people pursuing MIS careers.
4. What is the nature of the MIS major/curriculum?
5. What is the nature of the job market in MIS?
6. What do MIS graduates do?
7. Would you major in MIS? Why?

In phases 1 and 2 of the study we also elicited input from non-MIS faculty and staff members in a semi structured interview in each of the phases (10 in phase 1 and 8 of the same faculty and staff in phase 2). Interviews were recorded and transcribed.

In phase 1, data from the focus groups and faculty interviews informed a questionnaire that was distributed to approximately 200 students enrolled in the Introduction to MIS required course at the start of the quarter. Students were also asked to forward the questionnaire to their parents. Participation in the questionnaire was voluntary in phase 1. There were 35 student responses and 28 parent responses. In phase 2 in 2010, students taking the introduction to MIS course were asked to complete the questionnaire during the class period which increased the responses to 216 responses. The questionnaire was consistent in phases 1 and 2 and contained close-ended statements (5 point scale with 5 being strongly agree) regarding the themes in the literature and the focus groups regarding the technical nature of MIS, the level of difficulty, the nature of the jobs in MIS and skills required, and the nature of the job market. The questionnaire also contained open ended questions to allow students and parents to articulate what is MIS, nature of jobs, and general concerns regarding MIS as a career paths. Open ended questions helped us gain better understanding of the perceptions in participants own words.

### **Data Collection in Phase 3 (2014)**

In phase 3 of the study we shifted our attention from research question 1 to research questions 2 and 3 in more depth. Findings from phases 1 and 2, and new themes in the literature suggested we turned our attention to gain a deeper understanding of student perceptions and focus on asking why students major in MIS. We targeted the same population of students in the introductory MIS course receiving 317 responses. We utilized the same set of open ended questions we utilized in focus groups and questionnaires in phases 1 and 2.

### **Data Analysis**

The data was first analyzed within each phase. Qualitative data was analyzed using Miles and Huberman's (1994) iterative process of data collection, data reduction, data display, and then we ultimately drew and verified conclusions. A basic content analysis framework was first developed using themes from the literature (e.g. MIS as technical, non-technical, or sociotechnical; jobs available/not-available). Content analysis was modified until we reached saturation within each category. Two to three coders were utilized to conduct the content analysis within each phase, and inter-coder reliability tests were performed to reach above 80% inter-coder reliability. Quantitative data was analyzed using descriptive statistics to identify range and strength of perceptions. Cross analysis of the findings from each phase was conducted to identify the changes of perception over time.

## **IV. Results**

The study investigated the following three research questions:

- What were the MIS-perceptions of MIS Programs between 2006 and 2014?
- Which MIS-perceptions changed during that period?
- Which MIS-perceptions did not change and why?

In this section we will present the findings addressing each question organized under each data collection phase.

### **What were the MIS-perceptions in 2006?**

The results from the student focus group followed by the surveys of parents, and students and interviews with non-MIS faculty confirmed themes in the literature. Findings suggested that respondents viewed MIS careers as technical and difficult, confirmed the image of a “techie geek” in the computer lab behind a computer, and the perception that MIS jobs are diminishing. The data across all three stakeholder groups revealed that in 2006, students, parents and faculty from non-MIS disciplines identified MIS as a **technical field** with roles primarily in programming, development, support and a few in IT consulting. Specifically, students in the focus groups perceived that the MIS major centered on programming because of the observation of MIS majors spending significant amount of time in the labs programming. MIS majors were perceived to require a high level of intelligence, detail orientation, and self-motivation to work with computers. Our questionnaires indicated that more than 50% of respondents either agreed or strongly agreed with the statement that MIS is a technical field. Most striking is that 96% of respondent scored between 3 and 5 (on a 5 point scale with 5 being strongly agree) that MIS professionals spend most of their time behind a computer. The faculty interviews were no different.

When asked about the MIS job market, faculty and students shared their **concerns regarding offshoring** and outsourcing as significant threats to the technology industry. Some expressed that their non-MIS faculty and parents mention that there is little future in MIS and that it is perceived as a second major. For example one student stressed that “We are told in college intro classes that MIS is a ‘complement major’ and can’t survive on its own.” Survey results indicated that 79% of respondents scored between 3 and 5 (on a 5 point scale with 5 being strongly agree) that MIS jobs are declining.

When probed regarding a deeper explanation of what MIS is and the roles MIS graduates take in industry, it was apparent the students have **no clear understanding of what is MIS or what an MIS graduate does**. Most participants however stressed that MIS graduates are “techies” good with computers. For example one student mentioned “if I have a computer problem, I always call an MIS major. They [MIS majors] have to be good with computers.”

### **What were the MIS-perceptions in 2010?**

The results from the student focus group followed by the surveys of parents, and students and interviews with non-MIS faculty suggested that respondents viewed MIS careers as technical and somewhat difficult, confirmed the image of a techie in the computer lab behind a computer, and that MIS jobs are growing. The data across all three stakeholders revealed that in 2010 students, parents and faculty from non-MIS disciplines identified MIS as a **technical field** and identified technical roles in programming, web development and Microsoft Office, and a few in IT consulting. Non-MIS majors referred to their introductory MIS courses and the emphasis on IT tools as an indication of what the major will be like. Students in the focus group also perceived that MIS major centered on programming because of the observation of MIS majors spending significant amount of time in the labs doing programming assignments. Our surveys indicated that more than 67% of respondents scored between 3 and 5 (on a 5 point scale with 5 being strongly agree) on the statement that MIS is a technical field. In the survey 89% of respondents scored between 3 and 5 (on a 5 point scale with 5 being strongly agree) that MIS professionals spend most their time behind a computer. The faculty interviews were no different though they did emphasize the importance of business understanding. One faculty for example made the following statement to explain why students do not major in MIS “I can’t go into MIS; I don’t know anything about computers.”

When asked about the MIS job market faculty and students were **optimistic regarding the MIS job market**. Survey results indicated that 80% of respondents scored between 3 and 5 (on a 5



point scale with 5 being strongly agree) that MIS provides more job opportunities than other fields and only 54% indicated were neutral to strongly agree that MIS jobs are still being offshored. Students and faculty referred to MIS as a secondary major despite the positive job outlook “The best area for growth with the MIS major is as a complimentary major.”

When probed regarding a deeper explanation of what is MIS and the roles MIS graduates take in industry it was clear the non-MIS faculty, staff and students have *no clear understanding of what is MIS or what an MIS graduate does*. Most participants could recite a conceptual definitions about integration of IT in Business but focus on the technical elements of designing and developing programs and websites. One faculty member explained “I don’t know what you do.”

### **What were the MIS-perceptions in 2014?**

In 2013-2014 we conducted a survey of all students enrolled in the Introduction to MIS course in the College of Business. The focus of this phase was to try to focus on students and their understanding of MIS and MIS roles by asking them to articulate it in their own words. We first asked the students to define what MIS is. About 14% had no understanding of what MIS was, 26% emphasized that MIS is a technical field, and 60% stressed the integration of IT in business. When asked about the types of jobs available for MIS graduates almost all students indicated that there is a positive job market and 23% listed developer type jobs; 21% support IT personnel jobs and the remainder are analyst and consulting jobs. Students were then asked to identify whether they are considering a major in MIS 22% responded yes, 56% said no, and 21% said they would consider it as a second major. When asked to explain why they would not consider MIS they explained that MIS is more difficult, they do not have the technical skills or they don’t enjoy the work.

The results of phase 2014 of the research make clear that Business students understand MIS on a conceptual level and in broad terms. The majority of them understand that MIS is not just about technology, but also how the technology interacts with business and processes. So, we observed their understanding of MIS as highly general. Further, questions regarding roles of MIS majors, and their view of the skills necessary to succeed in the profession revealed very limited knowledge of the true nature of the MIS profession. It was clear that the students now know the definition of MIS, but they do not actually understand what MIS professionals do.

Students still associated MIS with PowerPoint, Excel, Web Design, and Application Development – all major components of introductory level Computer literacy courses in the university and business curricula. This content often introduced in introductory courses skewing students’ comprehension of the major. Students seemed to have knowledge on possible career paths for an MIS major, such as Business Analysts, Consultants, and IT Personnel but not a complete understanding of these roles.

### **RQ2: Which MIS-perceptions changed between 2006 and 2014?**

Analyzing the data across the three phases we can see three clear changes. Phases 1 and 2 seem more similar, and phase 3 provides a divergent perspective.

1. **Increased Confidence in the Job market:** In 2006 the data revealed that parents, students and faculty had little confidence in the MIS job market despite the growth in jobs indicated in the literature. This view changed significantly in 2010 and 2014. In 2010 80% of survey respondents indicated a perception of a strong MIS job market and in 2014 almost 100%. In fact, in 2014, 30% of students mentioned that they were considering MIS as a first or second major due to the positive job market compared to other majors.

2. **Decrease mention of outsourcing and offshoring:** in 2006 offshoring was a significant theme and a deterrent from majoring in MIS. Parents, faculty and students mentioned offshoring strongly in phase 1 and associated it with loss of jobs. In 2010 there was still mention of concerns of offshoring (54%) but the optimism of the job market for MIS graduates was not affected. In fact what was most striking was that there was little mention of offshoring in phase 3.
3. **Better understanding or explanation of what MIS is:** Over time, faculty, parents and students were better able to articulate what MIS is. In 2006 we often heard the question “so what is MIS?” Respondents of the various phases could not articulate a definition of MIS and often associated it with “computers” only. In 2010, respondents did not have a much better articulation of MIS. In 2014 we saw a clearer articulation and definition of MIS including both technology and business concepts. Basic understanding of MIS roles also became broader to include business analysts and consulting. In 2006 and 2010 respondents predominantly included development and tech support roles with MIS graduates. In 2014 respondents identified new roles such as business analysts and projects managers as roles MIS majors occupy.

### **RQ3: Which MIS-perceptions did not change and why?**

Some MIS-perceptions persisted across all three phases and indicate a lack of true understanding of the role of MIS in business. Students in all phases of the research stressed that MIS is about MS Office, Web development and programming. Most jobs identified with MIS remained technical (developer positions and technology support). Most cited reasons for why students don't major in MIS is because it is too technical and does not satisfy their business interests. In interviews with students, faculty and staff we are consistently asked to explain what MIS graduates do. The research indicates that the general population understands “what MIS *is*” conceptually” but does not understand “what MIS *does*” explicitly.

## **V. Discussion and Conclusion**

This analysis does suggest that significant progress has been made in debunking some of the primary misconceptions about the MIS Major. Students are starting to appreciate that MIS programs are valuable, doable and present viable career options. This progress has come through proactive efforts by MIS Programs to dispel misconceptions early in students' careers. It has also been essential to work with employers to generate interest in the major and to show there is significant demand for talent. Increased word of mouth by peers has also begun to have a positive impact on enrollments. As a result, students do see the potential in the incredible diversity of IS careers available. They are realizing there are jobs out there, and they pay well. They are also beginning to see that the technical side of IS programs is surmountable, possibly driven in part by the new generation of tech-savvy millennials who are making their way into our classrooms. But we see their level of understanding of MIS as still far too general. Students remain unclear on the specific roles IS professionals play in organizations and specific career options the MIS Major creates.

So, despite the clear progress in addressing MIS-perceptions over the past 1.5 decades, there is a great deal of work to be done before MIS programs are on par with other more familiar disciplines such as marketing, accounting and finance. It seems we have been successful at convincing more students to give MIS a try. We have been able to successfully address their initial fears/concerns about the curriculum, but we haven't been able to successfully paint the clear picture of the definitive career options MIS programs can create. As our students gain clarity on what MIS is and is not (in the classroom), they still struggle to understand what MIS does (in the outside world). We submit that the key to establishing the needed level of clarity will come through establishing “What MIS is” through unified constructs to define and scope MIS and utilizing recognized IT tools. It is equally if not more important to leverage employers/practitioners

to clarify “What MIS Does” through real world examples. We therefore offer the following strategies to take the next step towards MIS clarity:

### Establish Unifying Constructs

In order to define “What MIS Is” programs need a consistent set of unifying constructs, which lay out the primary terms, clarify how they relate and define the scope of MIS. These constructs will vary from program to program, but should be established in cooperation with key employers/MIS advisory boards and once established should be understood and utilized by all faculty. Examples of unifying constructs could include a definition and model of information systems (What are information systems?), the system development lifecycle (how are they developed?) and types of information systems included in the program. Accordingly, we offer the following unifying constructs examples:

#### 1. Information Systems Model – “The IS Triangle”

This construct offers a general definition of information systems as sets of people, processes and information technology, implemented to help organizations to support strategic goals and achieve operational efficiency. This provides a common definition of IS in the most general sense.

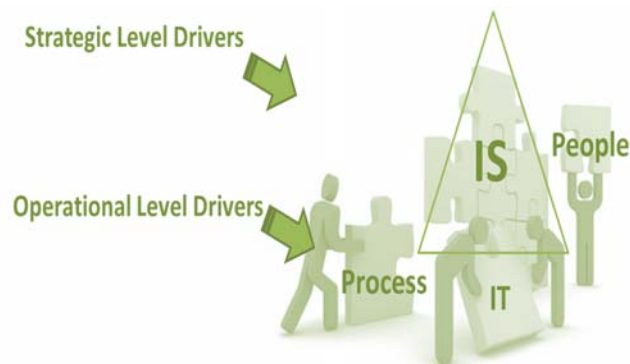


Figure 2: The IS Triangle

#### 2. The System Development Lifecycle

Having a common definition of the process used to develop systems is also critical. The phases, action taken in each phase, and deliverables created should all be consistently used by program faculty to create a consistent understanding of the process. While it is critical that MIS programs expose students to a range of systems development methodologies, it is important to adopt one more comprehensive methodology such as the SDLC.



Figure 3: The SDLC

#### 3. The “Big 3” Information Systems

The scope/universe of types of information systems should be defined through a high-level systems architecture diagram such as figure 3. This “Big 3” diagram lays out the three specific categories of IT tools used (Enterprise Systems, Business Intelligence Systems and Collaboration Systems, what they are used for and how they integrate to transact business, promote decisions and information sharing.

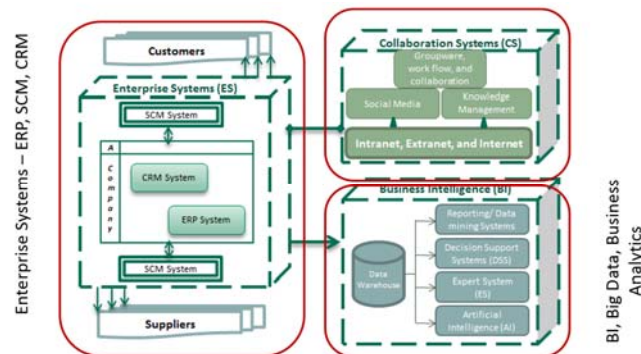


Figure 4: The Scope: “The Big Three”

### Utilize Recognized IT Tools

In order to create a more tangible experience for students, use of recognized toolsets for each of the “Big 3” is essential. Solutions such as SAP for enterprise systems, SAS for BI and MS SharePoint for Collaboration can provide highly tangible examples that students can grasp readily.

### Leverage Practitioners to Provide Real World Examples

With a common understanding of “What MIS Is”, it becomes essential to paint a clear picture of “What MIS Does” through real-world illustrations of career paths, typical days in the life, and other similar activities that involve IS professionals. It will be essential to increase the level of engagement with students by IS professionals in order to transcend the next level of understanding in our quest to clarify “What MIS is” (and is not) and more importantly to the next phase, “What MIS does”.

We see ample opportunities for future research through continuing our longitudinal study in the current IS program and deepening the qualitative approach. We also see the opportunity to extend the qualitative study to multiple MIS programs using the same methodology to compare and contrast. Finally, we are intent on developing a quantitative instrument to look more deeply into the factors that drive perceptions of the MIS major, careers and perceptions of the future of our field amongst students, faculty, advisors, and parents.

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