Improving IS Enrollment Choices:
The Role of Social Support

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ABSTRACT

Over the last decade, enrollment in Information Systems (IS) and related programs has dropped worldwide and still remains low despite positive job market predictions. Given the significant negative consequences of low enrollments on both academia and industry, the IS community has focused its efforts on mechanisms to increase enrollments. This study investigates how such a mechanism – social support – influences students' aspirations to pursue an IS degree. More specifically, the study suggests that social support, self-efficacy, outcome expectations, and interests independently and cumulatively affect students' choice of IS as their major.

Keywords: Enrollment, Careers, Curriculum design and development, Student perceptions, Pedagogy.

1. INTRODUCTION

Over the last decade, enrollment in information systems (IS) and related programs has plummeted worldwide and still remains low despite positive job market predictions. In the United States, student enrollment has fallen by as much as 75 percent since 2000 (Street et al., 2008). Many universities in Europe have also reported similar sharp drops in enrollments both at the undergraduate and graduate levels (Panko, 2008; Leeuwen and Tanca, 2008). At the same time, employment projections indicate that career opportunities in the field are strong and the demand for information technology (IT) professionals continues to increase (Lomerson and Pollacia, 2006; Panko, 2008; Leeuwen and Tanca, 2008). For example, in the United States, IS field is expected to add about 1.25 million new jobs for the period 2010-2018. This implies that the employment growth in IS will be about 50% greater than the average job growth rate in other fields (Laudon, 2011). Even though anecdotal evidence suggests that enrollments have started to increase in the last couple years, estimations are that in the near future, there will not be enough IS graduates to fulfill the increasing demand (Lynch, 2007).

Given the significant negative consequences of low enrollments on both academia and industry (such as program/department closures, faculty layoffs, tenure failures, inability to fulfill the demands of companies that are desperately seeking qualified IS graduates), the IS community has focused its efforts on implementing different mechanisms to increase enrollments (Dick et al., 2007; Firth, Lawrence, and Looney, 2008; Galletta, 2007; Kuchler, McLeod, and Simkin, 2009; Looney and Akbulut, 2007;

Street et al., 2008). Some of these initiatives focus on marketing and promotional efforts to build awareness about IS degrees and careers and to change the image of the profession by busting the prevailing myths. Other initiatives emphasize revamping university curriculum to make IS programs and courses more attractive and valuable to today's students.

Even though these initiatives appear to be potentially profitable approaches aimed at curtailing declining enrollments, there is very limited empirical evidence to prove whether implementing these mechanisms would actually result in an increase in the number of students pursuing IS degrees and careers. Therefore, the different approaches that are recommended in the literature must be confirmed and validated through qualitative and quantitative studies. Moreover, existing recommendations are largely based on how educators perceive the enrollment issue from a macro perspective. In order to facilitate a more comprehensive understanding of the situation, it is necessary to understand the mechanisms by which students are compelled to seek IS degrees from their perspective. This study will address this important research gap by developing and testing a research framework that could be used to explain how and why a key environmental support factor that has been repeatedly mentioned in the literature, social support, influences major selection in the IS discipline from students' perspective.

Environmental supports refer to the environmental factors (e.g., financial support, availability of facilities, social support, existence of role models, etc.) that people perceive as having the potential to facilitate their efforts to implement a particular educational or occupational goal

(Lent, Brown, and Brenner, 2002). In terms of social support, students who perceive high levels of support from the people who are important to them, such as family, friends, advisors, etc. might become more confident in their abilities to pursue an IS major, expect to receive valued rewards from majoring in IS, develop greater interest in the IS discipline, and acquire aspirations to choose IS as their primary field of study (Akbulut and Looney, 2007).

A review of the relevant literature shows that no study to date has empirically linked perceived social support to student academic and career choices in the IS field. Moreover, a theoretical model has yet to be put forth to explain the means by which social support might influence students to select IS as a major. Understanding these underlying mechanisms has significant implications for developing successful intervention strategies to attract more students to the IS field. In this respect, the specific objectives of this current study are: (1) to empirically validate whether perceived social support improves student interest in and choice of the IS major and (2) to derive and test a theoretical model that can be used to explain how and why social support influences major selection.

The remainder of this paper is organized as follows. The next section provides a review of the literature, followed by a brief overview of the underlying theory base. A research model and an interrelated set of hypotheses are then put forth. The research methodology is subsequently outlined and the results presented. The paper concludes with a discussion of the findings and implications.

2. LITERATURE REVIEW

In the recent years several studies have been conducted to address the issues related to MIS enrollments. These studies can be categorized into three major groups: (1) studies that focus on the reasons behind the sharp decline in enrollments, (2) studies that others offer strategies for improving enrollments, (3) studies that focus on the factors that influence student interest in and choice of IS majors.

Numerous reasons have been cited in the literature to explain declining IS enrollments. Some of these reasons revolve around the changes in the economy and market conditions and the corresponding changes in the IT employment landscape (Baskerville et al., 2005; Becker, Hassan, and Naumann, 2006; Dick et al., 2007; George, Valacich, and Valor, 2005). Other reasons that have been cited in the literature to explain the decline in enrollments focus mainly on the shortcomings of the IS curriculum such as the curriculum being outdated and boring, and not including a correct mix of technical and business skills; as well as on the students' lack of knowledge about the field and their negative perceptions of IS professionals and the profession (Dick et al., 2007; Van Slyke et al., 2007; Enns, Ferratt, and Prasad, 2006; Firth, Lawrence, and Looney, 2008; Galletta, 2007; Scott et al., 2009).

Several short or long term approaches have been offered to address enrollment problems. Some these approaches focus on marketing and promotional efforts to build awareness about IS degrees and careers and to change the negative image of IS professionals (Becker, Hassan, and Naumann, 2006; Dick et al., 2007; Galletta, 2007; Granger et al., 2007; Scott et al., 2009; Street et al., 2008). On the other hand curriculum related approaches focus on making IS programs and courses more attractive and valuable to today's students (Akbulut and Looney, 2007; Becker, Hassan, and Naumann, 2006; Dick et al., 2007; Galletta, 2007; Granger et al., 2007; Scott et al., 2009; Street et al., 2008). Some researchers also provide more specific suggestions based on the on the intervention initiatives utilized at their institutions (Firth, Lawrence, and Looney, 2008; Koch et al., 2010).

The third category includes the studies that focus on the factors that influence student interest in and choice of IS majors. These studies utilize different theoretical bases and try to identify how and why certain factors (e.g. self-efficacy, outcome expectations, social norms, social beliefs, work value congruency, innovative technologies, effective teachers, attitudes, etc.) influence students choices in the IS field (Akbulut and Looney, 2009; Joshi and Kuhn 2011; Koch and Trower, 2011; Looney and Akbulut, 2007).

3. THEORETICAL BACKGROUND

This study utilizes Social Cognitive Career Theory (SCCT), which was developed in the vocational psychology literature (Lent, Brown, and Hackett, 1994). SCCT represents a framework for understanding the mechanisms through which individuals form academic and career relevant interests, make choices among available options, and perform and persevere in their selected fields of pursuit (Lent, Brown, and Hackett, 1994).

Built upon Bandura's (1986) triadic reciprocal model of causality, SCCT represents a comprehensive set of personal, environmental, and behavioral variables that influence academic and career choice behaviors over time. According to SCCT, these variables operate as interlocking mechanisms that affect one another bi-directionally. Individuals bring a set of abilities, expectations, histories, emotions as well as cognitive resources to deploy when interacting with the environment. When considering potential behaviors, individuals assess their ability to engage in these behaviors by integrating perceptions of themselves, the environment, and the particular behavior in question. Environmental forces can enable or inhibit certain types of behavior. Behavior in a given situation is, therefore, mutually determined by environmental and personal factors (Looney and Akbulut, 2007).

Akbulut and Looney (2007) adapted the SCCT to develop a model that describes the core factors affecting student decisions to major in IS. The IS Major Choice Goals Model focuses on four factors - self-efficacy, outcome expectations, interest, and choice goals - that are particularly relevant to the academic choices. Even though the Model provides an explanation of the main factors that motivate students to choose a major in the IS field, it does not incorporate all the factors that could potentially influence students' major or career decisions. Moreover, similar to the original SCCT, the core model does not include any environmental factors. This is a major limitation because the environment might have important effects on the student's attitudes toward an IS major (Joshi and Kuhn, 2011). This current study extends the IS Major Choice Goals Model by including an environmental factor, social support.
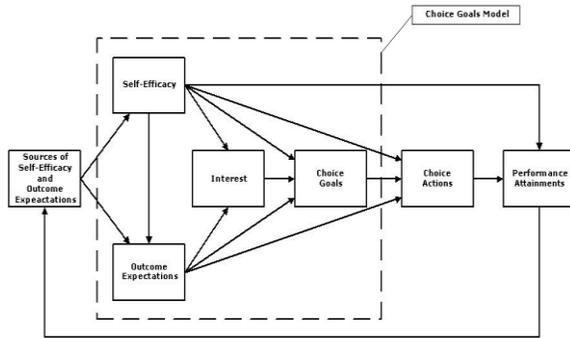
Figure 1. SCCT and IS Major Choice Goals Model

Even though the Model provides an explanation of the main factors that motivate students to choose a major in the IS field, it does not incorporate all the factors that could potentially influence students' major or career decisions. Moreover, similar to the original SCCT, the core model does not include any environmental factors. This is a major limitation because the environment might have important effects on the student's attitudes toward an IS major (Joshi and Kuhn, 2011). This current study extends the IS Major Choice Goals Model by including an environmental factor, social support.

Environmental Factors. Environmental factors refer to the temporal and spatial forces beyond an individual's boundaries (Bandura, 1986). According to SCCT, individuals do not make educational and career choices in a vacuum, as they are aware of particular environmental circumstances. The career development literature has identified several environmental factors that individuals perceive as aiding their efforts to implement a particular educational or occupational goal. For instance, a variety of support factors have been mentioned in the literature including social support, role models, instrumental assistance, and financial resources (Lent, Brown, and Brenner, 2002; Akbulut and Looney, 2009). While there are many important support factors to consider, this study focuses on the role of social support in steering students toward the IS major. *Social support* refers to students' perceptions that most people who are important to them would approve and encourage their decision to major in IS. Social support can come from a variety of people including family, friends, advisors, peers, and the like (Clark, Murdock, and Koetting, 2008). Zhang (2007) identified opinions of parents and professors as an important factor affecting students' decisions to major in IS. Research has shown that social support enables students to develop a strong sense of professional identity, leading to positive results (Inglehart and Brown, 1989). For example, it is plausible that students who perceive high levels of social support would become more confident in their abilities to pursue an IS major, expect to receive valued rewards from majoring in IS, develop greater interest in the IS discipline, and acquire aspirations to choose IS as their primary field of study. Moreover, these students would be more likely to be satisfied with their decision to pursue the IS major. Therefore, social support is expected to play an influential

role in student psychology and behavior in the context of IS major choices.

Personal Factors. SCCT focuses on three key personal factors including self-efficacy, outcome expectations, and interests (Lent, Brown, and Hackett, 1994).

Self-efficacy: Self-efficacy is defined as the perception of one's ability to organize and execute certain courses of action to accomplish a particular task (Bandura, 1986). Self-efficacy provides individuals with a set of beliefs regarding their capabilities to exercise control over their actions and the environment. IS research suggests that self-efficacy plays a critical role when one interacts with information technologies. For example, self-efficacy plays a central role in IT training (Agarwal, Sambamurthy, and Stair, 2000; Johnson and Marakas, 2000), technology acceptance (Taylor and Todd, 1995) and technology use (Compeau and Higgins, 1995a, 1995b) to name a few. Self-efficacy judgments are situational and task-specific (Marakas, Yi, and Johnson, 1998), meaning that self-efficacy judgments should match the behaviors they intend to predict (Bandura, 1986, 1997). Therefore, this study focuses on a context-specific form of *self-efficacy,* which is defined as an individual judgment of one's capability to perform effectively as an IS major.

Outcome Expectations: Outcome expectations capture the perceived likelihood that favorable consequences will occur after one has acted (Bandura, 1986, 1997). Although behaviors must be carried out to realize outcomes, individuals do consider the prospective outcomes before undertaking a particular task. Individuals are more likely to undertake behaviors that they expect to result in favorable outcomes. As such, unless one expects the behavior to produce favorable outcomes, the individual may lack the necessary motivation to undertake the behavior (Bandura, 1986, 1997). Outcome expectations can take three major forms: (1) physical (e.g., job security), (2) social (e.g. recognition), and (3) self-evaluative (e.g., sense of accomplishment), (see Bandura, 1997). Similar to self-efficacy judgments, outcome expectations target the outcomes that emerge as a result of performing specific behaviors. Therefore, in the context of the current study, *outcome expectations* refer to the perceived likelihood that valued rewards will be received as a result of pursuing an IS major.

Interest: Interest refers to an emotion that arouses attention to, curiosity about, and concern with a particular educational path (Lent, Brown, and Hackett, 1994). Even though individuals may try out and pursue many different activities throughout their formative years, they ultimately develop distinctive patterns of academic and career interests, as certain activities differentially intrigue people to varying degrees over time (Bandura, 1986; Lent, Brown, and Hackett, 1994). In this study, the target of interest specifically focuses on majoring in IS.

Behavior. In the context of career-related choices, the behavior in question is operationalized as choice goals, which can be defined as the determination to engage in a particular educational or occupational activity (Bandura, 1986). Specific to this study, *choice goals* refers to a students' aspirations to choose IS as a major. Choice goals play an important role in the self-regulation of behavior. People set goals to organize and guide their behavior, as well

as to increase the likelihood that desired outcomes will be attained. Goals play an important role in decision making theories, including career choice decisions. In this respect, career plans, aspirations, and expressed choices are considered as goal mechanisms (Lent, Brown, and Hackett, 1994).

4. RESEARCH MODEL AND HYPOTHESES

Based on the above discussions, the following research model is put forward (Figure 2). As illustrated in the model, social support (environmental factor), self-efficacy, outcome expectations, and interests (personal factors) are expected to independently and cumulatively affect choice goals (behavioral factor). The following sections describe the hypotheses development.
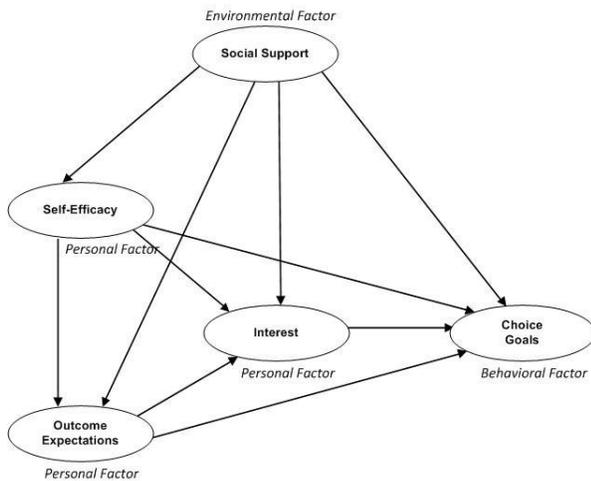

Figure 2. Research Model

According to SCCT, environmental support factors such as social support play an important role in promoting certain behaviors. Research has shown that individuals will be more determined to be engaged in a particular course of action when they perceive that behavior will be approved and supported by the important people in their lives (Inglehart and Brown, 1989). Lent et al. (2005) suggested that environmental support factors may affect individuals' choice goals directly. As such, it is reasonable to assume that students would be more determined to select a major in a field in which they feel their decision would receive support from the important people in their lives. Therefore, the following hypothesis is offered:

H₁: Social support will have a significant positive influence on choice goals.

Discussing the interplay among personal and environmental factors on behavior, research points out that most external influences affect human functioning through intermediary self-processes (Bandura, 1999, 2000). Along these lines, Lent et al. (2003) suggested that environmental support factors may also indirectly affect choice behavior through personal factors (i.e. self-efficacy, outcome expectations, and interest). The degree of social support available to students might promote student interest in a

particular subject, as individuals, such as family, friends, peers, and teachers, can expose students to a wider variety of relevant topics, activities, and advice, which may encourage students to become more inquisitive. Therefore, the following hypothesis is offered:

H₂: Social support will have a significant positive influence on interests.

According to SCT, environmental factors can have a profound influence on self-efficacy and outcome expectations (Bandura, 1986, 1997). Research has shown that social support for career choices has a tremendous influence on a person's expectations and values connected with these choices. Since students who perceive high levels of support about a particular major would be better equipped to perform certain behaviors, it is expected that social support will affect students' self-efficacy perceptions. Students who are supported by the important people in their lives are more likely to develop higher levels of confidence in their abilities to perform as an IS major. Therefore, the following hypothesis is offered:

H₃: Social support will have a significant positive influence on self-efficacy.

Similarly, social support may promote outcome expectations. Family, friends, peers, professors, advisors and the like might provide information and examples about the consequences that may occur as a result of pursuing an IS major (Compeau and Higgins, 1995a). When students perceive that they are being supported, they are apt to believe that they are more likely to obtain rewards as a result of majoring in the IS field. Therefore, the following hypothesis is offered:

H₄: Social support will have a significant positive influence on outcome expectations.

The relationship between self-efficacy and outcome expectations has been repeatedly studied in the IS literature. Research has shown that self-efficacy beliefs influence outcome expectations (Compeau and Higgins, 1995a, 1995b; Compeau, Higgins, and Huff, 1999; Looney et al., 2006). People expect to achieve desirable outcomes in activities at which they deem themselves as capable. In essence, an individual who possesses a strong sense of efficacy is more likely to believe that favorable consequences will arise from her or his actions. Therefore, it is reasonable to assume that students who have higher levels of self-efficacy will develop robust outcome expectations.

H₅: Self-efficacy will have a significant positive influence on outcome expectations.

Lent, Brown, and Hackett (1994) has demonstrated that perceptions of self-efficacy play an important role in the formation of educational and vocational interests and behaviors. People tend to form enduring interests in activities in which they view themselves as capable (Bandura and Schunk, 1981). Therefore, students with higher levels of self-efficacy will be more interested in pursuing majors and careers within the field of IS. The following hypothesis is offered:

H₆: Self-efficacy will have a significant positive influence on interest.

Self-efficacy beliefs are also assumed to have direct effects on choice goals. Bandura (1986) has proposed that self-efficacy affects an individual's goals to perform a

specific behavior. When high self-efficacy prevails, individuals are more likely to set goals to engage in a particular behavior. As such, students who are confident in their abilities to perform as an IS major would be more likely to develop aspirations to major in the IS field. Therefore, the following hypothesis is offered:

> *H7: Self-efficacy will have a significant positive influence on choice goals.*

Similar to self-efficacy, an individual's expectations about the consequences of pursing educational and vocational paths shape interests (Lent, Brown, and Hackett, 1994). In essence, when a student expects pursuing a major or career in the IS field will result in favorable outcomes, he or she will be more likely to find that IS field compelling and develop an interest. Therefore, the following hypothesis is offered:

> *H8: Outcome expectations will have a significant positive influence on interest.*

Outcome expectations can also affect choice goals directly. People develop goals, in part, based on the rewards they expect to receive. The higher the likelihood of obtaining valued outcomes, the more likely that people will adopt particular career goals. Therefore, the following hypothesis is offered:

> *H9: Outcome expectations will have a significant positive influence on choice goals.*

In addition to self-efficacy and outcome expectations, interest will influence choice goals. Research indicates that people tend to select academic and career options that match their primary interests (Holland, 1985). Emergent interests lead to cognized choice goals for further activity exposure (i.e. intention plans, or aspirations to engage in a particular academic or career direction), fostering the development of goals to choose particular actions (e.g., declaring a corresponding major) (Lent, Brown, and Hackett, 1994). Therefore, students who are interested in the IS field will be more determined to major in the IS discipline.

> *H10: Interest will have a significant positive influence on choice goals.*

5. METHODOLOGY AND ANALYSES

The survey methodology was used to collect the data for testing the research hypotheses. The sample, construct operationalization, and analysis are presented in the following subsections.

5.1 Sample and Procedure
Study participants consisted of students enrolled in an introductory level management information systems course at a large state university in the United States. A web-based survey was administered at the end of the semester. Survey participation was completely voluntary. A total of 318 usable responses were obtained. Forty five percent of the respondents were female and respondents averaged 21.4 years of age ($SD = 2.14$). All students were required to take the course in order to pursue business degrees, but the vast majority of students were still in the process of formalizing their major decisions. Second, the opportunity to persuade a prospective student typically disappears after a different major has been chosen. Students who indicated that they had

already chosen a major were removed from the sample. Chi-squared and t-tests did not reveal any significant differences between discarded and retained respondents in terms of gender, age, class standing, or business school classification.

5.2 Measures
A total of five scales were used to test the research hypotheses. Existing scales were utilized directly to take advantage of their proven psychometric qualities (Boudreau, Gefen, and Straub, 2001). Four scales (self-efficacy, outcome expectations, interest, and choice goals) were available and applicable in their current forms. The remaining scale (social support) was adapted to reflect the context accordingly. Please refer to the Appendix 1 for a list of the items.

Self-efficacy, outcome expectations, interest, and choice goals were measured utilizing the measures developed by Akbulut and Looney (2007). Self-efficacy construct focused specifically on IS major self-efficacy and was measured with a six-item scale. The scale included questions about students' abilities to perform well as an IS major, to successfully master the course material associated with an IS major, among others. The response format for the questions included an 11-place Likert type scale ranging from 0 (*Cannot Do*) to 10 (*Certain Can Do*).

Outcome expectations construct focused on three groups of positive outcomes (physical, self-evaluative and social) that would be achieved as a result of pursuing an IS major. A ten-item scale was used to measure outcome expectations. The scale items focused on job security, sense of accomplishment, and being perceived as competent, among others. The response format consisted of an 11-place Likert type scale anchored by 0 (*Will Never Occur*) to 10 (*Will Always Occur*).

Interest and choice goals were measured using five and four items respectively. Interest construct focused on students' interest in the IS major and included questions about how interesting the IS major and the courses and activities involved in an IS major were. Choice goals construct focused on students' aspirations to pursue an IS major. For both interest and choice goals scales, the response format consisted of 7-place Likert-type scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

Social support construct was measured via 4 items, which were adapted based on previous studies (Lent, Brown, and Hackett, 1994; Lent et. al., 2003). The scale included questions about the level of support the students would receive from the important people in their lives if they majored in IS. A 7-place Likert-type scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) was utilized.

5.3 Data Analyses
Partial Least Squares (PLS) was used for data analysis (Barclay, Higgins, and Thompson, 1995; Wold, 1985). More specifically, PLS-Graph Version 3 was utilized (Chin, 2003). PLS is a latent structural equation modeling technique that uses a correlational principle component-based approach to estimation. PLS was chosen because it is a well-suited technique for testing theories in the early stages of development (Taylor and Todd, 1995).

Construct	No. Items	Avg. Item Scores		∝	CR	AVE	Constructs				
		M	*SD*				CG	INT	OE	SE	SS
CG	4	2.881	1.577	0.979	0.984	0.940	**0.970**				
INT	5	4.369	1.337	0.950	0.961	0.833	0.691	**0.913**			
OE	10	8.061	1.855	0.967	0.972	0.780	0.335	0.508	**0.883**		
SE	6	5.868	2.108	0.974	0.979	0.885	0.487	0.516	0.415	**0.941**	
SS	4	5.536	1.132	0.960	0.971	0.894	0.290	0.414	0.602	0.335	**0.946**

[a]Diagonal elements (in bold) represent the square root of the average variance extracted (AVE). Off-diagonal elements represent the correlations among constructs.

Note: *M* = mean average item score (unweighted). *SD* = average item score standard deviation. ∝ = Cronbach's alpha. CR = composite reliability. AVE = average variance extracted. CG = choice goals, INT = interest, OE = outcome expectations, SE = self-efficacy, SS = social support.

Table 1. Descriptive Statistics, Reliability, Correlations, and Discriminant Validity

Considering that the current study serves as an initial attempt to advance a theoretical model on IS enrollments, PLS can be used to analyze the data (Keil et al., 2000). PLS allows the researchers to confirm the psychometric properties of the measurement model prior to estimating the structural model parameters, as discussed in the following sections.

5.3.1 Measurement Model Analysis: Reliability and validity of the indicators and constructs were examined. First, reliability of each construct was evaluated to ensure that the items collectively measured their intended construct consistently (Gefen, Straub, and Boudreau, 2000). Reliability was assessed by examining the reliability of individual items (Cronbach's α) and the composite reliability of constructs (Barclay, Higgins, and Thompson, 1995; Fornell and Larker, 1981). As shown in Table 1, both Cronbach α's and composite reliability scores were well above the recommended level (0.70) for acceptable reliability (Barclay, Higgins, and Thompson, 1995; Fornell and Larker, 1981). As such, the reliability of the scales was confirmed.

Convergent validity was also assessed at the individual item and construct levels by examining the individual item loadings and the average variance extracted (AVE) respectively (Fornell and Larker, 1981). All individual items exhibited adequate loadings (greater than 0.707) and no unacceptable cross loadings emerged (Table 2). As shown in Table 1, the AVE score for each construct is also well above the recommended (0.50 or greater) level (Fornell and Larker, 1981). Therefore, convergent validity was confirmed.

Discriminant validity was assessed by comparing the AVE values associated with each construct to the correlations among constructs (Barclay, Higgins, and Thompson, 1995). The discriminant validity analysis is provided in Table 1. For each construct, the AVE exceeded the correlations between constructs, confirming discriminant validity.

Given the results of the reliability and validity analysis, it was concluded that the scales exhibited excellent psychometric properties.

5.3.2 Structural Model Analysis: The structural model was tested by estimating the path coefficients among the constructs in the research model. Statistical significance at the 0.05 level was determined using two-tailed tests based on the bootstrap resampling method with 500 samples. In terms of the model's explanatory power, the results indicate that the model explains a sizeable proportion of the variance in choice goals.

Construct/Item	Loading
Choice Goals	0.963
	0.964
	0.974
	0.976
Interest	0.912
	0.951
	0.943
	0.931
	0.819
Outcome Expectations	0.739
	0.896
	0.901
	0.917
	0.848
	0.877
	0.899
	0.924
	0.902
	0.912
Self-efficacy	0.919
	0.935
	0.954
	0.946
	0.939
	0.952
Social Support	0.949
	0.946
	0.957
	0.931

Table 2. Constructs, Items, and Loadings

Social support, self-efficacy, outcome expectations, and interest cumulatively accounted for 50.3 percent of the variance in choice goals. Combined, social support, self-efficacy, and outcome expectations explained 38.0 percent of the variance in interest. Social support and self-efficacy

together accounted for 41.3 percent of the variance in outcome expectations. Finally, social support explained 11.2 percent of the variance in self-efficacy. The results of the structural model analysis are represented in Figure 3.
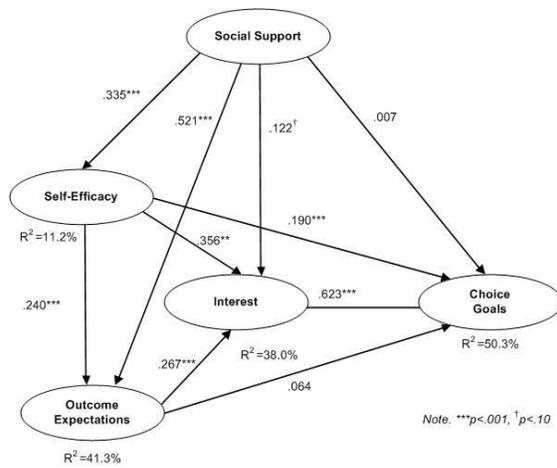

Figure 3. Structural Model Results

Despite expectations, social support was not a significant predictor of choice goals (0.007, *ns*). Therefore no support was offered for H_1. As expected, social support was a significant predictor of interest (0.122, p<0.1) self-efficacy (0.335, $p < 0.001$) and outcome expectations (0.521, $p < 0.001$), supporting hypotheses H_2, H_3, and H_4.

Self-efficacy was found to be a significant predictor of outcome expectations (0.240, $p < 0.001$) and interest (0.356, $p < 0.001$). Therefore, hypotheses H_5 and H_6 were supported. Self-efficacy also served as a significant predictor of choice

goals (0.190, $p < 0.001$). As a result, hypothesis H_7 was also supported.

Outcome expectations was a significant predictor of interest (0.267, $p < 0.001$), supporting hypothesis H_8.

However, in opposition to expectations, outcome expectations did not have a significant influence on choice goals (0.064, *ns*). Therefore, hypothesis H_9 was not supported. Finally, interest was found to be a significant predictor of choice goals (0.623, $p < 0.001$), supporting hypothesis H_{10}.

6. DISCUSSION

Concerned with the negative consequences of declining enrollments, IS community has been looking for mechanisms to re-stimulate student interest in the discipline. This paper addressed this important issue and investigated how a particular mechanism – social support – influences students' aspirations to pursue an IS degree.

Findings of this study indicate that perceived social support plays an important role in student uptake. Social approval and encouragement increases students' self-efficacy and outcome expectations. Social support from the important people in their lives enhances students' confidence in their ability to successfully perform as an IS major. Students who perceive high levels of support and encouragement from family members, professors, friends, etc. are more likely to believe that they can master the course materials in IS classes, perform effectively on the various activities involved in an IS major and utilize the tools and techniques needed in an IS major. These students also believe that they can overcome the various obstacles they might face in an IS major. Similarly, social support elevates students' expectations that valued rewards will be received by majoring in IS.

Hypothesis		*t*-stat		Conclusion
H_1:	Social support will have a significant positive influence on choice goals.	0.1450		Not Supported
H_2:	Social support will have a significant positive influence on interests.	1.7116	†	Supported
H_3:	Social support will have a significant positive influence on self-efficacy.	5.4793	***	Supported
H_4:	Social support will have a significant positive influence on outcome expectations.	9.5313	***	Supported
H_5:	Self-efficacy will have a significant positive influence on outcome expectations.	3.4573	***	Supported
H_6:	Self-efficacy will have a significant positive influence on interest.	6.2037	***	Supported
H_7:	Self-efficacy will have a significant positive influence on choice goals.	4.1310	***	Supported
H_8:	Outcome expectations will have a significant positive influence on interest.	3.8768	***	Supported
H_9:	Outcome expectations will have a significant positive influence on choice goals.	1.3106		Not supported
H_{10}:	Interest will have a significant positive influence on choice goals.	15.7863	***	Supported

$***p < .001$, $†p < .100$ (2-tailed tests).

Table 3. Summary of Hypotheses Testing

Interactions and information exchanges with these people can enrich students' understanding of the IS major and the profession as well the outcomes associated with pursuing an IS major (Compeau and Higgins, 1995a). In turn, certain outcomes (e.g. receiving an internship, getting a well-paid job upon graduation, self-satisfaction, etc.) become more achievable. Moreover, social support directly and indirectly (through self-efficacy and outcome expectations) affects student interest. Compared to some other business majors, IS is a relatively new major and career option for students. Many students may not even be aware of an IS major or may have some misperceptions about the major and the profession (Joshi and Kuhn, 2011).Therefore, encouragement and stimulation from others inspires students to be inquisitive and piques their curiosity about IS majors and careers. Since interest has been found to be the most influential factor in choice of a major (Downey, 2011) understanding which factors affect student interest in the IS discipline is particularly important. In this respect, this study proves that social support plays an important role in shaping student interest in the IS field.

The results did not provide support for the direct effects of social support on choice goals. Therefore, even though social support play's an important role in shaping students' academic choices; higher levels of perceived support does not directly result in an increase in students' aspirations to major in IS. Rather, the effects of social support on choice goals are channeled indirectly through self-efficacy, outcome expectations, and interests. This finding is consistent with the previous studies that provided evidence that environmental factors indirectly affect choice behavior through personal factors (Lent et al. 2003).

Specifically, social support augments self-efficacy and outcome expectations, which in turn increases student interest. Along these lines, strong self-efficacy and outcome expectations foster student interest in the IS discipline. Therefore, it is reasonable to assume that students are more likely to develop an interest in the IS discipline when they feel efficacious and expect to receive valued rewards. Like social support, however, the results did not provide support for the direct effects of outcome expectations on choice goals. Therefore, even though the students may find the outcomes for majoring in IS (for example, salary, ability to find a job, peer recognition) enticing, the expectations about these valued rewards do not directly translate into aspirations to major in the IS field. In contrast, choice goals develop through strong interests, which evolve, in part, form a robust sense of efficacy and outcome expectations. It was also found that self-efficacy leads to more robust outcome expectations. Not surprisingly, students who deem themselves as capable of majoring in IS perceive that value rewards are more likely to be obtained. Finally, findings also provided strong support for the positive relationship between interests and choice goals, confirming that interest serves as the primary mechanism through which goals to choose IS major emerges.

6.1 Limitations
Like every research study, this study is limited in certain aspects. The study utilized a survey to examine the relationships among the variables in the model. Although the measures exhibited excellent levels of reliability and validity, it is plausible that self-reported data could have resulted in common method variance, artificially inflating the relationships among the variables. Therefore, future studies should utilize additional methods using complementary samples to identify the boundary conditions of the findings.

The constructs in the research model represent a relatively limited subset of the factors that could plausibly affect student choices. In order to develop a more comprehensive set of intervention strategies targeted at student recruitment, a wider range of support factors needs to be considered and validated. Along the same lines, the study did not differentiate among different sources of social support such as family, friends, professors, etc. Future research should examine how different sources of support influences students' choice of the IS major. The research model developed in this study can be readily adapted to study these factors.

In terms of the theoretical base, this study utilized SCCT, which was developed in the vocational psychology literature (Lent, Brown and Hackett, 1994). SCCT was selected because it provides researchers with an integrative framework that unifies multiple career development theories such as the social learning theory of career selection (Krumboltz, Mitchell, and Jones, 1976), life span developmental approach to career development (Vondracek, Lerner, and Schulenberg, 1986) and the individual differences model (Dawis and Lofquist, 1984). Regardless, other theoretical bases can also provide important insights into understanding students' major and career choices. One such theory is the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), which provides a model of individual behavior focusing on attitudes and social beliefs. Future research should utilize TRA and similar behavioral models to examine whether these models would provide more explanatory power and deeper insights compared to the SCCT.

It is also important to note that even though this study focused on the positive aspects of perceived social support, research indicates that social support can have negative consequences as well. For example well-intended attempts to give social support can be harmful if students think they are excessive, improper, or given at an inappropriate time (Inglehart and Brown, 1989). Therefore, future studies should examine the potential negative influences of perceived social support on students' decisions to major in IS related disciplines.

6.2 Conclusion
This study has provided us with a theoretical and empirical understanding of the role social support can play in the student recruitment process. The model developed herein supports the notion that social support can be used to attract larger pools to the IS discipline, and it explains how and why social support influences student aspirations. It is clear from the findings of this study that university educators can utilize social support to boost student confidence (i.e., self-efficacy) and expectations of value rewards (i.e., outcome

expectations). In turn, these factors elevate student interest, which ultimately influences students' aspirations to choose IS as a major. This recommendation is consistent with the findings in the IS literature, which states that domain-specific self-efficacy and outcome expectations can be increased through training mechanisms and support structures (Compeau and Higgins, 1995a; Stephens, 2005/2006) like social support.

The knowledge gained as a result of this study demonstrates the importance for higher education institutions to provide social support to students through university advisors, peers, career services, and the like. To increase social support, academic programs might create support structures by providing academic and social opportunities for students. Working with faculty members on research, participating in student organizations, taking part in study groups, obtaining a teaching or research assistantship, and attending department socials and other formal or informal events can increase students' level of perceived social support. Advisor support is also a crucial factor and programs should emphasize and foster continued student-advisor relationships (Clark et al., 2008; Walstrom et al. 2008). Utilizing the Internet and the world wide web (www) could also prove beneficial in terms of social support. Since majority of today's students use social networking sites, programs can create online communities where students, faculty, advisors, and the like can ask and answer questions and share relevant information. Even though the current study focused on college students, it is possible that many students have already made up their minds about what area to major in before they start college. Therefore, in order to attract more students to the IS discipline, beyond college students, outreach programs should also target high school students, career counselors, and parents. Activities aimed at recruiting students at a younger age might prove beneficial as the effects on social influences on students tend to be greater when students are younger.

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APPENDIX 1

ITEMS

Self-Efficacy
1. I can perform well as an IS major.
2. I can master even the hardest material in courses associated with an IS major.
3. I can perform effectively on the various activities involved in an IS major.
4. Compared to other people, I can do most activities in courses associated with an IS major well.
5. I can overcome the various obstacles facing people in an IS major.
6. I can successfully utilize the tools and techniques needed in an IS major.

Outcome Expectations
If I pursue a major in the field of Information Systems, …
1. …I will not have to worry about finding a job when I graduate.
2. …I will feel more powerful.
3. …I will increase my chances of having job security when I graduate.
4. …I will increase my sense of accomplishment.
5. …my major will be personally rewarding.
6. …I will be proud of myself.
7. …other people will perceive me as competent.
8. …I will be a stronger candidate in the job market.
9. …I will be able to get a good paying job when I graduate.
10. …I will be able to interview for good jobs.

Interest
1. I think an IS major is interesting.
2. I am interested in the kind of courses involved in an IS major.
3. I am interested in the challenges that IS majors face.
4. I am interested by the type of work that people in IS majors do.
5. IS majors tackle interesting problems.

Choice Goals
1. My academic goal is to select IS as my major.
2. I have aspirations to choose IS as my major.
3. Choosing to major in IS is a goal of mine.
4. I want to choose IS as my major.

Social Support
If I pursue a major in the field of Information Systems,
1. ...Important people in my life would support this decision.
2. ...I would get encouragement from important people in my life for pursuing this academic path.
3. ...People who are important to me would be proud of me for making this decision.
4. ...I would get approval from people who are important to me.

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