

An Empirical Examination of the Composition of Vocational Interest in Business Colleges: MIS vs. Other Majors

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ABSTRACT

Given the diminishing number of Management Information Systems (MIS) majors, an understanding of the factors which influence student choice of major is crucial. It has been noted in many previous studies that interest in a major and career significantly influences the student's choice of college major; indeed, in most studies, it is the strongest influence. Yet extant studies treat interest as a one-dimensional construct; in fact, interest is multi-dimensional, that is, it is comprised of many factors. This study examines the construct of interest and in particular the factors which contribute to vocational interest among business college majors. Using a sample of 452, it compares and contrasts the significant influences on vocational interest among two groups: MIS majors and non-MIS business majors. Findings indicate both similarities and differences between the two groups, leading to constructive recommendations for increasing interest in MIS with the intention of increasing the number of majors.

Keywords: Careers, Computing majors, Student perceptions, Student expectations

1. INTRODUCTION

Numerous studies have examined why students choose a particular major in college. This has critical significance not only for students, but for college departments as well. Students wish to pursue a major and subsequent career that matches with their talents and interests. One of the critical findings in most of these studies is that interest in a major and in the matching subsequent career significantly influences their choice of major (Mauldin, Crain, & Mounce, 2000; Moorman & Johnson, 2003). In fact, in many studies of business majors, interest has been found to be the *most important* influence in choice of major (Kim, Markham, & Cangelosi, 2002; Malgwi, Howe & Burnaby, 2005; Strasser, Ozgur & Schroeder, 2002; Zhang, 2007). Interest has been found to be significant (as well as most important) in many studies that concentrated on specific majors within the business college, including economics (the most important factor, Worthington & Higgs, 2004), management information systems (MIS) (the most important factor for both MIS majors and computer science majors, Downey, McGaughey, & Roach, 2009), marketing (Pappu, 2004), and accounting (Mauldin et al., 2000). There is not a known study that included interest in a major as one of the variables influencing choice of major in which interest was not significant.

Based on the importance of interest in choosing one's major, the question that must be asked is what constitutes interest in a major? Although most (if not all) studies treat interest as one-dimensional, and one of many variables that influence choice of major, it seems intuitive that interest is a multi-dimensional construct, that there are various influences which promote an individual's interest in a particular career or major, and indeed research indicates this is the case (Izard, 1991; Silvia, 2006). But what in particular enhances interest in a particular major, and does this vary by major? This study examines the influences on interest in MIS (or the IT field) as a major and career. It examines 35 individual items that are theorized to promote interest in the MIS major. Further, it does the same empirical analysis for a group that includes business majors that are not MIS, in order to compare and contrast the items that significantly enhance interest in a business major.

The choice of college major is an important choice for students as well as for colleges and their departments. This is especially true currently in MIS Departments, which have seen a decrease in enrollment in the last five years, as well as entire departments being closed (Aken & Michalisin, 2007; Downey et al., 2009; Pratt, Hauser, & Ross, 2010; Vegso, 2005). One obvious way to increase enrollment in MIS is to expand interest in IT, and to do this requires an understanding of the forces or influences which enhance

one's interest in a major. This study examines these influences.

2. INTEREST AS A CONSTRUCT

2.1 Interest

Interest in and of itself has a long history, dating at least as far back as Aristotle in the 4th century BC, who described it as voluntary choice involving rational principle and cognitive thought (Aristotle, trans. 1947). The American pragmatist philosopher John Dewey listed three characteristics of interest, stating it is dynamic (interest is an *active* activity), objective (it is focused on something, that is, it is "embodied in an object of regard"), and personal to the individual involved (Dewey, 1913, p. 16). Interest (or being interested) is cognitive in nature, that is, it involves mental processing and is the interaction between an engaged person and the external world (Armstrong, Day, McVay & Rounds, 2008; Hidi, 1990). It is not a biological orientation reflex (infant at nipple) and though it involves attention, it is clearly more than that (Izard, 1991). A person can be attentive to a math problem, but have little interest in math.

Interest is motivational in nature; it helps determine and control human behavior. Like other motivational constructs (e.g., self-efficacy, Bandura, 1997; expectations, Meece et al., 1982), interests serve as instigators and sustainers of human behavior, influencing an individual's choice of what to pursue, effort in that pursuit, and persistence in the face of difficulty (Low, Yoon, Roberts & Rounds, 2005). Interest prompts exploration, learning and engagement with some aspect of the environment, and is characterized by elevated feelings of pleasantness, enjoyment, and surprise (Silvia, 2006).

In addition to its motivational component, interest has a powerful effect on learning. Individuals interested in a topic or task pay more attention, give more and better effort, and acquire more and qualitatively different knowledge in the process (Hidi, 1990). Interest promotes creativity and motivates the development of skills and competencies (Izard, 1991). Clearly there is a biological component, with sensory input, processing, and motor output (such as facial and vocal expressions) (Silvia, 2006; Zajonc & Markus, 1984). For many, interest promotes what Silvia (2006, p. 69) calls "deeply processing", that is, interest encourages individuals to process what is being learned more completely, leading to memory being stored in long-term storage and positively affecting learning strategies.

In the area of cognitive, motivational, vocational, and emotional psychology, much has been studied and written on whether or not interest should be classified as an emotion. Some theorists suggest it is an emotion; for example, Izard (1991) describes it as one of the "basic" emotions, which emanate from some primitive biological and/or psychological foundation in humans (Ortony & Turner, 1990). Many others conclude that interest is not an emotion (Clare, Ortony, & Foss, 1987; Morgan & Heise, 1988; Ortony & Turner, 1990). Most holding this view suggest emotions involve affective states, while interest is more cognitive in nature. Izard (1991) defends his view of interest as an emotion by describing the inescapable complex interplay between emotions and cognition present in humans,

which subsequently influences behavior. However one classifies interest, it is clear that it is cognitive in nature and motivational in its impact.

What causes interest? It seems to develop early in life; for example, infants appear to display a well-developed interest in human faces (Izard, 1991). In one respect, there are probably an infinite number of context-specific causes. But these can be classified into broad categories. A first, overarching cause is change (Izard, 1991). Change stimulates our sense organs and elicits interest. It is foundationally related to the other causes in that each involves a change of some type. Novelty or newness can cause interest (Silvia, 2006). New scenery, new places, and new people all elude interest. Uncertainty can activate interest (Silvia, 2006). For example, interest can be generated by an uncertain outcome (who will win?) in a close sporting contest.

Interest can be conceptualized as either situational or dispositional, that is, state or trait. Situational interest is momentary and context-specific, evoked by some recent experience in the environment, such as a transitory emotion (Hidi, 1990; Low et al., 2005). This conceptualization is important to educational psychologists in particular who study the relationship between interest and classroom achievement (Su, Rounds & Armstrong, 2009). Dispositional interest, on the other hand, is slower to develop or change, has long-lasting effects on a person's knowledge, values, and behavior, and reflects a person's preferences for situations and activities (Hidi, 1990). Dispositional interest affects the development of personality and abilities (Hogan & Roberts, 2000). Many of the important types of interest studied by psychologists and others are dispositional in nature, including the topic of this paper, vocational interests.

A key question in examining the interest construct is stability. Does interest function like personality traits, which are relatively stable for long periods of time, or not? The question is critical, especially in the context of vocational interest and career choice, because a primary purpose of career counseling and increasing majors through enhancing interest is to match an individual's interests with educational and work environment. If vocational interest fluctuates frequently, then matching them with particular careers would be useful only for short periods of times. In a meta-analysis of 66 longitudinal studies involving 23,665 participants, Low et al. (2005) conclude that vocational interests are not only dispositional in nature, but steady, and highly stable until middle adulthood (approximately age 40; there were no studies past middle adulthood, so they were unable to make any conclusions after that time frame). Specifically, they found that prior to age 18 (12-17) and after age 22, vocational interests were highly stable. For the ages 18-22, interests tended to develop and increase, which they attributed to the choices and changes people make as they transition from high school to college or the workforce.

2.2 Vocational Interests

Although the study of interest as a construct in itself is informative, the real value of interest requires a context, or object of regard, as Dewey (1913) called it. Interest has been contextualized in a broad array of milieus; including some central to the area of business marketing, such as consumer

interest (Pappalardo, 1999) or retailer interest (Jones & Reynolds, 2006). Vocational interest, as the context for this paper, is one of the most enduring and compelling areas of research (Low et al., 2005). Vocational interest is interest in a particular field of education or employment, and is a central predictor in choice of educational major (Hansen & Sackett, 1993; Lapan, Shaughnessy & Boggs, 1996), degree completion (Webb, Lubinski & Benbow, 2002), job satisfaction (Tranberg, Slane & Ekeberg, 1993), satisfaction with life in general (Webb et al., 2002) and staying in one's current job (Low et al., 2005). It is the strong relationship between interest and vocations (educational and work-related) that make matching of interests and jobs the primary goal for career and vocational counseling and the object of study for developmental, vocational, and educational psychologists.

Vocational interests, being dispositional in nature, are fundamental to career development because individuals want to get degrees and/or work in a field in which they are interested (Su et al., 2009). There are, however, different theories as to how this comes about. Holland (1992) suggests that individuals seek out environments in which they can exercise their skills, express their attitudes and values, and find congruence between their interests and their environment. For Holland, this is determined by personality; individuals develop a certain personality type, which includes different interests, competencies, and dispositions, and are attracted to similar environments. This search for congruence, or a match between one's personality and environment type, is what leads an individual to major in a particular field and/or work in particular job type. Vocational interests, therefore, are an outgrowth of an individual's personality.

Another view of vocational interest comes from socioanalytic theory and suggests that interests are the result of one's identity (Hogan & Blake, 1999; Hogan & Roberts, 2000). Identity refers to how a person thinks about and defines him- or herself, and how that person wants others to think about them. They are individual-specific, and shape one's interests, goals, hopes, and aspirations. Although identities develop over time, they are at the "very core of your psychological being" (Hogan & Roberts, p. 6) and quite resistant to change. One's identity thus determines vocational interests.

A third alternative is achievement/self-perception theory that offers an integrative framework which includes expectations and the subjective value of the task to explain behavior, in particular for academic choices (Eccles, 1993; Meece et al., 1982). Academic choice is based on the complex interplay of aptitude, socialization, attitudinal, and affective factors (Meece et al., 1982). These factors are framed to two specific constructs: expectation of success and subjective value of the choice. Expectation of success in a particular academic field takes into account self-concept of ability (in that field), its perceived difficulty, and perceptions of significant others. One tends to choose a field in which there is a high expectation of success. The subjective value of a particular field for an individual consists of three major components: attainment, intrinsic, and utility value (Meece et al., 1982). Attainment value represents the importance of doing well in the task (the academic choice), its challenge,

and its usefulness in confirming one's own characteristics of self. Intrinsic value is the inherent enjoyment one gets from the task. Utility refers to the value of the task as a means of reaching a variety of goals, such as financial, career goals, etc. It is the interplay of both expectations of success and the subjective value of the task or academic choice that motivates one toward particular vocational interests.

2.3 Study Model

The three theories of vocational interests above have commonalities. As the goal for this study is to determine the individual factors which make up "interest" in a particular business major, all three of these theories were used, as well as other literature which provided insight. Extant literature includes several useful studies and surveys of what factors are important in choosing a major in one of the business disciplines, particularly those developed by Downey et al., (2009), Kim et al. (2002), Mauldin et al. (2000), Pappu (2004) and Worthington and Higgs (2004). Most of the influences noted as important in choosing a major are also important because they influence interest. Given the literature cited above (Hogan & Roberts, 2000; Holland, 1992; Meece et al., 1982), choosing a major is a reflection of one's interest, and is based on one's personality or identity or expectations and subjective value of the major. Interest in a major stems from those same factors that influence choice of major, and are summarized below.

Interests are molded by achievement expectations, in particular one's self-concept of ability and perceived task difficulty (Meece et al., 1982). Students tend to display interest based on what they think they are good at or where a fit exists. For example, students with high standardized scores in math and science tend to be interested in technical majors, while those with lower scores tend to be interested in liberal arts (Carter, 2006; Maple & Stage, 1991). Kim et al. (2002) found that business students tend to pursue a fit with perceived ability while others found that students who *believed* they had high technical abilities (true or not) tended toward math, science, or engineering majors (Farley & Staniec, 2004; Lapan et al., 1996). The skills and abilities that are important in business majors are varied, and include technical and quantitative skills, leadership, and people skills of all types.

Perceived task difficulty vis-à-vis education is a person's perception of how difficult a particular major will be, which in turn influences one's interest in that major. Frequently, for inherently difficult majors, this has a negative correlation with choice of major (Meece et al., 1982). Some students choose majors that they perceive to be easier than alternate choices. Some may feel unqualified or ill-prepared to select a difficult major, such as one in math, science, engineering, or even technology (Carter, 2006; Maple & Stage, 1991). In a study of accounting majors, the amount of course work required to graduate was a significant influence in choice of major (Cohen & Hanno, 1993). Some students tend to choose majors based in part on how difficult or easy the major is perceived to be (Calkins & Welki, 2006; Lowe & Simmons, 1997).

Other people can be very influential in guiding interest in a particular field (Eccles, 1983; Meece et al., 1982). Labeled subjective norm in the Theory of Reasoned Action, it holds

that salient others influence one’s intention to perform a behavior (Ajzen & Fishbein, 1980). One direct way that others influence intention to perform a behavior (in this case choosing a major) is through motivating interest in that major. There are many potential salient others for students selecting a major/career, which are reported in the literature. These include parents or family (Calkins & Welki, 2006; Farley & Staniec, 2004; Zhang, 2007), high school teachers or counselors (Calkins & Welki, 2006; Mauldin et al., 2000), college instructors (Downey et al., 2009; Saemann & Crooker, 1999; Strasser et al., 2002; Zhang, 2007), and friends or other students (Calkins & Welki, 2006; Mauldin et al., 2000). These influential others may provide information, opinions, verbal encouragement and support, which may enhance interest in a particular major. They may also serve as role models or vicarious examples of success or failure.

A final broad source of interest in choosing a college major is one’s perceived value in the major. As mentioned above, Meece and her colleagues (Meece et al., 1982) identified three types of influences, including attainment value, intrinsic value, and utility value. These influences may take many forms in promoting interest. For example, projected salary may have utility value and has been demonstrated in studies as an important ingredient in choosing a major (Farley & Staniec, 2004; Felton, Buhr & Northey, 1994; Lowe & Simmons, 1997; Walstrom et al., 2008). Job security and availability can be important in picking a major (Mauldin et al., 2000; Walstrom et al., 2008). Studies focusing on specific business majors like accounting, finance and MIS found job security and availability important (Niculescu, 2006; Sugahara, Boland & Cilloni, 2008). Prestige or respect afforded a particular career path or major may also influence its subjective value. Previous studies have noted that prestige or status were significant in career/major choices (Hogan & Li, 2009; Leppel, Williams & Waldauer, 2001; Sugahara et al., 2008). Interest may be promoted by both business and college circumstances. Although this could be common to all business majors, an interest in business organizations, and/or running and managing a business may be different depending on the major. The college and department may also play a role in developing interest. Some students are influenced by the perceived quality of education available in the major or the first course in a major. One study reported faculty reputation to be important (Calkins & Welki, 2006); another found that the university’s reputation important in the choice to major in business (Kim et al., 2002).

3. METHODOLOGY

3.1 Survey

Based on the review of the literature, a list of potential influences on interest in a major was developed. These items were cross-checked against previous useful surveys of students majoring in business disciplines, including Downey et al., (2009), Kim et al. (2002), Mauldin et al. (2000), Pappu (2004) and Worthington and Higgs (2004). The items in these surveys and in the literature cited formed a preliminary list which was presented to several faculty members from different business disciplines. Following minor modifications, the survey was pilot tested on twenty

students, leading to some rewording to enhance clarity. The final version consisted of two items measuring interest in the major and 35 items which were predicted to influence interest. Each item was measured on a seven-point scale, with 1 = “Completely Unimportant” and 7 = “Very Important”. The survey is presented as part of Table 2.

3.2 Participants and Methodology

Participants were college students majoring in business at a Southern university with an enrollment of approximately 12,000. At the time of the survey (2010), the College of Business included 1276 majors, in eight different disciplines, including accounting, economics, finance, insurance/risk management, management, marketing, MIS, and general business (see Table 1). Almost all students surveyed were pursuing a BBA (Bachelor of Business Administration) degree, the only degree available for almost all undergraduate business majors (the only exception was economics majors, who may earn either a BA, BS, or BBA degree). Table 1 summarizes demographic information.

In order to provide a cross-section of majors, three courses were selected to survey. These courses were required of all business majors. These courses included Principles of Accounting 1 (taken mostly by sophomores/juniors), the management core class (taken mostly by juniors and seniors), and a capstone course taken by seniors. None of these courses were part of the general education courses that any major could take for credit, which meant that only business majors were likely to be in these courses. After obtaining permission from both chairs and instructors, multiple sections in each of these three courses were surveyed during class time. In addition, to increase the sample size for MIS majors, two other MIS courses were included, providing a total of 99 MIS majors. As shown in Table 1, respondents in the sample had an average age of 22.0, 60% were male, and most (85%) were juniors or seniors.

Major	n	Age: mean (sd)	% M/F	Class Fr/So/Jr/Sr
Gen. Bus.	62	22.3 (3.7)	53/42	1/10/23/26
Accounting	62	21.8 (3.5)	42/56	2/11/28/21
Finance	62	21.9 (1.5)	71/27	0/2/15/45
Marketing	65	21.1 (1.2)	49/49	0/12/28/25
Management	63	22.2 (2.5)	57/41	0/8/29/26
Economics	16	20.7 (1.2)	69/31	1/2/8/5
Insurance	23	21.6 (1.1)	65/35	0/2/4/17
MIS	99	22.8 (4.4)	76/23	3/10/31/53
	452	22.0 (3.1)	60/38	7/57/166/218

Table 1. Sample Characteristics

Percentages do not always equal 100% due to missing fields or other responses.

4. RESULTS

To analyze the data, multiple regression analysis was used instead of structural equation modeling (SEM). SEM should only be used in confirmatory settings (Hair et al., 1998; Straub, Boudreau & Gefen, 2004), and given the exploratory nature of this study, it was deemed inappropriate. First, the

individual survey items are examined, with a comparison of responses by non-MIS majors and MIS majors. This is followed by an analysis of which items contribute to a student's interest in a major. This is done in two steps; the first uses multiple regression to examine which items are significant with respect to the two groups. Next the items are factor analyzed, and the resulting factors are regressed on interest.

There were two items making up the interest construct and 35 items that potentially influence interest. Both groups (non-MIS majors and MIS majors) reported a high interest in

their choice of major (approximately 5.9 of 7). They reported job availability and security as the two most important items in choosing their major, after which the two groups diverged somewhat. Some of the other top items included career earnings, opportunity to lead, lifestyle, and opportunity to use people skills. For both groups, the least important items included more distal relationships (high school influences and other personal influences). Means and standard deviations for the entire sample plus both groups are provided in Table 2.

	Full Sample		Non-MIS		MIS only	
	Mean	sd	Mean	sd	Mean	sd
Job security (long term)	6.11	1.1	6.10	1.2	6.16	.99
Job availability (after graduation)	5.96	1.2	5.94	1.2	6.04	1.1
Career earnings	5.79	1.2	5.77	1.2	5.86	1.1
Opportunity to lead	5.77	1.4	5.93	1.3	5.20	1.7
Lifestyle assoc. with major	5.74	1.3	5.78	1.3	5.57	1.4
Opportunity to use people skills	5.41	1.6	5.59	1.5	4.76	1.8
Opportunity to use communication skills	5.41	1.5	5.53	1.5	4.98	1.6
Opportunity to manage business	5.40	1.6	5.52	1.6	4.98	1.8
Starting salary	5.40	1.3	5.33	1.3	5.68	1.3
Interest in business organizations	5.39	1.3	5.47	1.3	5.11	1.3
Opportunity to use creativity	5.31	1.4	5.29	1.5	5.40	1.3
Quality of education in major	5.27	1.4	5.33	1.4	5.06	1.3
Respect associated with major	5.23	1.4	5.33	1.3	4.87	1.7
Work is challenging	5.21	1.3	5.21	1.3	5.22	1.5
Opportunity to use technical skills	5.19	1.5	4.99	1.5	5.88	1.1
Opportunity to use negotiation skills	5.19	1.6	5.33	1.6	4.68	1.7
Opportunity to own a business	5.07	1.8	5.21	1.8	4.60	1.9
Prestige associated with major	5.07	1.5	5.17	1.4	4.70	1.1
Opportunity to manage people	5.04	1.5	5.15	1.5	4.63	1.6
Opportunity to use quantitative skills	4.95	1.4	4.95	1.4	4.95	1.3
Opportunity to be part of a team	4.75	1.6	4.80	1.6	4.57	1.8
Influence of introductory course in major	4.68	1.7	4.73	1.7	4.52	1.9
Perceived degree of difficulty in major	4.42	1.6	4.41	1.6	4.48	1.7
Opportunity to manage non-human assets	4.33	1.6	4.14	1.6	4.99	1.4
Previous work experience in major	4.28	1.8	4.32	1.8	4.12	1.8
University department's reputation	4.21	1.8	4.29	1.7	3.90	1.9
Influence of both parents	3.96	2.0	4.08	1.9	3.54	2.1
Influence of a college instructor	3.95	1.9	3.96	1.9	3.91	2.0
Influence of male parent	3.52	2.0	3.60	1.9	3.23	2.1
Influence of female parent	3.40	1.9	3.48	1.8	3.12	1.9
Influence of other male working in field	3.28	2.0	3.36	2.0	2.99	2.1
Influence of friends or other students	3.24	1.7	3.24	1.7	3.25	1.8
Influence of other female working in field	3.02	1.9	3.04	1.8	2.95	2.0
Influence of high school teacher(s)	2.83	1.8	2.85	1.8	2.78	1.8
Influence of high school counselor(s)	2.44	1.6	2.44	1.6	2.43	1.7
Interest construct						
The work is interesting	5.89	1.2	5.86	1.2	6.02	1.0
Interest in my major field of study	5.92	1.2	5.93	1.2	5.87	1.3

Table 2. Items influencing choice of major

Full sample: n = 452; non-MIS: n = 353; MIS: n = 99.

Multiple regression was run on the two groups to determine which of the 35 items predicted interest (the interest dependent variable consisted of the two items measuring it). The results are presented in Table 3, with only the significant items displayed (because of the

exploratory nature of the study, items at the $p < .10$ level of significance are noted). The model accounted for a relatively large amount of the variance, with r^2 values at .51 (non-MIS) and .58 (MIS only). If the five items for MIS majors at the $p < .10$ are included, there are three common items which

influenced both non-MIS majors and MIS majors. The most important for both groups was the challenging nature of the work. For both groups, this influenced one's interest positively, that is, students' interest was enhanced by the challenge. Lifestyle was another significant influence for both groups; the lifestyle associated with a career in one's major was attractive to students and positively influenced interest. The third common influence was quantitative skills; the opportunity to use such skills promoted interest in both groups (somewhat surprising for some non-MIS majors).

The other influences for the two groups differed. For non-MIS majors, the first course in a major influenced interest, as did business organizations and previous work experience in the major field. Two items negatively influenced interest: the opportunity to manage non-human assets (non-MIS majors thought this detracted from interest) and friends/fellow students. For MIS majors, creativity, job security (long term), and high school teachers positively influenced interest in the MIS major, while technical skills,

male parent, and college instructors negatively influenced interest. These findings will be discussed in the next section.

In order to examine the influence of factors of similar influences for both non-MIS and MIS majors, the 35 items were factor analyzed (presented in Appendix 1). The exploratory factor analysis resulted in eight sensible factors. Four of the items cross loaded and were deleted from the analysis (difficulty of major, interest in business organizations, creativity, and previous work experience in the major). Although the loading was not seamless, there was only one remaining cross load that was above .50 in two factors; opportunity to lead loaded in both people skills (.66) and business management (.51). It was left in people skills (a post hoc analysis putting this in the business management factor did not change subsequent analysis). The eight factors (with number of items in parenthesis) included people skills (5), high school influences (5), external rewards, including security and compensation (5), parental influence (3), college influence (4), quantitative skills (3), and esteem (2). Results for both groups are provided in Table. 4.

Non-MIS Majors (r ² = .51)				MIS Majors (r ² = .58)			
	β	t	P		β	t	p
Challenging work	.21	4.22	.000**	Challenging work	.45	3.24	.002**
1st course in major	.22	3.84	.000**	Creativity	.39	2.81	.007**
Managing non-human assets	-.19	-3.74	.000**	Lifestyle	.33	2.34	.02*
Quantitative skills	.19	3.71	.000**	Technical skills	-.30	-1.96	.05*
Friends/Other students	-.17	-3.19	.002**	Male parent	-.36	-1.87	.07+
Business organizations	.16	3.14	.002**	Job security	.35	1.86	.07+
Previous experience	.12	2.62	.009**	HS teacher	.31	1.78	.08+
Lifestyle	.13	2.61	.01**	College instructor	-.22	-1.65	.10+
				Quantitative skills	.24	1.65	.10+

Table 3. Item multiple regression results for interest, only significant items
 Only significant influences (including $p < .10$) are displayed. Dependent Variable (DV): Interest.
 Ranked in t -value order. β is standardized. ** $p < .01$ * $p < .05$ + $p < .10$

Non-MIS majors (r ² = .38)				MIS majors (r ² = .32)			
	β	t	p		β	t	p
Quantitative skills	.33	6.50	.000**	Quantitative skills	.45	3.95	.000**
College influence	.25	4.80	.000**	External rewards	.33	3.14	.002**
People skills	.26	4.66	.000**	Business mgt.	-.18	-1.62	.11 (ns)
HS influences	-.14	-2.44	.015**	Parental influence	-.21	-1.60	.11 (ns)
Business mgt.	-.09	-1.65	.10+	College influence	.16	1.45	ns
External rewards	.07	1.52	ns	Esteem	-.15	-1.36	ns
Esteem	.04	.73	ns	HS influences	.08	.54	ns
Parental influence	-.02	-.45	ns	People skills	.07	.47	ns

Table 4. Multiple regression results for factors of interest (eight factors)
 DV: Interest. Ranked in t -value order. β is standardized. ** $p < .01$ * $p < .05$ + $p < .10$

5. DISCUSSION

This study examines the foundations of a student's interest in his/her major. Because interest plays such a crucial role in choosing a major, an understanding of its significant influences is critical in order to move to the next step, which is using this understanding to promote interest in a major among students who may be undecided or who may consider

switching majors. An understanding of the important factors which enhance interest will be helpful in counseling and advising students, as well as promoting interest within a specific business discipline or major.

This study focuses on MIS majors, and uses the group of non-MIS business majors as a comparison. Given the general decline in number of MIS majors, figuring out ways to promote interest in MIS should be an important goal for

most MIS departments, especially in relation to its nearest competitors for students, which are other business disciplines in the same college. It also provides faculty with enhanced understanding from an advising perspective. This section first examines similarities and differences between MIS majors and non-MIS business majors, and then examines ways the findings may be used to promote interest in MIS.

5.1 MIS Majors vs. non-MIS Majors

The results of this study suggest that there are some similarities as well as marked differences between non-MIS majors and MIS majors. There were 35 items of potential influence on interest which comprised the survey, which then formed eight groups of items when factor analyzed. Interestingly, most of the 35 items were *not* significant predictors of interest. The non-MIS group had eight significant predictors, MIS majors had nine (including those at $p < .10$), with fourteen different items between the two groups (there were three common predictors). Of the eight factors (after factor analyzing), five were significant for non-MIS majors while only two were significant for MIS majors. The following is a summary of the findings. See Figure 1 for a visual synopsis.

For both groups, quantitative skills were the most important influences on a student's interest in their major. The item "the work is challenging" was the most important single item in predicting interest. The "opportunity to use quantitative skills" was also significant to both groups; in fact, these made up two of the three common predictors for both groups. Students of all business majors increased their interest in their major because the career field consisted of challenging work. They seem to look forward to such a challenge. Their interest was also peaked because they could use quantitative skills. Of the eight factors, the quantitative skills factor was the most important, based primarily on the two items above. There was a third item in that factor, "opportunity to use technical skills", which was significant for MIS majors, but not for non-MIS majors. Interestingly, for MIS majors its significance (at $p < .05$) was in the negative direction. That is, one's technical skills negatively influenced interest in MIS. For MIS majors, this item was rated very highly (5.88 of 7.0), much higher than for non-MIS majors (4.99). Clearly MIS majors viewed their technical skills as important in choosing their major, and thought highly of this ability. The finding that it *negatively* influences interest is therefore puzzling. One potential reason for such a finding is reported in Downey et al. (2009), which found that for technology majors (MIS and computer science), the image of IT people as nerds or geeks was negatively influential in choosing their major. In light of this image, MIS majors may react against it, and therefore it is something to be overcome in their interest in the major.

The influence of other people in promoting interest in one's major showed similarities between the two groups, but the influence was mostly either minimal or negative. Most personal influences were not significant for either group, including the influence of a male or female working the field, female parent, both parents (a combined influence), and high school counselors. The only personal influence that was both significant and positive was high school teacher, which was significant only for MIS majors ($t = 1.78$).

Technology majors tend to choose their major earlier, even in high school (Downey et al., 2009), suggesting a high school teacher (or teachers) prompts interest. The other personal influences were all negative. Friends negatively influenced non-MIS majors, the male parent negatively influenced MIS majors, and college instructors negatively influenced MIS majors. These negative influences on interest suggest that interest-building by salient individuals is complex and not all support the career decisions of college students.

There were three areas of interest building in which there was a marked difference between the two groups. The first area was people skills, which was highly significant for non-MIS majors ($t = 4.66$) but not for MIS majors. Individually, none of the items concerning people skills was significant for either major. But combined into a factor, the five items clearly influenced non-MIS majors. These items included being part of a team, the opportunity to lead, and the opportunity to use negotiation, communication, and people skills. For MIS majors, these items did not enhance their interest in MIS. For non-MIS majors, people skills were an important influence on interest. The second area was college influences. Again, for non-MIS majors, college influences significantly influenced interest in their major ($t = 4.80$), but not for MIS majors. This factor consisted of four items, including quality of education in the major, university department's reputation, first course in a major, and influence of a college instructor. Non-MIS majors' interest was aroused by these influences, while MIS majors were not. Individually, two of the items were significant. For non-MIS majors, the first course was the second strongest predictor of interest in the major (it was not significant for MIS majors). The other item was a college instructor; for MIS majors this was significant (at the $p < .10$ level), but not significant for non-MIS majors. As mentioned, the influence of a college instructor for MIS majors was negative, that is, MIS faculty detracted from interest in the major rather than enhanced it. This was an ominous finding.

The third area was the external reward factor, which was significant for MIS majors, but not for non-MIS majors. This factor included five items: starting salary, career earnings, job availability (after graduation), long term job security, and lifestyle. As an individual item, lifestyle was important and significant to both groups (indeed, it is the third significant item common to both groups, in addition to challenging work and quantitative skills). The lifestyle one associates with accountants or managers or IT personnel enhanced one's interest in the major. The influence of lifestyle was not enough to make the factor significant for non-MIS majors, because the other four items were not significant. For MIS majors, however, the job security item was also significant ($t = 1.86$, $p = .07$). Long term job security (which is the wording of the item) was important to MIS majors, and enhanced interest.

Finally, there were those items and factors which did not influence either group much at all. This included two factors and their associated items, which turned out to have minimal impact. The esteem factor, which included prestige and respect associated with the major and career, was not significant either individually or as a factor for either non-MIS majors or MIS majors. Business management

influences were also mostly non-significant. Though marginally (negatively) significant as a factor for non-MIS majors ($t = -1.65$), it was not significant for MIS majors. The factor included four items, opportunity to manage people, business, non-human assets, and the opportunity to own a business. Only one item was significant for non-MIS

majors, and it was a negative influence: managing non-human assets. Non-MIS majors were not interested in this area. Surprisingly, perhaps, this was not significant for MIS majors ($t = -.30$) in enhancing interest. None of the other three individual items were significant for either group.

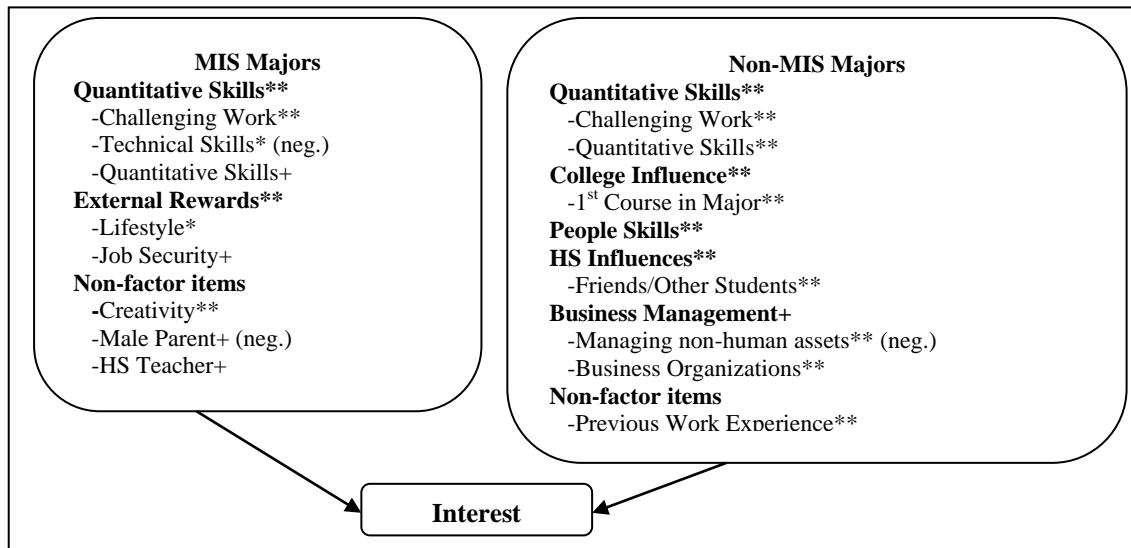


Figure 1. Significant factors and items. Factors in bold; items belonging to that factor follow. Only significant factors and items displayed. ** $p < .01$ * $p < .05$ + $p < .10$

5.2 Implications for MIS Departments

For MIS Departments, these findings suggest a wealth of ways in which interest in an IT major may be enhanced, particularly during the critical time frame between 18-22 years of age when interest development is most amenable (Low et al., 2005). Increasing interest in a major requires an understanding of what to promote (and what can safely be ignored) and the ability to do the promoting within some student context. This context is provided by the interaction of MIS faculty and students, both in and out of the classroom. The promotion should not be directed solely toward students who are undecided in the choice of major, but also to all business students who may have selected a major but still be early in the process of earning it. Changing majors to something more “interesting” is of course quite common among students. Most important in all these recommendations is the underlying pillar of wisely using the early MIS classes to promote interest in IT. Most (if not all) business colleges require an introduction to MIS course for all business majors. Many required a computer applications course (such as familiarity with spreadsheets and/or databases) for all business majors that is also taught by MIS faculty. Sometimes the required statistics course is taught within the department. All of these courses, taught by MIS faculty early in one’s college career, are critical in encouraging interest in MIS! Students are more amenable to switching majors early, when switching costs are lower. The faculty that teach such courses are the gatekeepers to increased interest, because they have the opportunity to

promote the essential items that actually increase interest in MIS. Here are some opportunities:

--Promote the challenge of IT and its quantitative skills! For both MIS majors and non-MIS majors, this was the most important component of interest. Students like the challenging nature of work, and especially like the opportunity to use quantitative skills. This was perhaps the most surprising finding. Interest in a business major is enhanced by challenge and quantitative skills. In classes, reinforce the idea that IT work is both quantitative and challenging. Be careful, however, of extolling technical skills! This had a significant but negative influence on interest for MIS majors. This appears to be a reaction against image (Downey et al., 2009), the idea that IT professionals are “geeks”.

--Promote other items conducive to interest, in particular creativity, lifestyle, and interest in business organizations. Creativity is encouraged in majors such as marketing, but less so in a major such as MIS. Yet it is clearly important in enhancing interest for MIS majors, and may attract students also interested in marketing. MIS does have a creative aspect, in particular web design, but also in managing creative IT solutions. Stress this. Lifestyle is important to all majors; one recent study found that business students tended to reject MIS as a major based on a lifestyle image of working in a cubicle on the computer every day all day (Kuechler, McLeod, & Simkin, 2009). This must be dispelled. Interest in business organization, though not significant for MIS majors, can enhance interest in IT for

non-MIS majors. Stressing how IT professionals fit into and support business organizations may attract students who are interested in majors such as general business or management.

--In addition to promoting items in early classes, MIS Departments should examine how to better meet student needs. For MIS majors, MIS faculty had a negative influence on promoting interest ($t = -1.65$). For non-MIS majors, the first course in a major was highly significant to enhancing interest (2nd most important, after challenging work), but was not significant for MIS majors. One study of accounting majors, for example, found that the first course in the major was the most important influence in attracting majors and recommended only the most talented and student-friendly instructors teach the course (Mauldin et al., 2000). MIS departments should look for opportunities to improve this record, such as carefully selecting who teaches early or first courses in the major.

Although most of these recommendations are ways to promote interest in MIS/IT within the classroom, and early classes in MIS are fertile ground for enhancing interest in IT, there are also many other ways to do so outside the classroom. Anytime interaction occurs between students and MIS faculty, interest may be developed, by promoting those critical items already mentioned. There are some more formal ways to enhance interest outside the classroom, such as using an IT college club, where non-MIS majors may be "encouraged" to attend, perhaps by extra credit or even free food. Since such clubs frequently bring in outside speakers, concentrate such speaking efforts on promoting things like challenge, lifestyle, quantitative skills, etc. One recent study reported the effectiveness of using MIS students as recruiters for their own major, with MIS faculty acting as counselors (Koch & Kayworth, 2009). Don't neglect high schools. Interest may be developed or augmented by MIS faculty by reaching back. There are numerous ways to do this, such as speaking to classes and through participation in technology oriented high school clubs. Summer IT camps, targeting high school students, may also promote interest in MIS and IT (Choudhury, Lopes, & Arthur, 2010).

5.3 Limitations and Conclusions

Like any empirical study, this one had limitations. The population for this survey consisted of students from a single university. While this college was "traditional" in nature (suburban or small town setting, more residential than commuter, and ethnicity approaching the average in U.S. colleges) and therefore similar to many other colleges, it does significantly impact generalizability. This study concentrated on examining the structure of interest in choosing a business major, but clearly there are other reasons why students choose majors. While interest has been found to be an extremely important (and frequently the most important) factor in choosing a major, there are other factors, and faculty should not neglect other items of influence. There are also other things important to interest in a major other than the 35 items included. Although r^2 values were relatively high, there are obviously other factors influencing interest not included. One possibility is personality itself, which has received support in one previous study (Noël, Michaels, & Levas, 2003). Like all cross-sectional studies, it

cannot be concluded that any of the 35 items *causes* interest; cause and effect lie outside the realm of this analysis.

Future studies should further evaluate the construct of interest as it applies to college majors in general and specific majors in particular. Generalizing to other colleges, areas of the United States, and other countries is paramount, for perhaps vocational interest has region-specific origins. This study grouped all non-MIS majors into one group, but clearly there are differences between different majors in this group (accounting vs. marketing, for example) that are worth exploring.

This study extends the literature by examining the multi-dimensional construct of interest in choosing a major. All known previous studies that examined interest as an influence in choosing a business major assumed it was one dimensional. This study provides the first known analysis of the individual items that comprise interest in a business major. The study also adds to the literature by examining the differences and similarities noted between MIS majors and non-MIS majors. In order to increase the number of majors, and in particular MIS majors, faculty and MIS Departments must be cognizant of the factors important in a student's choice of major and strategies that can be used to enhance those influential factors. Interest in the major is one of the most critical influential factors; determining its structure and composition will enable faculty to better advise potential majors as well as increase interest in a major by promoting those items important to interest. If MIS Departments wish to increase the number of majors, studies which explicate the relationship between influences and choice of major are important contributions to this effort.

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APPENDIX 1

Factor analysis of all items

	People Skills	HS Infl.	External Rewards	Bus. Mgt.	Parents	Col. Infl.	Quant.	Esteem
Opportunity to be part of a team	.57	.27	.06	.02	.10	.17	.33	.07
Opportunity to use people skills	.84	.09	.06	.19	.11	.08	.11	.11
Opportunity to use communication skills	.86	.03	.01	.13	.06	.13	.21	.05
Opportunity to use negotiation skills	.81	.12	.04	.24	.10	.11	.18	.07
Opportunity to lead	.66	-.06	.07	.51	.11	.12	.09	.12
Influence of other male working in field	.34	.50	.01	-.01	.25	.06	-.25	.21
Influence of friends or other students	.16	.56	.09	.06	.48	.02	.05	-.03
Influence of other female working in field	.21	.65	.06	-.05	.20	.16	-.12	.08
Influence of high school teacher(s)	-.02	.73	.01	.08	.25	.20	.18	.02
Influence of high school counselor(s)	-.04	.80	-.03	.15	.19	.15	.19	.08
Career earnings	.06	.13	.72	.19	-.04	-.09	.02	.45
Starting salary	-.04	.18	.66	.18	-.03	-.19	.06	.45
Job security (long term)	.01	-.05	.83	-.04	.12	.19	.12	.07
Job availability (after graduation)	.06	-.02	.80	-.07	.07	.21	.09	.05
Lifestyle assoc. with major	.17	.04	.56	.24	.14	.29	.04	-.13
Opportunity to manage people	.44	.16	.13	.63	-.03	.06	.07	.11
Opportunity to own a business	.14	.03	.00	.84	.19	.06	.00	.10
Opportunity to manage business	.26	.01	.06	.86	.15	.05	.02	.07
Opportunity to manage non-human assets	.04	.26	.17	.52	.01	.05	.46	-.11
Influence of male parent	.11	.21	.02	.11	.85	.08	.07	.06
Influence of female parent	.06	.33	.08	.09	.79	.11	.11	.11
Influence of both parents	.13	.28	.14	.17	.79	.14	-.01	.14
Quality of education in major	.08	.03	.17	.07	.08	.74	.16	.25
Influence of a college instructor	.14	.44	.07	.12	.02	.64	.02	-.02
Influence of introductory course in major	.13	.11	.10	.01	.06	.80	.16	.01
University department's reputation	.20	.32	.10	.07	.23	.57	-.04	.13
Work is challenging	.23	.01	.06	-.05	-.05	.18	.55	.30
Opportunity to use technical skills	.27	.07	.17	.01	.06	.01	.74	-.02
Opportunity to use quantitative skills	.16	-.01	.01	.14	.13	.13	.72	.15
Respect associated with major	.22	.06	.23	.07	.22	.30	.08	.66
Prestige associated with major	.14	.12	.18	.12	.15	.14	.22	.75

HS Infl: High school influences; Bus. Mgt.: Business management; Col. Infl.: College influences; Quant.: Quantitative skills.



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