Selecting a Business College Major:

An Analysis of Criteria and Choice Using the Analytical Hierarchy Process

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Abstract

According to the *Chronicle of Higher Education* (2001), 15 percent of entering freshmen believe that there is a good chance they will change their college major and 8 percent are undecided. To gain insight into the criteria that students use to select a major, a model of the student decision making process was developed using the Analytic Hierarchy Process (AHP). This model predicted student's first choice major with 88 percent accuracy for sophomores and seniors. An analysis of the criteria revealed judgement inconsistencies, particularly for accounting, finance, and decision science majors. Not surprisingly, sophomores were more inconsistent in their decision making than were seniors. It was also determined that students clustered the majors into two separate groups, viewing accounting, finance and decision science majors differently than marketing and management majors

Introduction

Many college students choose a major long before they ever get to college and some select a major only to change their minds as they progress through their required courses. According to the *Chronicle of Higher Education* (2001), 15 percent of entering freshmen believe that there is a good chance they will change their college major. One recent study found that 72 percent of freshmen that initially chose a major changed their major before graduating (Kroc et al. 1997). A handful of students even change their minds more than once, frustrating themselves, their advisors and their parents in the process. The *Chronicle of Higher Education* (2001) also states that over 8 percent of entering freshmen are undecided. This group of students, the most problematic, have a difficult time narrowing their choices, often ending up in their third or fourth year of college and still listing their major as undeclared. Aside from the fact that this group finds graduating in four years more difficult, there are other pitfalls that accompany their indecision. Because classes cannot be planned, synergies cannot be taken advantage of and opportunities for internships in the major may be lost. Unfortunately students who cannot choose a major also have trouble deciding upon a minor. By the time a major is selected it is often too late to fit in the required courses for a minor area of study and electives become filled with unrelated courses. If a student should select a minor prior to a major, the two disciplines may not complement each other.

While it is important for students to understand where their strengths and interests lie, are other criteria also involved in the…decision process students use in choosing a major?

To avoid some of these problems and to help students make better decisions, college career centers are stocked with instruments (both computerized and pencil/paper) that test students' interests and abilities. These instruments are designed to help students determine to which careers/majors they are most suited. While it is important for students to understand where their strengths and interests lie, are other criteria also involved in the decision making process that are not accounted for in the existing instruments? If there are additional criteria, maybe some are more important for particular majors than others.

The purpose of this research is to develop a model to analyze the criteria and decision process students use in choosing a major. The model, using the analytic hierarchy process (AHP), is based on the decision criteria used by the students, as determined by student surveys and a review of the literature. The AHP model requires students to compare the majors not only with respect to different criteria but also to the relative importance of the criteria for each student.

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How do students decide on a college major? Understanding how students choose a major may better ensure that students are given the correct information and guidance in making that decision, while offering insight into the perceptions and assumptions that students may be using to make their decision.

The remainder of this paper is organized as follows: a review of the literature to determine what criteria have been explored, an explanation of the methodology along with details of the analysis of model development, application of AHP, results of the analysis, and conclusions of this study.

Literature Review

Several studies support various criteria students use to select a major in college and these are summarized in Table 1.

Many authors supported the importance of "interest" in the decision process. Hansen and Neuman (1999) found that students' interests, as determined by the Campbell Interest and Skill Survey (CISS), were more important than skill in determining a college major. Lapan (1996) explored the factors affecting students who become math/science majors, specifically looking at self-efficacy and vocational interests. Interest was also an important criterion in the model developed by Kaynama and Smith (1996) and that of Coperthwaite and Knight (1995) as measured by coursework.

Coperthwaite and Knight (1995) listed "ability" among the fifty variables they analyzed in their model and found it to have a large effect even though Hansen and Neuman (1999) suggested a lesser effect.

The "influence of others" was included in the initial analysis of Kaynama and Smith and found to have an effect on the decision process, however, they omitted the variable from their model.

The variable "compensation" appeared in many studies (Coperthwaite and Knight 1995; Kaynama and Smith 1966; St John 1994) and was determined to be an important factor. Related to compensation, Gabrielsen (1992) suggested that the image, reputation, and prestige of a major were important to students.

"Career opportunities" also emerged as a critical factor in a study authored by Kirk (1990) and the study by Kaynama and Smith (1996) who found "job availability" to impact a student's decision.

In addition to interest, ability, influence, compensation and career, several studies included measures of personality, self-esteem and job satisfaction (Coperthwaite and Knight 1995; Kaynama and Smith 1996; Lapan 1996).

Model Development

In an effort to achieve a parsimonious model, it was necessary to select only those variables that were critical to the decision making process. To gain a better understanding of the criteria, we used a convenience sample and asked two senior capstone strategic management classes (n = 60) and two sections of the sophomore business statistics class (n = 57) to list the factors that they

Table 1
Summary of Decision Criteria Literature

Author(s) & Year	Sample Size	Methodology	Subjects	Decision Criteria Determined in Study	Limitations of Study
Coperthwaite & Knight *(1995)*	43,614	discriminant analysis	college sophomores	Almost 50 variables including course work, ability, self esteem, importance of money	Too many variables, cumbersome design
Gabrielsen *(1992)*	92	survey	college sophomores	Image, reputation and prestige of the major	Limited to *"self-monitors"*
Hansen & Newman *(1999)*	128	survey	college students	Interest in subject more important than skill in determining college major	Limited to Campbell Interest and Skill Survey
Kaynama & Smith *(1996)*	91	multiattribute & AHP	prebusiness students	Influence of other, job satisfaction, interest, job availability, and money	Influence was not included in the model – although it was found to be an important criteria
Kirk *(1990)*	204	survey	graduate students	Program quality and career opportunities	Limited to recruiting nontraditional students
Lapan *(1996)*	101	structural path analysis	math/science students	Personality *(introverted vs extroverted)* and vocational interests	Limited to math/science
St. John *(1994)*	3,893	survey	high school students	Debt burden not a factor *(is money?)*	1980 high school class

Table 2
Student Generated Criteria

Interest in the subject	
	Personal preference
	Ability in subject matter
	Rigor/challenging
	Enjoyable/fun
Influence of others	
	Advisors
	Parents
	Peers
Career	
Compensation	
	Earning potential
	Earning growth
Job availability and growth	
	Employment opportunity
	Advancement opportunity
Job requirements	
Interpersonal skills	
	Dealing with people
	Team Work
Computer usage	
	Quantitative analysis
	Working with computers

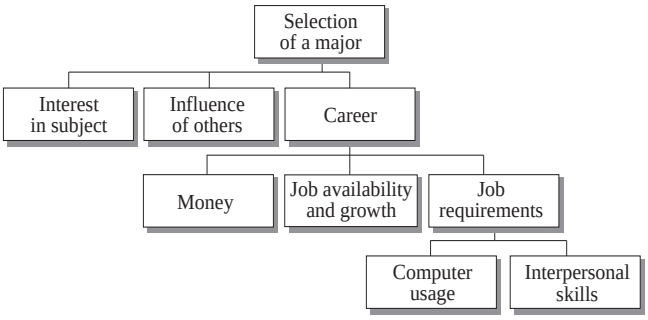
considered important in selecting a major. Aside from accessibility, we were interested to learn if there was a difference between these two groups. No difference was apparent. We tabulated and analyzed the responses and prepared a list of the top fifteen factors in Table 2. Interestingly, these factors could be subjectively divided into three clusters that we titled *interest in subject*, *influence of others,* and *career* where *career* included compensation, job availability and growth, and job requirements. This provided a very close match to the criteria mentioned in the literature and provided some validity to the clusters. While other studies included self-esteem, personality, and job satisfaction as decision criteria, our students did not suggest these and we decided to exclude them from the model. Another reason for excluding job satisfaction from the model was because this criterion is already captured in the other variables used to measure career (compensation, job availability and growth, and job requirements).

After clustering, we considered hierarchical relationships within each cluster. While we decided to have a single hierarchy for the *interest in subject* and *influence of others*, the *career* cluster consists of three sub-criteria: *compensation, job availability and growth,* and *job requirements*. The *job requirements* criterion includes two sub-criteria: *computer usage* and *interpersonal skills*. The schematic representation of the model is presented in Figure 1.

Application of AHP

The data in this study were analyzed using a multi-criteria decision making approach called the analytic hierarchy process (AHP). Saaty (1994), the founder of AHP, claims that AHP is, "…natural to our intuition and general thinking," which combines logic and intuition,

Figure 1
AHP Model for Selection of a Major



and takes advantage of our ability to rank choices. Many articles have been written on the successful implementation of AHP in various environments that involve a selection or decision (Kalb and Hemaida 1999; Liberatore and Miller 1995; Wang et al. 1998). Forman and Gass (2001) provide an examination of the history, development, methodology, and a summary of the wide range of applications of AHP.

AHP breaks the problem into many smaller, simpler decisions and then asks respondents to rank them by using pair-wise comparisons, giving the decision maker an organizational tool to attack the larger problem. The College of Business Administration has five majors: accounting, decision science (consisting of operations, statistics, and information systems), finance, management/international business, and marketing. The AHP asks students to compare all ten pairs and to rank them on their preferences based on all of the criteria in the model; for instance, "Based on your interest in the subject, do you prefer marketing or finance?" The scale used for this study treats the value of 1 as a neutral point and the values from 2 to 9 indicate preference in both directions resulting in a 17-point scale. After ranking the choices in terms of all of the criteria, AHP then requires the student to rank the importance of all of the criteria (compare the relative importance of computer skills and interpersonal skills with respect to your career). Using the rankings of the individual majors weighted by the rankings of the criteria, AHP provides priority scores (0 to 1) for each major and for each criteria (an explanation of the actual calculations are provided in Saaty (1994)). The higher the score, the more likely the student will select that major or believes that criteria to be important in their decision. AHP allows us to not only evaluate the student's decision, but their criteria can be analyzed as well.

AHP also provides a measure of consistency for each student's judgement (0 to 1). If a student prefers decision science to finance and finance to marketing, to be consistent, they should also prefer decision science to marketing. When students are confused about the criteria or

don't fully understand the majors, their preferences may not be consistent and they will receive a high inconsistency score. The inconsistency score is computed as a ratio of the actual number of inconsistencies divided by the potential number of inconsistencies.

Methodology

The Questionnaire

A questionnaire was developed (Appendix A) to measure students' preferences for the five majors currently offered in the College of Business Administration. This two-phase process began by asking students to compare majors based on each of the model criteria and to rank their preferences. A second phase required students to compare each of the criteria and to rank the importance of each within the model. In all, students made sixty-seven pair-wise comparisons. To test the accuracy of the model, the final question was to order the five majors according to personal preference. This ordering would later be checked against the predictions of the model.

The questionnaire was pretested using ten students from the College of Business Administration and improvements were made based on their feedback.

The Sample

While the criteria suggested by both sophomores and seniors were almost the same, the authors suspected that students just starting out in the College might not have as much information as seniors do and might give different weights to the criteria. To determine if there was a difference in the decision making process between sophomores and seniors, sixty-three sophomores and forty-nine seniors from the College of Business Administration were included in the study. None of these students were from the first group that generated the criteria. The convenience sample was considered large enough to have sufficient power and was consistent with several similar studies we reviewed.

The instrument was administered during class to ensure completion. As a reward to the students who participated in the study, every student received a printout listing their individual priority scores for each of the five majors. While many students viewed these as less than miraculous, several students wanted to discuss the model and to re-evaluate their choices. At the very least, most of the students enjoyed the exercise and were pleased with the results. Unfortunately, we could not ensure confidentiality and still be able to offer the students feedback on their preferences. We did not believe that this would be a critical issue for data integrity as the results of the questionnaire are not sensitive.

The following results are based on those returns. As this study is exploratory in nature, simple correlations and independent t-tests were employed to investigate the relationships among the factors and majors in the model.

Results of Classification

To validate the model, we compared predicted majors, based on the highest priority scores for each student, to actual majors for all 112 in the sample. Table 3 represents a breakdown of the percent of correctly classified students.

Table 3
Percent of Students Correctly Classified

	Sophomores (n=63)	*Seniors (n=49)*	*Total (n=112)*
At Least the Top Choice Predicted	84%	92%	**88%***
Top Choice Not Predicted	16%	8%	12%

* This model predicted the exact order of all five majors for 38% of the participating students.

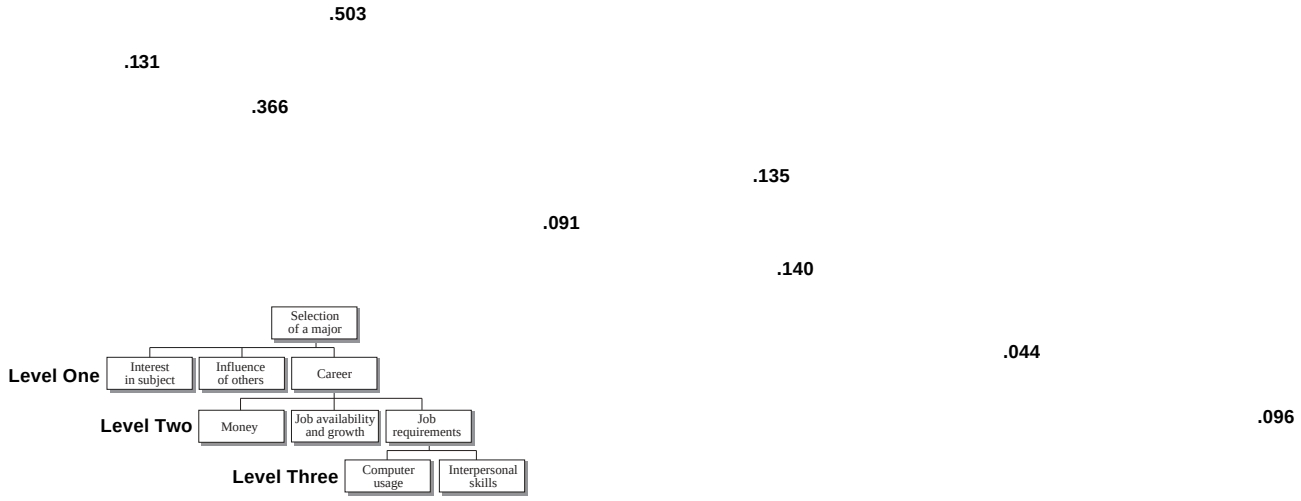
Overall, the AHP model predicted 88 percent of the students' first choice of major. This compares favorably with a previous study by Kaynama and Smith (1996) that used different factors and correctly classified 80 percent of their students. It is interesting to note that our model correctly predicted the exact order of preference of all five majors for 38 percent of the students. We were able to discriminate at a very fine level for more than one third of the students. The percent of correct classifications for sophomores and seniors is not statistically different ($p = .22$).

Table 4 compares the percent of students predicted in each major to the percent of students in the College of Business Administration actually enrolled in each major. While most of the numbers are similar, finance and decision science seem to be areas of disagreement. Too many students were predicted to be decision science majors and too few for finance. An analysis of the criteria, contained in the next section, will be necessary to try to explain these discrepancies.

Table 4
Comparison of the Percentage of Actual vs. Predicted Majors in the College of Business Administration

	Predicted n = 112	*Actual n ≅ 400*
Marketing	22%	24%
Management	29%	30%
Finance	18%	23%
Decision Science	15%	6%
Accounting	17%	17%

Figure 2
Priority Scores



Results of Criteria Analysis Using Priority Scores

This section of the paper is divided into three parts: an analysis of the student criteria using the three levels of the model; an analysis of the majors for both sophomores and seniors; and a comparative analysis using the criteria, the majors, and sophomore/senior standing.

Figure 2 illustrates the three levels of the model with a bar graph of the priority scores for each level. The first level includes the criteria *interest*, *influence*, and *career*. Note that the priority score for interest (.503) is much larger than career (.366) or influence (.131). The interpretation is that, on average, students value the interest they have in a major as far more important than the career benefits of a major or someone else's influence on them to choose a particular major. While this seems intuitive, it makes a good argument against those who suggest that business students are in it for the money and don't really enjoy the discipline. We are a little surprised by the low priority score given to influence. Anecdotally, students seem to choose majors because their parents want them to be accountants or because a high school teacher encouraged them to major in marketing. This is certainly not true for the majority of students participating in this study.

Level two, a subset of career, includes the criteria *compensation, job availability and growth,* and *job requirements*. Both compensation and job requirements are important elements with respect to a student's career choice. While job availability and growth were not considered as important, this is perhaps largely due to the optimistic employment picture at the time of data collection. For the last several years prior to this survey, students had been receiving multiple offers for high paying jobs, often with signing bonuses. We have to wonder if availability and growth would become more important to students' careers in a poor economic climate.

The third level of the model divides job requirements into two subcategories of *computer usage* and *interpersonal skills*. Based on priority scores, we can conclude that students value interpersonal skills as being much more important in their career than the computer usage. This could be interpreted that students will choose a career that fits their interpersonal skills rather than a career based on the amount of computer usage they believe will be required on the job. This level could be viewed as a measure of the quantitative/qualitative dichotomy.

A more complete listing of the priority scores for sophomores and seniors at all levels is provided in Table 5. The priority score for the interest criterion is very high for all students who prefer management and marketing and lower for those who prefer finance, decision science, and accounting. The students believe that marketing and management lead to greater usage of interpersonal skills and finance, decision science, and accounting lead to greater usage of computer skills. Priority scores for both sophomores and seniors appear to form into the management/marketing group and the finance/decision science/accounting group. This clustering will be further explored later in the paper. As can be seen in Table 6, the mean priority score for marketing received by sophmores is about .21 and about .28 for management, the most often predicted as first choice.

To graphically analyze the majors, boxplots of priority scores are provided for both sophomores and seniors in Figure 3. The boxplots are based on the individual priority scores for each student, for each of the five majors.

Table 5
Summary of Mean Priority Scores

Criteria	(n = 49) (0=low priority, 1=high priority) Sophomores	(n = 63) Seniors
Interest	***0.478***	***0.523***
Marketing	0.113	0.121
Management	0.174	0.156
Finance	0.066	0.086
Decision Science	0.080	0.059
Accounting	0.044	0.101
Influence	***0.147***	***0.119***
Marketing	0.037	0.019
Management	0.035	0.028
Finance	0.024	0.024
Decision Science	0.031	0.020
Accounting	0.020	0.027
Career	***0.375***	***0.358***
Compensation	***0.118***	***0.148***
Marketing	0.015	0.024
Management	0.021	0.034
Finance	0.036	0.035
Decision Science	0.019	0.015
Accounting	0.027	0.040
Job Availability & Growth	***0.100***	***0.084***
Marketing	0.018	0.016
Management	0.019	0.021
Finance	0.025	0.018
Decision Science	0.016	0.012
Accounting	0.021	0.018
Job Requirements	***0.158***	***0.126***
Computer Skills	***0.042***	***0.045***
Marketing	0.004	0.005
Management	0.004	0.003
Finance	0.008	0.009
Decision Science	0.018	0.016
Accounting	0.009	0.012
Interpersonal Skills	***0.116***	***0.081***
Marketing	0.038	0.024
Management	0.048	0.033
Finance	0.014	0.010
Decision Science	0.008	0.006
Accounting	0.009	0.009

Perhaps the most interesting aspect of these plots is the decrease in predicted accounting majors. The accounting faculty verified that many students change from accounting after their sophomore year. This decrease is particularly intriguing in light of the stability of the other four majors. What is causing the drop in accounting majors, both predicted and actual? A second most interesting result from these plots is the high number of outliers for both sophomore and senior finance majors. The unusually high number of outliers for the finance major indicates a large variation in priority scores among the participants. This variation is likely to occur as a result of inconsistencies between the finance major and the selection criteria in the decision making process.

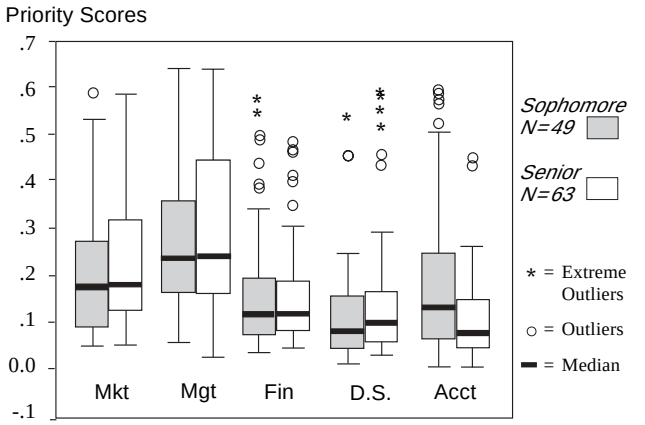
Table 6
Mean Priority Scores for Each Major

	(n=49) Sophomores	(n=63) Seniors
Marketing	0.210*	0.220
Management	0.280	0.300
Finance	0.180	0.170
Decision Science	0.130	0.170
Accounting	0.210	0.130

*(0 = low priority, 1 = high priority)

To gain a better understanding of the drop in accounting and the previous issue of underestimation of decision science and overestimation of finance, a correlation matrix was computed for all priority scores. The significant correlations in priority scores were identified among the five majors and the interest criterion of the model, and are listed in Table 7. Interest was included based on its high consistency score. Table 7 also includes significant priority score correlations between preferences for majors and interest in majors.

Figure 3
Priority Scores by Major and Class



Mkt = Marketing; Mgt = Management; Fin = Finance; D.S. = Decisions Sciences; Acct= Accounting

Management is the only major correlated with interest. The interpretation is that the model selects management for students who place the greatest value on interest. A strange twist to this is that none of the other majors are correlated with interest. This does not mean that other majors are not interested in the subject, but rather that other factors are more important to their decision.

A second finding illustrated in this table is that majors appear to cluster into two groups with management and marketing forming one group and finance, decision science, and accounting forming the other group. To explain this phenomena, notice that if the model classifies the

Table 7
Correlations Between Measures of Interest and the Priority Score for Each Major

	Priority Scores for Majors				
	Marketing	***Management***	***Finance***	***Decision Science***	***Accounting***
Importance of Interest		.19*			
Interest in Marketing	.81**		-.35**	-.24**	-.31**
Interest in Management		.86**	-.35**	-.31**	-.31**
Interest in Finance	-.37**	-.25**	.77**		
Interest in Decision Science	-.27**	-.23**		.78**	
Interest in Accounting	-.35**	-.33**			.86**

** p value <.05*
*** p value < .01*

student as a management major, the student prefers management (based on interest and high positive correlation) and does not select finance, decision science, or accounting (large negative correlations). Notice, however, that interest in marketing is not correlated (positively or negatively) to management. Perhaps the management student is neutral toward marketing. If a student is classified as finance, they score high on finance interest and negatively on marketing and management. Again, the student would be neutral toward decision science and accounting. This relationship holds for all of the majors. A strong positive correlation in one major, negative correlations in majors from the other group and no correlations with majors from the same group. This would indicate that students who are classified as management majors are interested in management, dislike finance, decision science, and accounting, and are neutral to marketing. Students are being attracted to one major from a group and remain neutral to the other major(s) in that same group. At the same time they are detracted from all of the majors in the second group.

It appears that marketing and management have something in common that is not a part of the decision science, finance, or accounting majors. What is it about these two groups that would form this interesting clustering? It might be helpful to address this question in combination with high turnover in accounting students. When students change majors from accounting, what do they choose instead? Do most accounting students stay within the same cluster or do they move to management or marketing? Possible explanations could be the perception of marketing and management as being non-quantitative and more subjective than finance, decision science, and accounting or a perceived difference in the level of difficulty and challenge between the two groups of majors. Though intriguing explanations, further investigation of these hypotheses is necessary.

As a group, decision science, finance, and accounting also seem to act differently in terms of eliciting consistent judgements. According to logic, if a person prefers A to B and B to C, then they should also prefer A to C. The extent to which these logical relationships are not maintained (if A is not preferred to C) is reflected in an inconsistency score. Table 8 lists five questions that correlate significantly ($p < .01$) with inconsistency for sophomores only. There were no significant correlations with inconsistency for seniors. Sophomore students who preferred decision science or accounting based on the influence of others or who thought that finance and accounting lead to greater computer usage had higher inconsistency scores. In general, students who have a stronger belief that interest in the subject is important in choosing a major have lower inconsistency scores.

In the case of influence involving accounting and decision science, the student may be torn between what she wants and what someone else wants for her, causing confusion in preferences. Why then, doesn't this confusion occur in management, marketing, or finance? Are students who prefer these majors less likely to be influenced by others? Similar inconsistencies are observed when students believe that finance and accounting lead to greater usage of computer skills. Sophomores relating computer usage to the other three majors show no inconsistency. This phenomena may be partially explained by the confusion or lack of understanding about the role of computers and technology in the context of accounting

Table 8
Indicators of Inconsistency: Questions that Significantly Correlate with Inconsistency Scores of Sophomores

Questions	***Correlations With Inconsistency Scores***
Which major do you prefer based on the influence of others - decision science.	.44**
Which major do you prefer based on the influence of others - accounting.	.36**
Which major do you think leads to greater usage of computer skills in your career - finance.	.33**
Which major do you think leads to greater usage of computer skills in your career - accounting.	.37**
The relative importance of interest in the subject in choosing a major.	-.33**

None of these correlations are significant for seniors.
*** p values < .01*

and finance. It is interesting to note that the computer usage in decision science had the highest priority score and no inconsistency.

The importance of interest in choosing a major seems to be the same for all majors. For sophomores, it appears that the more important interest is in choosing a major, the less inconsistent the decision. If interest is important to a student, he may have a clearer picture of his preferences. A possible explanation could be the disconnect between choosing from the heart and choosing from the head. If a student is using both, the results may be confusing.

As sophomores, limited class experience may cause their beliefs to not fit with their overall concept of finance or accounting. It is important to state that these inconsistencies are not present for seniors, possibly because after two years the students are able to understand themselves better, have a clearer picture of the disciplines and can make cleaner decisions. In fact, the inconsistency scores for sophomores are significantly higher than the scores for seniors ($p = .033$).

To further evaluate this difference, the priority scores of sophomores were compared to those of seniors for statistical significance. The results appear in Table 9. Seniors were less likely to choose a major based on interest than sophomores were and more likely to choose based on career related factors such as personal abilities and interpersonal skills. Seniors place more importance on the growth potential of finance and decision science, are less interested in accounting, and more interested in marketing and management. This is exhibited in the decrease of accounting majors in the senior class.

To summarize the effect of the criteria on the majors, Table 10 lists the major priority scores (for sophomores and seniors combined) and the one or two criteria priority scores with which they are most highly correlated. All correlations are statistically significant ($p \leq .05$). Notice that marketing is most correlated with interpersonal skills. As sophomores advance and determine that their interpersonal skills are more important to a career, they may lean toward marketing. As discussed above, interest and management are correlated, but the table also shows a significant negative correlation with computer usage. As students move away from computers, they may move toward management. Finance has a high correlation with the importance of compensation. This may be an indication that students majoring in finance may be looking for higher salaries. The decision science major is significantly correlated with computer usage and influence. As most students are not aware of the major or what it means as freshmen, the influence is probably from college professors, advisors, or others they meet during their college enrollment. Perhaps their influence is strong enough to overcome an interest in another major or their desire to find a career. This would explain the high relationship between inconsistency and influence in decision science. Due to the high inconsistency regarding the influence criterion, the model may be identifying too many students as decision science majors. One potential reason finance majors are not identified enough by our model could be also due to inconsistencies in their understanding of the use of computers in finance.

As most [freshmen] students are not aware of what [a particular major] means, the influence [to select that major] is probably from college professors, advisors, or others they meet during their college enrollment.

Perhaps the most revealing bit of evidence as to why the decrease in accounting majors can be seen is the fact that no one criterion applies to accounting. It is possible that accounting students change to other majors not because they dislike accounting, but rather, they are driven to other majors by interest, interpersonal skills, job requirements, etc. Accounting has no claim to fame in that any of the criteria (as measured by the correlations between accounting major priority scores and criteria priority scores) point to an accounting major. Sophomores appear to be inconsistent, particularly when influenced to major in accounting and when they believe that a major in accounting leads to greater use of computer skills. It is probable that the influence to major in accounting is prior to college and that the inconsistency occurs when sophomores compare accounting to other majors. They may prefer a different major, but feel compelled to major in accounting due to someone else's influence (though this would not be the strongest motivation as influence and accounting are not correlated significantly). Again, by the time they become seniors, they have sorted out the dilemma and many leave accounting for other business majors.

Table 9
A Comparison of Sophomore and Senior Priority Scores

	t	*p value*	*Sophomore Score*	*Senior Score*
Importance of interest in the subject	2.204	0.031	0.57	0.479
Importance of personal abilities	-2.009	0.049	0.109	0.157
Importance of interpersonal skills	-2.286	0.026	0.071	0.114
Growth potential of finance	-3.324	0.002	0.012	0.026
Growth potential of decision science	-2.301	0.025	0.008	0.02
Interest in accounting	2.849	0.013	0.109	0.048
Interest in marketing	-2.091	0.042	0.02	0.04
Interest in management	-2.396	0.019	0.028	0.046
Priority score of accounting	2.547	0.013	0.206	0.139

Table 10
Correlations Between Major Priority Scores and Criteria Priority Scores

Major	*Criteria*	*Correlation*	*p-value*
Marketing	Interpersonal skills	0.22	0.02
Management	Interest	0.19	0.05
Management	Computer	-0.19	0.04
Finance	Compensation	0.24	0.01
Decision Science	Computer	0.23	0.02
Decision Science	Influence	0.32	0

Note: Accounting is not correlated with any criteria

Conclusions

Often it is said that students select a major based on interest, their dream of vast amounts of money, or their distaste of computers. But is their decision based solely on one factor? It may be desirable to weight their decisions based on how important interest, compensation, and computer usage is to each of them individually. The AHP model does exactly that in incorporating the student's view of majors based on the criteria and the rankings of the criteria themselves. In terms of correct classification, an 88 percent success rate suggests that the model is not only technologically exciting, but is a good fit as well.

Several interesting questions and possible relationships came out of the small data set we have already collected. Perhaps the most valuable idea to emerge is the sense that the accounting major is very different from the other majors. Nationwide, enrollment of accounting majors has dropped by 23 percent in the last four years (Albrecht and Sack 2000). The AHP model has the potential to answer why, particularly for *this* college and *these* students. We can hypothesize that our accounting students have been influenced to become accounting majors, are not knowledgeable about computer usage, and may not be making decisions consistent with their logic and intuition. When they change majors, it is probably not because they dislike accounting, but rather because they are positively drawn to another major. A possible strategy to minimize the inconsistencies and major shuffling, might be to spend more time early on explaining what accountants do and how the accounting discipline compares with other majors. This conversation is currently being held at this college and is supported by the results of this study.

This study also raised some interesting questions, such as why are management and marketing separate from accounting, decision science, and finance in so many criteria? What is it about these majors that makes them different? Is this the quantitative vs. qualitative perception, the difference in perceived rigor, or is it something else? Another question concerns the perceptions of sophomores as opposed to seniors. How can we help sophomores to make consistent decisions? For sophomores, lack of both experience and knowledge of the majors appear to be the key elements in making inconsistent decisions. Seniors make more consistent decisions because they learn more about the majors in their classes and understand themselves better.

By helping students to choose a major as soon as possible and making sure that the selection is appropriate, we are giving our students the very best foundation for their tenure in college, as well as for the rest of their lives. The more we know of that decision process, the more we can help.

Limitations and Future Research

It is important to note that there are numerous limitations to this study. Our biggest concern is that the model will act differently for entering freshmen and that its predictive ability will be lessened. The next step for us is to test the next entering freshman class and compare their results with those of the sophomores and seniors. A question will be added to the instrument asking if the student is undeclared so that we can factor that information in to the analysis as well. Finally, the purpose of a model is to simulate the real world with as few of the real-world complications as possible. As with any model, the question always remains as to how well the model replicates the actual decision process. Possible additional criteria under consideration include the personality and ability of the respondents and perceived rigor of the discipline. Therefore, model adjustment and improvement is the last phase of this research. n

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Appendix
Survey: Selection of a College Major

This appendix includes a condensed version of the survey instrument. Due to its considerable length, we have decided not to include the entire survey in this appendix. However, all of the survey questions (excluding the pairwise comparisons) are listed below.

1. Which major do you prefer based on your interest in the subject?
2. Which major do you prefer based on the influence of others?
3. Which major do you prefer based on compensation?
4. Which major do you prefer based on job availability and growth potential?
5. Which major do you think leads to greater usage of computer skills in your career?
6. Which major do you think leads to greater usage of interpersonal skills in your career?
7. Compare the relative importance of computer skills and interpersonal skills with respect to your career.
8. Compare the relative importance of money, job availability and personal abilities with respect to your career.
9. Compare the relative importance of interest in the subject, the influence of others and your career in choosing a major.
10. Rank your preference of majors (1 = highest, 5 = lowest)

Accounting _____ Decision Science _____ Finance _____ Management _____ Marketing _____

For survey questions 1 through 9 listed above, we have included a table under each question. These tables include the 17-point scale for all possible pair-wise comparisons associated with each specific question and serve as a convenient response mechanism. We have included the table below as an example. This table is repeated for questions 1 through 6, while other similar tables are used for questions 7 through 9.

	1= equal			*3 = moderate*			*5 = strong*			*7 = very strong*			*9 = extreme*				
1	MKTG	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	MGMT
2	MKTG	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	Finance
3	MKTG	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	DS
4	MKTG	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	ACCTG
5	MGMT	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	Finance
6	MGMT	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	DS
7	MGMT	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	ACCTG
8	Finance	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	DS
9	Finance	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	ACCTG
10	DS	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	ACCTG