

## Determinants of undergraduate business student satisfaction

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### Abstract

An analysis of the determinants of overall student satisfaction of 1,212 business seniors was conducted using the Undergraduate Business Exit Assessment. A factor analysis of the student's responses resulted in the determination of eight factors which are distinct from those proposed by the providers of this standardized instrument: (a) self-confidence, (b) satisfaction with the curriculum, instruction, and classes, (c) satisfaction with quality of teaching of subject matter, (d) satisfaction with extra-curricular activities and career opportunities, (e) satisfaction with student advising, (f) quality of teaching and instructor feedback, (g) satisfaction with computing facilities, and (h) satisfaction with student quality and interaction. Stepwise regression analysis was used to determine the strength of the relationship between those factors and three alternative measures of overall satisfaction: (a) were expectations met?; (b) what is the value of the educational investment made?; and (c) would you recommend the program to a friend? Regression results show that advising and quality of teaching in the subject matter have little or no effect on overall student satisfaction. Self-confidence, extra-curricular activities and career opportunities, and quality of teaching in general are the factors with greater impact on satisfaction. The results of the analysis are discussed and directions for further study are suggested.

Keywords: student satisfaction, assessment, factor analysis, undergraduate business program

## Introduction

Institutions of higher education are increasingly realizing that they are part of the service industry and are putting greater emphasis on student satisfaction as they face many competitive pressures. On the one hand, student satisfaction has been related to recruitment and retention and academic success [Athiyaman, 1997; Elliott & Healy, 2001; DeShields et al., 2005; Helgesen & Nettet, 2007] which has led university administrators to pay great attention to those factors that help them to more effectively attract students and create a supportive learning environment. Given the diversity of students' goals in pursuing a college degree and the variety of institutional missions, the challenge is to attract and retain those students that are best matched to the university's capabilities and to develop competences at the university that will better serve the needs of diverse student populations. Administrators and educators also recognize that understanding the needs and wants of students and meeting their expectations are important to develop environments in which students can learn effectively [Seymour, 1993; Gerdes & Mallinckrodt, 1994]. Furthermore, psychologists have found that student satisfaction helps to build self-confidence, and that self-confidence helps students develop useful skills, acquire knowledge, and become more confident, in what may be described as a virtuous cycle. For example, Aitken (1982) found that academic performance is one of the most important factors in determining satisfaction, and Pike (1991) concludes that satisfaction exerts greater influence on grades than academic performance on satisfaction. According to Bandura [1977] and Schunk [1991], learners use self-regulatory attributes to control their personal learning processes and self-efficacy influences choice, efforts, and volition. Successful students seem to have an ability to motivate themselves to complete a task, while less successful students have difficulty in developing self-motivation skills (Dembo & Eaton, 2000).

On the other hand, colleges and universities are increasingly involved in "rankings wars", and external ranking instruments invariably include some measure of student satisfaction along with other college and student attributes. College rankings are increasingly disseminated with great detail about the different components of the overall score, and the "stories" that frequently accompany the presentation of the overall position of an institution often refer to the general climate on campus and to the level of satisfaction of the students. In a narrower sense, measures of student satisfaction have long been used to assess the effectiveness of different college services (e.g. housing, student life, financial aid) and programs (e.g., programs dealing with special student populations such as commuters, adult learners and international students). The assessment of the effectiveness of particular academic programs (e.g., engineering, business) is increasingly including measures of student satisfaction.

Many aspects of the total college experience contribute to a student's overall satisfaction as the university's product is the sum of the student's academic, social, physical, and spiritual experiences [Sevier, 1996]. Much of the research in this field has focused on identifying program or student characteristics that impact of satisfaction. For example, whether the student is a commuter or a resident has been shown to impact their evaluations of quality; similarly, finding a compatible college roommate and adapting to a new social environment impact on retention; general factors such as the reputation of the institution or the ability to progress through the academic program also impact on satisfaction (Wetzel et al. 1999). Moro-Egido and Panades (2009) found that part-time students are more likely to report being less satisfied, that women are more satisfied in general, and that students enrolled in more specialized programs are relatively more satisfied with their degree. Umbach and Porter (2002), Grunwald and Peterson (2003), and

Thomas and Galambos (2004) focused on faculty and department roles in shaping student satisfaction, concluding that department where faculty focus on research, students report higher levels of satisfaction.

The current study focuses on program-centered determinants of student satisfaction with their business school experience. Rather than asking business students to rate the overall college experience, the satisfaction instrument used in this study measures satisfaction with specific features that are pertinent to the student's business academic program: curriculum, faculty, facilities, advising, and placement. The measures of overall satisfaction are about general satisfaction with the student's business program (Were expectations met?, Is it a good value?, and Would you recommend the program to a friend?) rather than about their overall college experience.

The remainder of the paper is organized as follows. Section 2 provides an overview of the literature on student satisfaction, perceived academic quality, and measurement instruments and models. In section 3, we describe in detail the methods and sample utilized in this case study. In section 4 we present the results of an exploratory factor analysis and of three regression models. A discussion of the findings and suggestions for further study conclude the paper.

### **Satisfaction, Quality, and Confidence**

At first glance, student satisfaction, student perception of quality, and student self-confidence are ideas that are simple to grasp. However, there are hundreds of articles attempting to clarify these concepts, develop measures to quantify them, and determine what their impact is on one another and on other constructs. Concepts that are seemingly clear to everyone suddenly are more difficult to define and isolate.

One of the most often quoted definitions of satisfaction is that offered by Hunt (1977, p. 49): "Consumer satisfaction with a product refers to the favorableness of the individual's subjective evaluation of the various outcomes and experiences associated with buying it or using it". In the context of education, student satisfaction refers to the favorability of a student's subjective evaluations of the various outcomes and experiences associated with education (Oliver & DeSarbo, 1989). Since satisfaction is based on experience, student satisfaction is constantly being influenced by the students' overall experiences (Oliver, 1980) and, as Seymour (1993) noted, what happens to students in the classroom and with their academic choices is not independent of all other experiences on campus life and the combination of all experiences affects the overall satisfaction with the institution.

Parasuraman et al., (1985, 1988) developed an important framework for understanding customer satisfaction in services. Satisfaction is based on the disconfirmation of consumer expectations in what is commonly known as the Gap model or the ServQual model: satisfaction occurs when perceived performance meets or exceeds the student's expectations and dissatisfaction results when there is a negative gap between performance and expectations. These authors propose that satisfaction is based on the gaps alongside five dimensions of experience that are common to all services: assurance (i.e., courtesy, knowledge, trust), empathy (i.e., individual attention and caring), reliability (dependability and accuracy), responsiveness (i.e., promptness and accommodation), and tangibles (i.e., facilities, equipment, personnel). They also suggest that the formation of expectations is based on word of mouth (e.g., recommendations), needs, past experiences, formal communications from the organization to its customers (i.e., printed promises), and price (Zeithaml, 1993, 1996). The proponents of this approach argue that

the ServQual model is eminently applicable to higher education and have designed measurement instruments adapted to this sector (e.g., Browne et al., 1998).

Another concept of satisfaction is related to Herzberg's two-factor theory of motivation (Herzberg et al., 1967) which propounds that factors that influence positive satisfaction (satisfiers or motivators) are different from factors that cause dissatisfaction (dissatisfiers or hygiene factors). Dissatisfiers are generally considered as factors that are part of the environment and largely under the control of someone other than the student, while satisfiers are part of the job and under the control of the self.

Kano extended (1984) the dichotomy of satisfaction/dissatisfaction to three types of satisfaction. "Dissatisfiers" or "must-be" factors are those elements of the customer experience that meet the customer basic needs or assumptions and their absence or poor performance quickly causes dissatisfaction; "satisfiers" or "more is better" factors are those components that customers readily equate with satisfaction and with meeting reasonable expectations; "delighters" or "ah-hah" factors address needs that the customer was not conscious about or was not expecting. For example, Petruzzeli et al. (2006) proposed the following classification of satisfaction factors for the Italian higher education environment: a) "must be": tutoring, administrative services, contacts with staff and professors, library, teaching equipment, lecture halls, and laboratories; b) "more is better": scholarships, counseling, internships, educational offerings, internet access, refectories; and c) "delighters": career placement, leisure time, accommodations, international relations, language courses, online registration.

While student satisfaction is considered a short-term attitude resulting from the student's educational experience, perceived quality is a general perception often affected by objective information and reputation and not necessarily tied to personal experience. For government officials and administrators alike, program quality is often linked to objective achievements, retention rates, time to graduate, enrollment trends, average starting salaries of graduates, percentage of students going to graduate programs, and passing rates on professional certification exams. Athiyaman (1997) also distinguished between perceived quality and consumer satisfaction. While the former concept is defined as "the overall evaluation of the goodness or badness of a product or service", the latter concept is a short-term attitude resulting from the evaluation of a specific consumption experience.

Two concepts of quality in higher education have been proposed by Rapert et al. (2004): process quality attributes and functional or outcome quality attributes. The former deals with how well services are provided, i.e., how well teaching and advising is performed, how hospitable the institutional climate is, and the like. The latter concept relates to how the outcome of the process helps the consumer to achieve other goals, i.e., the value of the education for career advancement or for attaining intellectual achievements. In their study of expectations of MBA students, Rapert and her colleagues differentiated between in-class quality attributes (intellectual growth, professionalism, specialized training, integration, teamwork, devoted instructors, and relationships with classmates and faculty) and outside-class quality attributes (integration with business community, career preparation, availability of financial aid, and clarity of program goals) and found that most higher education satisfaction studies focus on process quality attributes, that is, on the delivery and operational aspects of the student educational experience. They pointed out that while student satisfaction, as measured by most instruments currently in use, is helpful in assessing the quality of the service delivery (process quality) it may not capture the quality attributes of the educational product offered by an institution (functional quality). For example, as found by Kotler and Fox (1995), most students are satisfied with their

academic programs but less satisfied with support services such as academic advising and career counseling.

In what regards student confidence, Athiyaman (1997) noted that negative disconfirmation of a student's expectations produces short-term dissatisfaction focused on a specific transaction or experience (e.g., a bad class, an unpleasant exchange with a staff member or a classmate), and that dissatisfaction leads to attitudes and behaviors that are different from those derived from satisfaction. According to Bernstein et al. (1979), product service failures will generally be attributed to external causes, that is, the student might blame the professor, the university or the fellow student, while positive disconfirmations have a higher likelihood to be attributed to the self (i.e., I worked harder, I made a smart choice, or I am able to take it to the next level). On the one hand, positive satisfaction is expected to be associated with self-confidence in the short-term and only with perceived quality if positive satisfaction is prolonged, pervasive, and sustained. On the other hand, as suggested by Aldridge and Rowley (1998), dissatisfaction with one incident leads to dissonance and to complaints, while dissatisfaction with repeated incidents leads to disconfirmation (change of expectations and perceived quality), to disaffection and to withdrawal.

### **Measuring of Student Satisfaction**

Parasuraman and his colleagues (Parasuraman et al., 1985, 1988; Zeithaml et al., 1993, 1996) have proposed one of the most important models to measure customer satisfaction. The ServQual model implies that consumers are asked register their level of satisfaction with a number of attributes using a scale measuring their expectations and then filling out another scale measuring perceived performance. Extensions to this model have lead to the introduction of yet another scale that inquires about the importance of each attribute to the consumer, in what is known as the weighted ServQual model. In many studies, however, only two scales are included: one with question items framed with a 5- or 7-point scale ranging from "much better than expected" to "much worse than expected", and a second scale eliciting ratings of the importance of each attribute to the respondent. This approach is generally referred to as the importance-satisfaction model.

The ServQual model is not unchallenged, however. Cronin and Taylor (1992) and Taylor and Cronin (1993) criticized this approach on theoretical and measurement bases and proposed an alternative measure of customer satisfaction, ServPerf, which is based on a single scale—perceived performance—and is unaffected by expectations or by importance weights. A more recent study by Appleton-Knapp and Krentler (2006) presented an interesting finding that highlights the difficulties of measuring satisfaction: when students were asked about their expectations prior to or at the outset of their educational experience, the gap between expectations and performance had little predictive power; however, when students were asked to assess whether a course fell short, met or exceeded expectations at the end of the semester, the gap model was adequate in predicting overall satisfaction. The authors concluded that expectations at the beginning of the course are often different from the recollection of expectations at the end of the experience, and that the valence and intensity of the experience affects the reconstruction of earlier expectations. Given the obvious difficulties in measuring satisfaction, many instruments frame satisfaction items in simple terms, such as "exceeded expectations", "met expectations", and "did not meet expectations" or use a Likert scale with other similar descriptors. Babin and Griffin (1998) question the construct validity of most



satisfaction scales proposed in the literature and strongly recommend that an equal number of positively and negatively valenced questions items be included in any measuring instrument in order to clearly isolate the two dimensions of satisfaction: satisfaction and dissatisfaction.

Most empirical research studies on student satisfaction are based on specific models and instruments developed by the authors. In addition, many institutions of higher education prefer to use their own homegrown instruments to assess student satisfaction in general or student satisfaction with particular aspects of the college experience of their interest. Customized instruments have the great advantage of framing many of the question items in terms of the institution's mission and of the particularities of their offerings and student populations. The great variety of models and the proliferation of customized instruments result in a variety and richness of perspectives on student satisfaction but produce data that cannot be easily compared.

There is nonetheless a growing number of standardized, commercially-produced measures of student satisfaction. These instruments are generally based on sound theoretical basis and have been rigorously tested for their psychometric properties. The organizations that offer these instruments usually provide benchmarks which help the client institutions assess their relative position to peers or academe in general, and many of these instruments allow the client institution to develop institution-specific questions in order to address their specific concerns and contexts. Two of the most widely adopted instruments in higher education are the Student Opinion Survey (SOS) marketed by American College Testing (ACT), and the Student Satisfaction Inventory (SSI) developed by the Noel-Levitz consulting firm. Both instruments are comprehensive in nature in the sense that they are designed to assess enrolled students' satisfaction with core programs, support services, and many other aspects of their 'total' college experience. For example, the SOS measures the students' satisfaction with college services and programs, academic instruction, admissions, college rules and policies, facilities, registration, and the general student environment. Similarly, the SSI was developed to assess the following 12 dimensions: academic advising effectiveness, campus climate, campus support services, concern for the individual, instructional effectiveness, admissions and financial aid effectiveness, registration effectiveness, responsiveness to diverse populations, safety and security, service excellence, student centeredness, and campus life (included in versions for four-year institutions). A unique feature of the SOS instrument is that it assesses the importance assigned by students to each aspect of the academic experience and evaluates the students' satisfaction with their experience of each item. It clearly follows the importance-performance model.

A recent newcomer into the field of student satisfaction assessment is Educational Benchmarking, Inc. (EBI), a company that is sponsored by the Association for the Advancement of Collegiate Schools of Business (AACSB). The instrument that EBI developed, the Undergraduate Business Exit Assessment (UBEA), was designed exclusively for business undergraduate programs and it has much narrower focus than those of SOS and SSI. The scope of UBEA is the academic business program only. The instrument includes 66 items that are exclusively concerned with different aspects of the academic experience in business, such as satisfaction with teaching in business courses, knowledge and skills that are important for a business career, and assistance in securing placement in an organization or graduate program. UBEA does not attempt to capture the students' satisfaction with aspects of the total college experience (e.g., residence halls, food service, recreational/sports activities, financial aid) that albeit vital are not directly related to the delivery of the academic business program. EBI provides extensive comparative data and also allows the inclusion of custom questionnaire items in the UBEA instrument. The benchmarking reports specify that the 66 items which comprise the

instrument can be organized in 16 multi-item factors plus another 16 individual items that could not be aggregated into factors. The sixteen proposed factors are: 1) quality of faculty and instruction in required courses, 2) faculty responsiveness, grades, and student effort in required courses, 3) quality of faculty in major courses, 4) faculty responsiveness, grades, and student effort in major courses, 5) breadth of curriculum, 6) size of enrollments for required and major courses, 7) student organizations and extracurricular activities, 8) facilities and computing resources, 9) characteristics of fellow students, 10) placement and career services, 11) advisor, 12) effective communication and team work, 13) use and manage of technology, 14) effective management and leadership skills, 15) critical thinking and problem solving, and 16) overall program effectiveness. Unlike the SSI (but similarly to SOS), the UBEA does not assess the importance assigned by students to the different aspects of the business experience; instead, the responses are registered on a 7-point Likert scale denoting increasing levels of satisfaction, confidence, or perceived quality without indication of the importance of each item to the respondent.

### **Models of Student Satisfaction**

There are a number of models in the literature that attempt to relate student satisfaction with its antecedents as well as explain impact of satisfaction on other variables. Models vary greatly in terms of the number of variables considered and in terms of the methodologies used to quantify the strength and significance of the relationships. More importantly, the different approaches to modeling satisfaction reveal different underlying conceptions of the nature of customer satisfaction.

Browne et al. (1998) tested the ServQual model using regression analysis in a study that included ServQual dimensions as well as curricular dimensions. Overall satisfaction was measured by three measures: global satisfaction, willingness to recommend, and perceived value of the program. The findings of this study suggest that there are different drivers of overall satisfaction depending on how this concept is presented and operationalized to the respondent. When ServQual dimensions are included next to curricular factors and students are asked to express their satisfaction with a program, ServQual dimension have marginal predictive power; however, those aspects of ServQual that deal with student interaction become more important when students are questioned about their willingness to recommend the program to friends or family; finally, when overall satisfaction is framed as 'value of the investment', the predictive power of curricular dimensions and ServQual factors is much reduced. Elliott and Healy (2001) used regression analysis to find that only five of the 11 factors proposed in the Noel-Levitz's Student Satisfaction Inventory (SSI) were significant in predicting overall satisfaction: centeredness, campus climate, instructional effectiveness, service excellence, and support services. Mai [2005] compared student satisfaction between US and UK students with mixed results. He concluded that US students are in general more satisfied than college students in the UK but only four of the 19 variables used were significant in predicting overall student satisfaction.

Elliott and Shin (2002) used the SSI and analyzed the top 20 educational attributes ranked by students as being the most important to them. Of these, only the following were related to overall satisfaction: 1) excellence of instruction, 2) able to get the desired classes, 3) knowledgeable advisor, 4) knowledgeable faculty, 5) overall quality of instruction, 6) tuition is a worthwhile investment, 5) approachable advisor, 6) safe and secure campus, 7) clear and

reasonable requirement for major, 8) availability of advisor, 9) adequate computer labs, 10) fair and unbiased faculty, and 11) access to information. These authors concluded that what students claim are important factors does not necessarily correspond to the drivers of overall satisfaction. For example, factors such as registration process, placement rate, and reasonable graduation time were highly rated in the importance scale but were not significant in predicting overall satisfaction. Conversely, three of the significant factors were actually rated at the bottom of the top twenty factors: ability to get desired classes, availability of advisor, and access to information.

Eom and Wen [2006] used path analysis and found significant correlations between satisfaction and six composite factors: student self-motivation, student learning style, instructor knowledge, instructor feedback, student interactions, and course structure. Alves and Raposo (2007) used structural equation modeling to student satisfaction in Portugal and found significant relationships between seven constructs: institutional image, student expectations, perceived value, perceived quality, student satisfaction, word of mouth, and student loyalty. Student satisfaction is positively correlated with image, student expectations, perceived value and perceived quality and is a mediating factor influencing student loyalty and word of mouth. Helgesen and Nettet (2007) used a similar approach to study student satisfaction at a university in Norway and found empirical evidence relating service quality, institutional information and guidelines, students' social interactions, satisfaction with facilities, and student commitment to student satisfaction. Student satisfaction has a strong positive influence on student loyalty and on institution reputation, which also impacts positively on loyalty.

While most studies consider satisfaction a one-dimensional variable, a small number of studies are starting to model satisfaction and dissatisfaction as two related but distinct facets of the same concept. DeShields et al. (2005) modeled student satisfaction according to Herzberg's two-factor theory, and split the sample of students in two groups—high satisfaction group and low satisfaction group—to test their model. They found that satisfaction with faculty and with advising act as “satisfiers” while the satisfaction with classrooms seems to be a “dissatisfier”. Emery (2006), Petruzzellis et al. (2006), Chen and Lee (2006), apply the Kano model of satisfaction in three different the university settings.

The current study uses the UBEA student satisfaction instrument which embodies a simple approach to measuring satisfaction. All questions are framed in positive terms and importance ratings are not elicited. The instrument incorporates three items that are used as measures of overall satisfaction: meeting expectations, value of the educational investment, and likelihood of recommending the program to a close friend. The methodology employed in this exploratory study is regression analysis on factors that are constructed using factor analysis. The model is depicted in Figure 1.

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## Method

An analysis of determinants of overall student satisfaction was conducted using data collected from 1,212 undergraduate business students at the point of graduation from 2004 to 2008. Student satisfaction data was collected from all graduating seniors as a component of the ongoing program assessment procedures using the EBI's Undergraduate Business Exit Assessment instrument. This survey is currently used by around 150 business schools in the



United States collecting data from around 30,000 students annually. The survey includes 13 demographic variables and 66 items that pertain to different aspects of the respondent’s experiences as a business student: from satisfaction with courses and faculty, to advising, to facilities, to extra-curricular opportunities, to career services and placement, plus many other aspects.

Upon performing an exploratory analysis of the data it became apparent that not all students answered all questions. Of the 1212 student respondents, 352 answered all the questions while the rest did not answer at least one question. The question arises as to whether these 352 students, herein referred to as the “sample” data, share the same characteristics as those who missed answering at least one question. The 860 students who did not answer at least one question are referred to as the “other” data. Therefore a comparison was made between the “sample” data and the “other” data with respect to these demographics. The first method of comparison was accomplished by creating frequency distribution charts showing the percentage of respondents in each question’s scale value for both groups. This visual examination is followed by a statistical examination.

The frequency distribution graphs, presented in Figure 2, exhibit a remarkably similar demographic profile overall with the possible exception of gender. At first glance, it seems that the proportion of males in the “sample” students is higher than among those who did not answer all questions. Ethnically, white American shows the highest frequency but the two groups have similar distributions. In terms of GPA, it seems that those students who responded to all questions have slightly lower overall GPA than those who missed at least one satisfaction item. The remaining charts show that both groups of students show a high degree of demographic similarity.

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A statistical comparison between the demographic characteristics of respondents in the “sample” and “other” is presented in Table 1. Note that gender, ethnic group, year of entry in the business program, undergraduate major, plans after graduation, and plans for employment are qualitative variables and the test value is the Chi-square value of the respective contingency tables. The test values of the other variables are the t-values of simple means tests with pooled variance. The results presented show that only the variable Cumulative GPA is significantly different for both groups at  $p < 0.01$  level of significance. Students with lower GPA put more effort in responding to all questionnaire items.

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Are both the “sample” and “other” groups similar with respect to the 66 satisfaction questions? A t-test for the difference between two means was performed for each of these questions and it was found that of the 66 questions, only four questions had overall means that were significantly different. These four questions and their respective p-values are shown in Table 2. This finding provides assurance that the 352 students who answered every question are essentially similar to the 860 students who did not answer at least one question.

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**Results**

The data were analyzed using SAS’s PROC FACTOR program in order to perform an exploratory factor analysis to identify the factor structure underlying the dataset. The principle axis (principle component) method and the Varimax rotation method were employed. Several exploratory factor analyses were performed to get a handle on determining the number of meaningful factors to retain, as discussed in Hatcher (1994), who enumerates four criteria that should be used to determine how many factors should be retained. In light of these criteria, factor loadings of at least .35 were flagged in the output and it was decided to retain eight factors which have eigenvalues greater than 1. Table 3 lists the eight factors, the variance explained by each factor, the items that loaded on each factor and suggested factor names. Appendix A details the content of all items included in each factor.

The first factor is related to how students felt the business program enhanced their skills and knowledge. Since these items reflect self-reported perceptions of one’s own skills and abilities, this factor seems to express one’s self-confidence. The second factor relates to satisfaction with grades, accessibility of courses, instructor responsiveness, and satisfaction with instructors presenting concepts relating to the real world, global, social responsibility, ethical and technology issues as well as satisfaction with team experiences, size of classes and classroom quality. This factor is named Curriculum, Instruction, and Classes. Noteworthy is the inclusion of Q009-Satisfaction with the quality of teaching in Finance. One would expect this item to be included in the list for factor 3.

Factor 3 relates specifically to the quality of teaching in the major business areas in the curriculum. Factor 3 is named satisfaction with teaching in subject matter. The fourth factor, named extra-curricular activities and career opportunities, deals with practical experiences, interaction with practitioners, student organization activities, leadership opportunities, access to alumni, and career planning. Factor 5 is narrowly focused in one area, that of advisement. Students were asked questions about advisor availability, knowledge, helpfulness, and interest in student progress. This factor is named advising.

Factor 6, quality of teaching and feedback, revolves around student ratings of the quality of teaching, instructor feedback on assignments and of their satisfaction with the availability of courses in their major. This factor differs from factor 3 in that factor 6 assesses perceived quality of teaching in general rather than satisfaction with the quality of teaching in specific subject matters. Factor 7, computing resources, deals with computing resources, availability as well as remote access, and computer training. Satisfaction with the quality of business classrooms is included both in this factor and in factor 2, which may reflect some difficulty in interpreting the meaning of this question item. Fellow students is the name given to factor 8. This factor deals with how students perceive their academic quality of their colleagues, how satisfied they are with the level of camaraderie, and the ability to work in teams.

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Note that the factor analysis performed herein resulted in a much smaller set of factors than that proposed by the developer of UBEA. Instead of 16 factors, this study found eight factors only. Furthermore, instead of finding 16 items that did not load on any factor, we found that only one item is not part of any of the eight factors found: “How did the quality of teaching

in your business courses compare to the quality of teaching in non-business courses on this campus?”

Factor scores for each factor and for each of the 352 respondents in the sample were computed using SAS’s PROC FACTOR and these scores were used as predictor variables for overall student satisfaction. Three “bottom line” or “overall satisfaction” questions were asked of each student: 1) To what extent did your undergraduate business program experience fulfill your expectations?; 2) Comparing the expense to the quality of education, rate the value of the investment made in the undergraduate business degree; and 3) How inclined are you to recommend your undergraduate business program to a close friend?

A stepwise regression procedure was performed using SAS. The initial and final results of each regression analysis are presented in Tables 4-6. Table 4 contains the regression analysis of the variable ‘Extent of fulfillment of expectations’ against the factor scores for each student. The initial model includes all eight factors. The p-values for seven of the eight factors are very small and significant at the .01 level of significance. The p-value of factor 5, Advising, indicates that this factor is not significant. The adjusted R-square is .5292. Eliminating factor 5 resulted in significance for the remaining seven factors. This is the final model which has an R-square of .5247.

The results of the regression analysis for the item ‘Value of the educational investment’ are presented in Tables 5. The initial model utilized all eight factors as before. As shown, three predictors are deemed insignificant at the .01 level of significance: factor 3, satisfaction with teaching in subject matter; factor 5, advising; and factor 8, fellow students. When these three factors were removed from the analysis, the final model includes five significant factors and an adjusted R-square that shows little change from the initial model. The five predictors of the value of investment made are: factor 1, self-confidence; factor 2, curriculum, instruction, and classes; factor 4, extra-curricular activities and career opportunities; and factor 7, computing resources.

The regression results for the third item for overall satisfaction, ‘Likelihood of recommendation of the business program to a friend’ are presented in Table 6. The results of the initial model show that when it comes to recommending the program to a close friend, factors 3 and 5 are deemed insignificant. When these two factors are eliminated, the final model has an adjusted R-square essentially unchanged from the initial model and includes six significant factors: factor 1, self-confidence; factor 2, curriculum, instruction, and classes; factor 4, extra-curricular activities; factor 6, quality of teaching and feedback; factor 7, computing resources; and factor 8, fellow students.

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**Summary and Discussion**

The factor analysis conducted in this study indicates that eight factors (not sixteen) are sufficient to explain the total sample variance, with factor 1, self-confidence, explaining the most

variability. As suggested in the literature, it should come as no surprise that seniors who feel a strong sense of self-confidence about their knowledge and skills are generally satisfied with their academic business experience. Therefore, a major goal for business school faculty is to develop a sense of self-confidence in their students, and certainly, a way to accomplish this is to insure that students obtain a strong and effective education in a rich learning environment. In addition to academic endeavors, student accomplishments in course-related projects, internships, service to the community, and leadership experiences should be praised and formally recognized by the program. Furthermore, students should be encouraged to join campus organizations and take proactive steps in their career planning.

The results of all three regression analysis point to several interesting overall findings. First of all, the signs of all the regression coefficients in the three final models are positive, that is, all variables are positively correlated with overall student satisfaction. This result confirms other empirical findings indicating that many different factors are important in shaping overall satisfaction. Secondly, it is apparent in all models that student self-confidence (factor 1) has the greatest impact on satisfaction as seen by the magnitude of the regression coefficient of this factor in all three models. The next two factors in terms of magnitude of impact are the quality of teaching in general (factor 6) and extra-curricular and career opportunities (factor 4.) The quality of teaching matters and it seems that students value both extra-curricular activities and assistance with career placement. However, students seem not to relate the quality of teaching of a particular subject matter to general satisfaction with a business program, as evidenced by the low coefficient of factor 3 in the first regression model and the removal of this factor from the two subsequent models.

Finally, it seems that satisfaction with advising does not impact the overall satisfaction with the business program in any of the three forms in which overall satisfaction was measured. The fact that satisfaction with advising does not impact the overall satisfaction with the business program is a significant finding in that most educators and administrators seem to put great emphasis on student advising. For example, Elliott and Shin (2002) reported that, among the 13 highly significant variables that impact overall satisfaction with university performance, three are related to advising: advisor knowledge, approachability, and availability. In contrast, DeShields et al. (2005) suggested that advising may be a hygiene factor, that is, if adequate it will not contribute to quality, but if grossly lacking it will cause dissatisfaction. Is this study's finding in agreement with DeShields et al., that is, is the absence of a meaningful relationship to overall satisfaction an indicator that advising is being performed at a satisfactory level? Perhaps that is the case, but this matter needs further investigation.

Student satisfaction with a program matters both in terms of enhancing the learning process and in terms of ensuring the long-term success of a program. The measurement of student satisfaction and the study of its determining factors are not easy due to the complexity of the concept itself. Should one consider satisfaction alone or satisfaction and dissatisfaction as two separate but intertwined facets? Should one measure satisfaction with the process (i.e., teaching, advising, extra-curricular activities) or with the outcome (i.e., job, advancement, career)? Should satisfaction be measured as a snapshot? When viewed in terms of these broad questions, most instruments designed to assess student satisfaction have limitations. The UBEA instrument provides a wealth of information but it is narrowly focused on the characteristics of a business program. Its standardized questions are well-designed and thoroughly tested but lack open-ended questions. More importantly, this instrument lacks items designed to evaluate the extent of student dissatisfaction. Certainly, administrators and educators have other means (e.g.,

interviews, focus groups) to gather information from students, alumni, and employers that will help them to design effective educational features or intervene in the current programs offered. For example, it could be highly valuable for a program to collect data about highly-satisfying or highly-dissatisfying academic experiences that a student went through either at the program or elsewhere in the institution.

From the point of view of studying the different academic factors that influence student satisfaction, the UBEA instrument is unparalleled in its detail. It highlights many specific components of teaching and advising, focuses on particular aspects of student services, program features, and even business disciplines. It provides valuable information for institutions and offers the raw material for studying and understanding the relationships between specific factors and overall student satisfaction.

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FIGURE 1. Model of Student Satisfaction

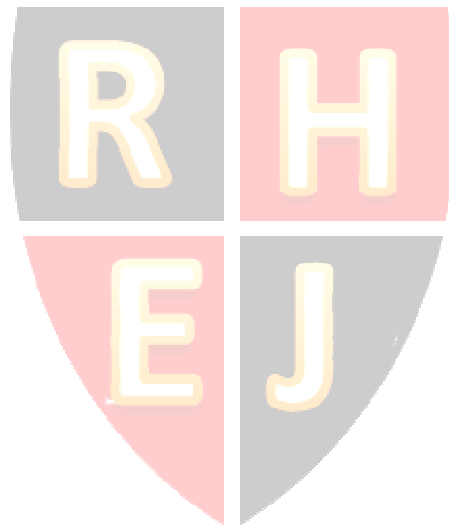
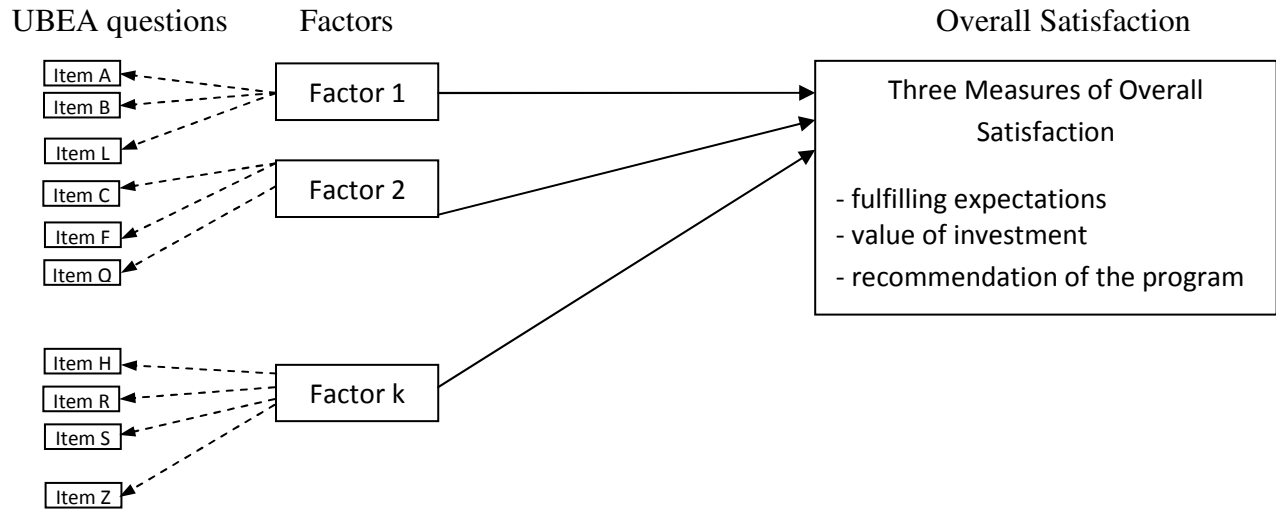


FIGURE 2. Profile of Sample and Non-Sample Cases

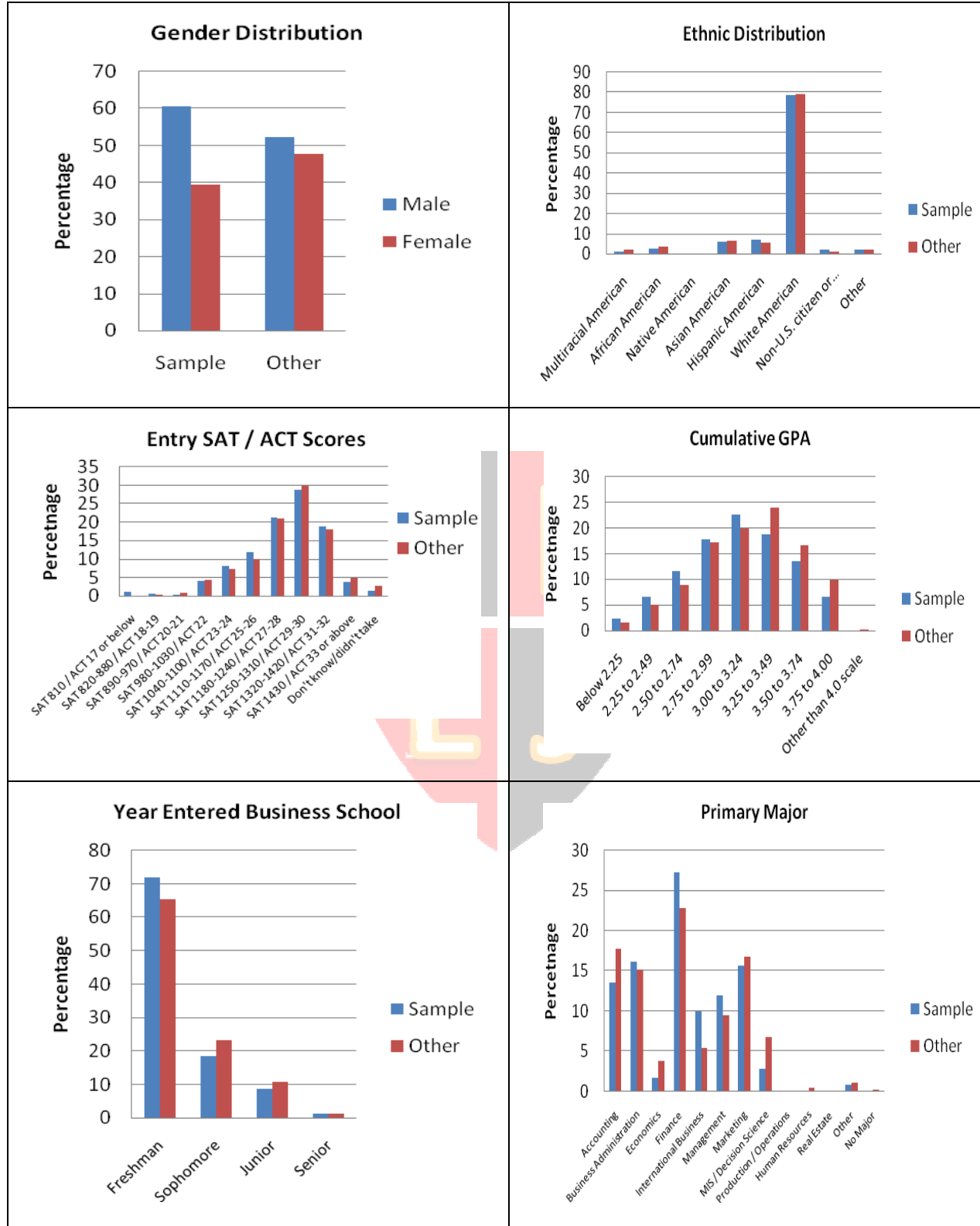


FIGURE 2. Profile of Sample and Non-Sample Cases (Cont'd)

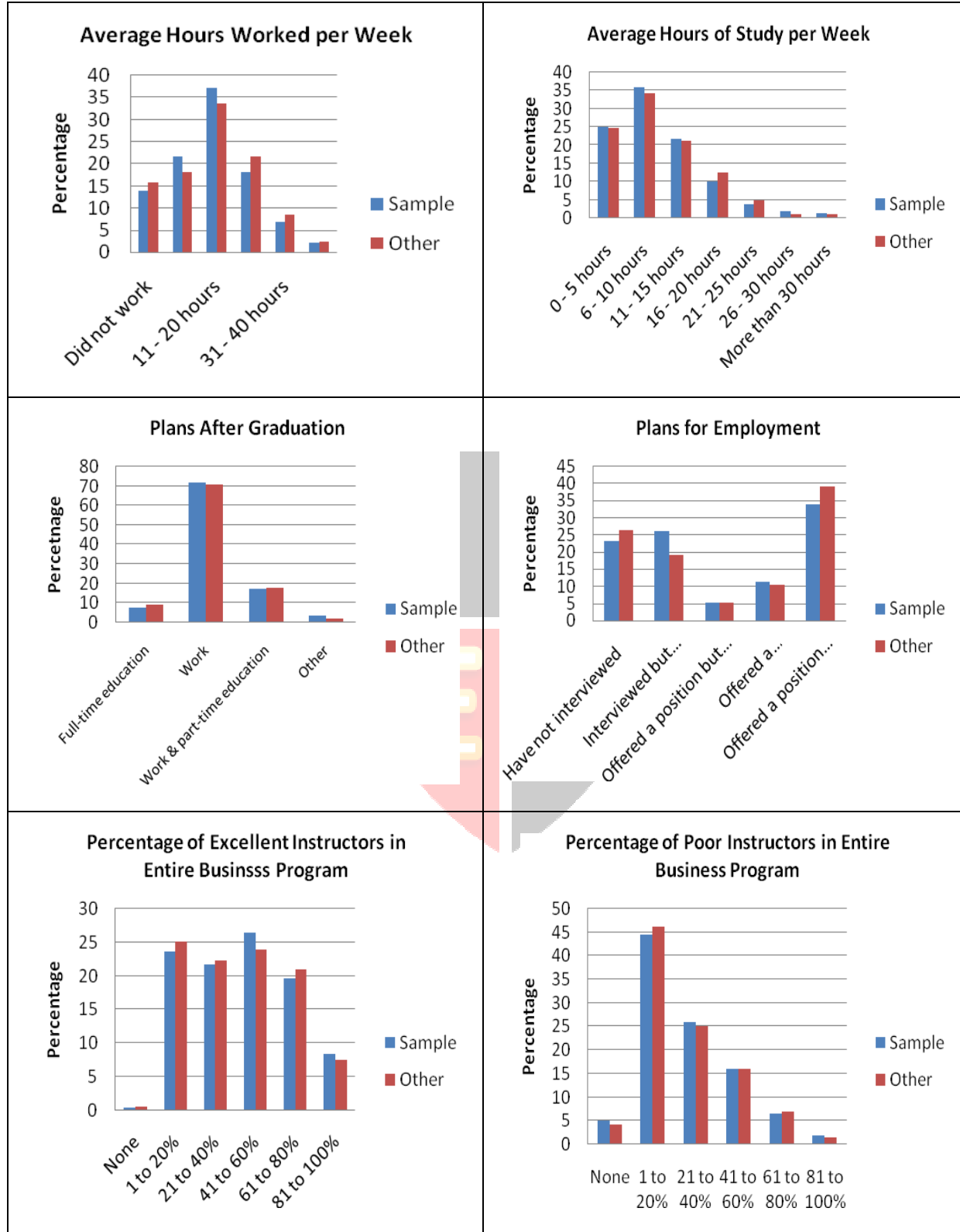




TABLE 1. Statistical Comparison of Demographic Variables of Sample and Non-Sample Cases

<b>Variable Name</b>	<b>Test value</b>	<b>p-value</b>
Gender	0.2315	0.6304
Ethnic group	0.0079	0.9949
SAT/ACT score	-1.4571	0.1453
Cumulative GPA	-2.5844	0.0099
Average number of hours worked per week	-0.8896	0.3739
Average number of hours studied per week	-0.3900	0.6966
Year entered into business school	0.7793	0.8544
Undergraduate major/Area of primary interest	0.5041	0.9978
Plans after graduation	0.8061	0.9376
Plans for employment	0.9226	0.8200
Percentage of excellent business instructors	0.5443	0.5863
Percentage of poor business instructors	0.1207	0.9039



TABLE 2. Statistical Comparison of Satisfaction Items of Sample and Non-Sample Cases

<b>Question</b>	<b>Test value</b>	<b>p-value</b>
Satisfaction with the quality of teaching in business law/legal environment	-3.4371	0.0006
Satisfaction with quality of teaching in human resource management	-4.9965	0.0000
Satisfaction with average size of major courses	-3.0651	0.0022
Satisfaction with quality of business classrooms	-2.7803	0.0055

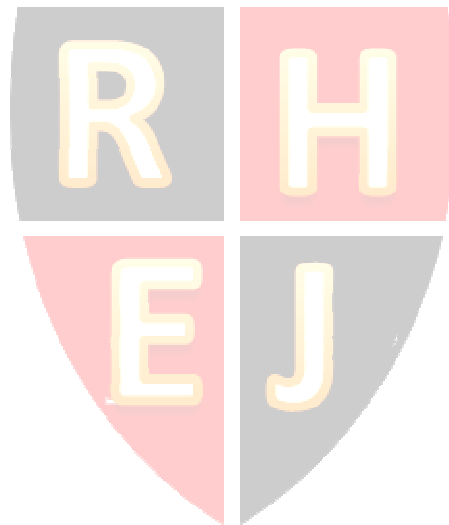


TABLE 3 – Results from the Factor Analysis

Factors	Variance Explained	Questionnaire items	Factor name and description
Factor 1	8.3264	51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63	<b>Self-confidence:</b> students' confidence in own abilities and skills
Factor 2	7.6972	9, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 40	<b>Curriculum, instruction, and classes:</b> satisfaction with coverage of different topics, grading, accessibility and responsiveness of instructors, class sizes
Factor 3	4.8198	6, 7, 8, 10, 11, 12, 13, 14, 15, 16	<b>Satisfaction with teaching in subject matter:</b> satisfaction with quality of teaching in specific subjects
Factor 4	4.5386	28, 29, 33, 34, 47, 48, 49, 50	<b>Extra-curricular activities and career opportunities:</b> satisfaction with opportunities for practical experiences, student organizations and leadership, and recruiting
Factor 5	4.0102	35, 36, 37, 38	<b>Advising:</b> satisfaction with student advising
Factor 6	3.7690	1, 2, 3, 4, 39	<b>Quality of teaching and feedback:</b> perceived quality of teaching and feedback from instructors in general
Factor 7	2.7085	40, 41, 42, 43	<b>Computing resources:</b> satisfaction with availability, training, and facilities
Factor 8	1.3478	44, 45, 46	<b>Fellow students:</b> satisfaction with academic quality of the student body and student interactions
Total	37.2175		

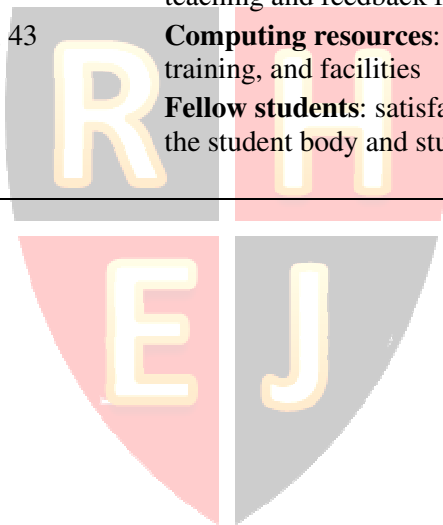


TABLE 4 – Results from Regression Analysis – Extent of Fulfillment of Expectations

<b>Initial model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	8	322.56889	40.32111	49.90	< .0001
	Error	34	274.74343	0.80807	<b>R<sup>2</sup> =</b>	0.5400
	Total	34	597.31231		<b>Adj. R<sup>2</sup> =</b>	0.5292
		8				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	4.75382	0.04812	98.78	< .0001	
Factor 1	1	0.58897	0.04905	12.01	< .0001	
Factor 2	1	0.20966	0.04992	4.20	< .0001	
Factor 3	1	0.18627	0.05295	3.52	0.0005	
Factor 4	1	0.48262	0.05064	9.53	< .0001	
Factor 5	1	0.10303	0.04968	2.07	0.0388	
Factor 6	1	0.43132	0.05127	8.41	< .0001	
Factor 7	1	0.25368	0.05307	4.78	< .0001	
Factor 8	1	0.18511	0.05260	3.52	0.0005	
<b>Final model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	7	319.09314	45.58473	55.87	< .0001
	Error	34	278.21928	0.81589	<b>R<sup>2</sup> =</b>	.5342
	Total	34	597.31232		<b>Adj. R<sup>2</sup> =</b>	.5247
		8				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	4.75303	0.04836	98.29	< .0001	
Factor 1	1	0.58906	0.04929	11.95	< .0001	
Factor 2	1	0.20966	0.05016	4.18	< .0001	
Factor 3	1	0.18814	0.05319	3.54	0.0003	
Factor 4	1	0.48273	0.05088	9.49	< .0001	
Factor 6	1	0.43292	0.05151	8.40	< .0001	
Factor 7	1	0.25420	0.05333	4.77	< .0001	
Factor 8	1	0.18432	0.05285	3.49	0.0006	

TABLE 5 – Results from Regression Analysis – Value of the Educational Investment

<b>Initial model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	8	271.61346	33.95168	28.91	< .0001
	Error	34	402.74733	1.17419	<b>R<sup>2</sup> =</b>	0.4028
	Total	35	674.36080		<b>Adj. R<sup>2</sup> =</b>	0.3888
		3				
		1				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	5.04261	0.05776	87.31	< .0001	
Factor 1	1	0.52919	0.05907	8.96	< .0001	
Factor 2	1	0.29888	0.06010	4.97	< .0001	
Factor 3	1	-0.01134	0.06328	-0.18	0.8579	
Factor 4	1	0.32692	0.06067	5.39	< .0001	
Factor 5	1	-0.03794	0.05967	-0.64	0.5253	
Factor 6	1	0.47362	0.06162	7.69	< .0001	
Factor 7	1	0.30969	0.06380	4.85	< .0001	
Factor 8	1	0.10431	0.06335	1.65	0.1006	
<b>Final model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	5	267.88587	53.57717	45.61	< .0001
	Error	34	406.47492	1.17478	<b>R<sup>2</sup> =</b>	.3972
	Total	35	674.36080		<b>Adj. R<sup>2</sup> =</b>	.3885
		6				
		1				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	5.04261	0.05777	87.29	< .0001	
Factor 1	1	0.52863	0.05907	8.95	< .0001	
Factor 2	1	0.29947	0.06006	4.99	< .0001	
Factor 4	1	0.32658	0.06067	5.38	< .0001	
Factor 6	1	0.47295	0.06163	7.67	< .0001	
Factor 7	1	0.31122	0.06379	4.88	< .0001	



TABLE 6 – Results from Regression Analysis – Likelihood of Recommendation to a Friend

<b>Initial model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	8	328.39291	41.04911	36.33	< .0001
	Error	34	386.46749	1.16002	<b>R<sup>2</sup> =</b>	0.4594
	Total	35	714.86040		<b>Adj. R<sup>2</sup> =</b>	0.4467
		0				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	5.02248	0.05674	88.51	< .0001	
Factor 1	1	0.60886	0.05795	10.51	< .0001	
Factor 2	1	0.30952	0.05896	5.25	< .0001	
Factor 3	1	0.10481	0.06214	1.69	0.0926	
Factor 4	1	0.44387	0.05958	7.45	< .0001	
Factor 5	1	0.01604	0.05870	0.27	0.7849	
Factor 6	1	0.43095	0.06048	7.13	< .0001	
Factor 7	1	0.28272	0.06298	4.49	< .0001	
Factor 8	1	0.16387	0.06227	2.63	0.0089	
<b>Final model</b>	<b>Source</b>	<b>DF</b>	<b>Sum of squares</b>	<b>Mean square</b>	<b>F value</b>	<b>Pr &gt; F</b>
	Model	6	325.05795	54.17633	47.81	< .0001
	Error	34	389.80245	1.13315	<b>R<sup>2</sup> =</b>	.4547
	Total	35	714.86040		<b>Adj. R<sup>2</sup> =</b>	.4452
		0				
<b>Variable</b>	<b>DF</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t value</b>	<b>Pr &gt; t</b>	
Intercept	1	5.02232	0.05682	88.39	< .0001	
Factor 1	1	0.61071	0.05802	10.53	< .0001	
Factor 2	1	0.31364	0.05899	5.32	< .0001	
Factor 4	1	0.44624	0.05964	7.48	< .0001	
Factor 6	1	0.43180	0.06056	7.13	< .0001	
Factor 7	1	0.28447	0.06305	4.51	< .0001	
Factor 8	1	0.16355	0.06235	2.62	0.0091	

APPENDIX A  
Results of the Factor Analysis

Factor	Questionnaire items
1	Q051 - To what extent did the Business program enhance your: Presentation skills Q052 - To what extent did the Business program enhance your: Writing skills Q053 - To what extent did the Business program enhance your: Ability to work in teams Q054 - To what extent did the Business program enhance your: Ability to use technology Q055 - To what extent did the Business program enhance your: Ability to manage technology Q056 - To what extent did the Business program enhance your: Ability to be an effective manager Q057 - To what extent did the Business program enhance your: Ability to be an effective leader Q058 - To what extent did the Business program enhance your: Ability to think critically Q059 - To what extent did the Business program enhance your: Ability to define problems Q060 - To what extent did the Business program enhance your: Ability to solve problems Q061 - To what extent did the Business program enhance your: Ability to analyze and interpret data Q062 - How academically challenging were Business courses in comparison to Non-Business courses on this campus
2	Q009 - Satisfaction with quality of teaching in Finance Q017 - Satisfaction with Grades in required courses accurately reflecting students' level of performance Q018 - Satisfaction with Grades in major courses accurately reflecting students' level of performance Q019 - Satisfaction with Accessibility of required course instructors outside of class Q020 - Satisfaction with Accessibility of major course instructors outside of class Q021 - Satisfaction with Required course instructor's responsiveness to student concerns Q022 - Satisfaction with Major course instructor's responsiveness to student concerns Q023 - Satisfaction with Required course instructors relating concepts to the real world Q024 - Satisfaction with Business curriculum instructors presenting a global perspective Q025 - Satisfaction with Business curriculum instructors presenting social responsibility issues Q026 - Satisfaction with Business curriculum instructors presenting ethical issues Q027 - Satisfaction with Business curriculum instructors presenting technology issues Q030 - Satisfaction with Value derived from team experiences Q031 - Satisfaction with Average size of required courses Q032 - Satisfaction with Average size of major courses Q040 - Satisfaction with Quality of Business classrooms
3	Q006 - Satisfaction with quality of teaching in Business Policy / Strategy Q007 - Satisfaction with quality of teaching in Business Law / Legal Environment Q008 - Satisfaction with quality of teaching in Economics / Business Economics Q010 - Satisfaction with quality of teaching in Human Resources Management Q011- Satisfaction with quality of teaching in Information Systems Q012 - Satisfaction with quality of teaching in International Business Q013 - Satisfaction with quality of teaching in Management / Organizational Behavior Q014 - Satisfaction with quality of teaching in Marketing Q015 - Satisfaction with quality of teaching in Operations Q016 - Satisfaction with quality of teaching in Statistics
4	Q028 - Satisfaction with Opportunities for practical experiences within the Undergraduate curriculum Q029 - Satisfaction with Opportunities for interaction with practitioners Q033 - Satisfaction with Student organization activities in the Business program Q034 - Satisfaction with Leadership opportunities in Business program's extracurricular activities Q047 - Satisfaction with Assistance in preparation for permanent job search Q048 - Satisfaction with Access to school's alumni to cultivate career opportunities Q049 - Satisfaction with Satisfaction with Number of companies recruiting on campus Q050 - Satisfaction with Satisfaction with Quality of companies recruiting on campus

Factor	Questionnaire items
5	Q035 - Satisfaction with Advisor's availability Q036 - Satisfaction with Advisor's knowledge of requirements Q037 - Satisfaction with Advisor's helpfulness of recommendations Q038 - Satisfaction with Advisor's interest in students' progress
6	Q001 - Quality of teaching in your required courses Q002 - Quality of teaching in your major courses Q003 - Quality of feedback on assignments (other than grades) received from instructors in required courses Q004 - Quality of feedback on assignments (other than grades) received from instructors in major courses Q039 - Satisfaction with Availability of courses in students' major
7	Q040 - Satisfaction with Quality of Business classrooms Q041 - Satisfaction with Availability of Business School's computers Q042 - Satisfaction with Remote access to Business School's computer network Q043 - Satisfaction with Training to utilize Business School's computing resources
8	Q044 - Satisfaction with characteristics of your fellow students: Academic quality Q045 - Satisfaction with characteristics of your fellow students: Ability to work in teams Q046 - Satisfaction with characteristics of your fellow students: Level of camaraderie

