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Measuring Student Satisfaction in the Andrews University School of Business

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Abstract:

The goal of my research is to help the Andrews University School of Business Administration (SBA) improve student satisfaction by identifying which factors are most closely correlated with undergraduate students' satisfaction and perceived quality. I studied satisfaction as a dependent variable measured in relation to nine different double-headed service factors (measured for satisfaction level and degree of importance) provided by the SBA: 1. Curriculum, instruction, and classes, 2. Teaching in subject matter, 3. Advising, 4. Quality of teaching and feedback, 5. Computing resources, 6. Social and extra-curricular components, 7. Preparation for career or graduate school, 8. Physical and office properties and 9. Religious components. To measure student satisfaction I utilized a survey tool I created based on the Student Satisfaction Inventory™, the Undergraduate Business Exit Assessment, and the AU Senior Survey and Course Survey. Results were evaluated with SPSS analytical software to perform step-wise regression analysis and R statistical software to perform multiple analysis of variance (MANOVA). This unique survey tool revealed six factors that were most closely correlated with overall student satisfaction: 6B. Satisfaction with social and extra-curricular components, 7B. Satisfaction with preparation for career or graduate school, 2B. Satisfaction with teaching in subject matter, 7A. Importance of preparation for career or graduate school, 2A. Importance of teaching in subject matter and 8B. Satisfaction with physical and office properties. The research revealed areas important to improving the Andrews University undergraduate business experience.

Introduction

Student satisfaction has traditionally been treated as consumer satisfaction with a service (Letcher and Neves, 2010; Douglas et al., 2007; Douglas et al., 2006, Deshields et al., 2005; Elliot and Shin, 2002). In the SBA student satisfaction model, the student is seen as the primary consumer and the scholastic institution as the service provider. As such, consumer satisfaction is viewed as a measure of how the perceived performance or quality of the service meets the expectations of the consumer (Elliot and Shin, 2002; Elliot and Healy, 2001). The two key terms are consumer satisfaction and perceived quality. In a study performed by Athiyaman (1997), consumer satisfaction is defined as short-term attitude relating to a consumer experience and perceived quality is defined as an overall attitude of satisfaction or dissatisfaction with a good or service. Athiyaman asserts that perceived quality is determined by whether or not the consumer's satisfaction with the service meets, exceeds, or disappoints their expectations of the service. Athiyaman notes that if performance of the service disappoints expectations, negative disconfirmation results, and conversely if the service exceeds expectations positive disconfirmation results. That being the case, the sum of the consumer's satisfaction with particular services equals their perceived quality or overall satisfaction with the overall service. For example, in the university setting, a consumer might have different measures of satisfaction with the faculty, the dorm and the cafeteria, which all contribute to the overall perceived quality of their education.

The need to measure student satisfaction has garnered attention in higher education due to the positive benefits associated with student satisfaction. Student satisfaction is correlated with higher retention rates, recruitment potential, willingness to recommend the institution and intent to study at a higher level within the same institution (Tessema et al., 2012; Douglas et al.,

2007; Douglas et al., 2006; Deshields et al., 2005, Elliot and Healy, 2001). Alves and Raposo report that student satisfaction has also been correlated with building long term relationships with students that can provide competitive advantages for universities in the form of positive word of mouth and future contributions from recent graduates (Alves and Raposo, 2006). The authors also state that negative consequences of student dissatisfaction include unsuccessful students, quitting or transferring and negative word of mouth harmful to future applicants (2006).

In research, satisfaction can either be measured as an independent or dependent variable (Tessema et al., 2012). As an independent variable it answers questions of student GPA, graduation and retention rates etc. As a dependent variable, satisfaction is measured as a result of related factors (Tessema, 2012). Douglas et al. elucidate this point by clarifying that research into customer satisfaction centers on identifying "drivers of satisfaction/dissatisfaction" (2007). Researchers in this way identify drivers or factors to measure student satisfaction with key institution services. Student satisfaction with these key factors will in sum relate to students' overall impression of the organization, or their perceived quality of the organization (Douglas et al., 2006).

Literature Review

From the plethora of past research, I identified key factors to measure student satisfaction with the Andrews University School of Business. By focusing on an academic department, Umbach and Porter (2002) note that the research focuses on a subunit of the university experience, which served as a guide in narrowing key factors. Tessema et al. (2012), identified 11 factors positively correlated with student satisfaction, five of which are statistically significant in their correlation to satisfaction utilizing regression analysis: 1. Quality of instruction, 2. Capstone experience, 3. Academic advising, 4. Overall college experience, 5. Preparation for

career or graduate school. Out of those five factors they specifically identified academic advising and preparation for career or graduate studies as the two most impactful factors to student satisfaction. Corts et al. (2000), identified five factors positively correlated to student satisfaction in their study on student satisfaction with an academic department: 1. Advising, 2. Course offerings, 3. Career preparation, 4. Quality of instruction, 5. Class size. Like Tessema et al., they pinpoint academic advising and career or graduate school preparation as two of the most important factors correlated to student satisfaction specifically with their major department. They note that these two measures of satisfaction are not typically covered in the traditional course evaluation model, which only focuses on in-class measures of satisfaction.

Letcher and Neves's (2010) research determines factors of student satisfaction as related to specific factors correlated with their experience in their business department. They identified eight factors statistically significant in their correlation to student satisfaction by utilizing the Undergraduate Business Exit Assessment survey. The factors identified are 1. Self-confidence 2. Curriculum, instruction, and classes 3. Satisfaction with teaching in subject matter 4. Extra-curricular activities and career opportunities 5. Advising 6. Quality of teaching and feedback 7. Computing resources 8. Fellow students. Unlike previous studies, they determined that academic advising has little impact in overall student satisfaction, and they noted the significance of student self-confidence on satisfaction levels.

Based on the research noted above I identified eight factors to measure as dependent variables of overall student satisfaction: 1. Curriculum, instruction, and classes, 2. Satisfaction with teaching in subject matter, 3. Advising, 4. Quality of teaching and feedback, 5. Computing resources, 6. Social and extra-curricular components, 7. Preparation for career or graduate school, 8. Physical and office properties. I decided to include a ninth factor, the importance of

religion, as a unique field designed for this study due to Andrews University School of Business's status as a private Christian university.

Uniqueness of the Research

It will be my original survey tool and the study of religious components as they relate to satisfaction that will make my research meaningful and unique. My original survey tool is based on the Student Satisfaction Inventory™, the Undergraduate Business Exit Assessment, the Andrews University Senior Survey and Course Survey and my own questions. I am incorporating questions from the Andrews University Senior Survey and Course Survey in regards to measures of satisfaction in the classroom. My own questions on religious components seek to measure the degree to which departmental religious factors influence overall satisfaction. This unique component of my study is made possible by Andrews University's position as a faith based university. In my literature review, I have not come across any academic study measuring how overall student satisfaction is impacted by factors related to the implementation of religious factors in the classroom or academic department.

Hypothesis

The goal of my research is to conduct an analysis of the students in the Andrews University School of Business Administration (SBA) to determine which factors are most closely correlated with overall satisfaction and perceived quality. For the purpose of my research, I studied satisfaction as a dependent variable measured in relation to different service factors provided by the School of Business Administration. I chose nine double-headed factors based on a focus group conducted with SBA students and research of previous studies: 1A/1B: Importance of/satisfaction with curriculum, instruction, and classes, 2A/2B: Importance of/satisfaction with teaching in subject matter, 3A/3B: Importance of/satisfaction with advising, 4A/4B: Importance

of/Satisfaction with quality of teaching and feedback, 5A/5B: Importance of/satisfaction with computing resources, 6A/6B: Importance of/satisfaction with social and extra-curricular components, 7A/7B: Importance of/satisfaction with preparation for career or graduate school, 8A/8B: Importance of/satisfaction with physical and office properties, 9A/9B: Importance of/satisfaction with religious components. Once identifying which of those double-headed nine factors are correlated to overall satisfaction, my research seeks to identify how the correlation differs across different demographic factors of gender, class level, current major, GPA, employment and ethnicity/race.

Survey Tool

To best measure student satisfaction within the Andrews University School of Business, I created a survey based on four current surveys used to measure student satisfaction. Through the work of Letcher and Neves (2010), I was introduced to the Educational Benchmarking, Inc. Undergraduate Business Exit Assessment (UBEA) survey tool. The survey proved a valuable tool as it focuses on factors relevant only to the business department setting, which is what the current research focuses on. The work of Elliot and Shin (2002) identified 20 of the most influential factors of satisfaction as taken from the Student Satisfaction Inventory™ survey created by Noel-Levitz in 1998. I was confident in using questions modified from the Student Satisfaction Inventory™ due to its high alpha or internal correlation indicating its reliability as a survey tool. The combination of UBEA and Student Satisfaction Inventory™ questions comprised the main bulk of my survey's questions.

Finally to measure the importance of religion, I utilized both the Andrews University Course Survey and Senior Survey supplied by the Office of Institutional Effectiveness at Andrews University. The Course Survey is used at the end of each semester as a tool to measure

students' satisfaction with individual classes. The Senior Survey is given to all seniors graduating from Andrews University in addition to their exit exams as a measure of their satisfaction with their university experience.

After conducting a literature review of the past research, a focus group was conducted comprised of Andrews University School of Business students to determine which factors they believed most closely correlated with their satisfaction. The focus group consisted of seven undergraduate students reflecting on what they believed were important factors that would create an excellent business program. Their input was pooled with my research in creating the survey tool.

My survey uses a two-sided, five point Likert scale, requesting that students report how important each factor is to them and then how satisfied they are with the perceived performance of each factor. Due to the Likert scale, students will be able to respond across a range from least important/strongly disagree to most important/strongly agree. Once the project was approved by the Institutional Review Board, I piloted the survey with my focus group before launching the survey in paper format to the undergraduate students of the Andrews University SBA.

I chose my convenience sample based on the fact that I am measuring student satisfaction in the Andrews University School of Business. As such, I limited my sample pool to students of that school. The survey was conducted on an anonymous basis, with the goal to reach as many of the approximately 175 students in the School of Business as possible. The survey was distributed in class via SBA teachers to students to be completed during class time. Due to its anonymous nature, the survey results were entered into the Microsoft Excel platform for managing data and measured via SPSS predictive analytical software using numbered codes to keep track of responses. The subjects' involvement with the project was concluded upon

completion of the survey. While general demographic information was gathered, no effort was made to determine the identity of any respondent. The anonymous nature of the survey also acted as a barrier against bias on my part as a researcher.

Methodology

The survey was distributed in the spring semester (2015) to undergraduate students of the Andrews University SBA. After gathering the data from the surveys distributed to my convenience sample, results were manually entered from the paper survey format into the Microsoft Excel platform for managing data. Based on past research, I selected forward step-wise regression analysis to measure student satisfaction and analyzed results using SPSS predictive analytic software version 22 and R statistical software version 3.1.3 in four distinct steps.

Step 1: Calculate scale scores and alpha correlation per subscale: First, I determined the mean scores and standard deviations for each of the factors being measured by the survey (Corts et al., 2000; Tessema et al., 2012). I imputed missing values before calculating scare scores. Determining the mean scores and standard deviations allowed me to demonstrate overall average student levels of satisfaction with a particular factor; results are listed from lowest to highest mean importance score (Fig. 1). For example, taken from a five point scale, importance of academic advisors has a mean score of 4.11 with a standard deviation of .85. This means, on average, students are very satisfied with academic advising (high mean score), with very little variation between scores (low standard deviation). An individual score divergent from the average can then be identified as an outlier score. Next, to validate my survey tool, I tested for the level of internal correlation of the questions in each subscale (Athiyaman, 1997; Tessema et al., 2012). That means statistically determining if the questions in each subscale measures the

same thing. For example, all the questions in my advising subscale need to cue students to measure advising. Internal correlation was found by testing the Cronbach's alpha for each subscale using the alpha function in psych package 1.5.1 in R 3.1.3. Reverse coded items were reversed before calculating alpha. High Cronbach's alpha, (.7-.95), indicates that my subscales have high internal correlation, while lower scores (<.5) indicate low internal correlation.

Figure 1

Mean Satisfaction/Importance Score out of 5		Std. Deviation	Crohnbach's Alpha
5A. Importance of computing resources	3.54	.78	.84
5B. Satisfaction with computing resources	3.49	.69	.56
6A. Importance of social and extra-curricular components	3.69*	.66	.75
6B. Satisfaction with social and extra-curricular components	3.39*	.65	.59
9A. Importance of incorporation of religious components	3.73	.89	.89
9B. Satisfaction with incorporation of religious components	3.36	.69	.58
8A. Importance of physical and office properties	3.78*	.81	.86
8B. Satisfaction with physical and office properties	3.08*	.75	.58
1A. Importance of curriculum, instruction, classes	3.87	.60	.68
1B. Satisfaction with curriculum, instruction, classes	3.63	.70	.68
2A. Importance of teaching in subject matter	3.95*	.62	.73
2B. Satisfaction with teaching in subject matter	3.46*	.65	.68
4A. Importance of quality of teaching and feedback	3.95	.64	.67
4B. Satisfaction with quality of teaching and feedback	3.26	.65	.41
7A. Importance of preparation for career, graduate school	4.08*	.72	.85
7B. Satisfaction with preparation for career, graduate school	2.87*	.74	.77
3A. Importance of advising	4.11	.85	.86
3B. Satisfaction with advising	3.54	.94	.77
10. Overall satisfaction	3.35	.99	.88

*Statistically Significant

Step 2: Correlation matrix of calculated scores: Then a correlation matrix of the calculated scores (Athiyaman, 1997; Corts et al., 2000; Tessema et al., 2012) was used to indicate the level to which each of the factors related to overall satisfaction. High positive correlation would indicate that as satisfaction with that particular factor increased overall satisfaction increased. High negative correlation would indicate that, as a particular factor increased, overall satisfaction decreased.

Step 3: Forward stepwise regression: Due to the multicollinearity of the results of the correlation matrix (i.e. numerous interdependent variables measuring the same thing) forward step-wise regression was utilized to identify which factors contribute uniquely as significant predictors of overall satisfaction (Elliot and Shin, 2002; Letcher and Neves, 2010; Tessema et al., 2012). Forward step-wise regression starts with the factor that accounts for the most variance and keeps testing factors until the results become insignificant.

Step 4: MANOVA: Once the above factors were positively identified as predictors of overall satisfaction, MANOVA (multiple analysis of variance) was utilized to determine if the subscales significant correlation to overall satisfaction varied in relation to different demographic variables. ANOVA (analysis of variance) determines how much of the variance from the null hypothesis is accounted for by the independent variable and how much is not explained by the independent variable, shown by an F ratio. The higher the ratio (>1) the more variance in the dependedent is explained by the independent variable. For example, if my null hypothesis is "there is no statistical difference between males and females (the independent variable) in relation to academic advising and overall satisfaction" then ANOVA would determine if the results varied from that null statement indicating there is a statistical difference between males and females in relation to advising and overall satisfaction.

Multiple ANOVA, or MANOVA, runs analyses of variance with multiple dependent variables to reduce the risk of type 1 error (rejecting the null hypothesis incorrectly) and to look for overall effects across all dependent variables. When running MANOVA, Pillai's Trace is the overall statistic measurement that is considered most robust and powerful because it is less sensitive to violations of the assumptions of MANOVA. There is also an individual F test for each dependent variable. This allows me to determine if there is a difference overall between the demographic categories and then specifically which subscales are responsible for any differences. Results are considered statistically significant when they have $p < .05$, and very significant with $p < .01$.

Results:

105 usable surveys were analyzed from SBA undergraduates giving a 60% response rate. The following figures demonstrate the demographic information gathered from the students' surveys (Fig 2, Fig 3, Fig 4, Fig 5 and Fig 6).

Figure 2

Gender	#
Female	45
Male	48
No response	12

Figure 3

Class Level	#
Freshmen	23
Sophomore	10
Junior	20
Senior	41
No response	11

Figure 4

Employment	#
On-campus	60
Off-campus	8
No job	28
No response	9

Figure 5

Current Major	#
Accounting	20
Finance	8
Information Systems	6
BBA/BA	5
Management	39
Marketing	14
BS	6
Minor	1
Prefer not to respond	4

Figure 6

Ethnicity/Race	#
African American	16
Asian/Pacific Islander	15
Caucasian/White	35
Hispanic	10
Other	4
Prefer not to respond	25

After determining the scale scores and Cronbach's alpha scores, the correlation matrix identified numerous factors correlated with overall satisfaction (Fig 7).

Figure 7

Factor		Pearson Correlation
1A	Importance of curriculum, instruction, classes	.274
1B	Satisfaction with curriculum, instruction, classes	.480
2B	Satisfaction with teaching in subject matter	.539
3B	Satisfaction with advising	.354
4B	Satisfaction with quality of teaching, feedback	.445
5B	Satisfaction with computing resources	.250
6A	Importance of social, extra-curricular components	.243
6B	Satisfaction with social, extra-curricular components	.595
7B	Satisfaction with prep for career, graduate school	.560
8A	Importance of physical, office properties	.193
8B	Satisfaction with physical, office properties	.549

9A	Importance of religion components	.309
9B	Satisfaction with religion components	.500

Forward step-wise regression analysis identified the following factors as statistically significant as they contributed uniquely to overall satisfaction: 6B. Satisfaction with social and extra-curricular components, 7B. Satisfaction with preparation for career or graduate school, 2B. Satisfaction with teaching in subject matter, 7A. Importance of preparation for career or graduate school, 2A. Importance of teaching in subject matter and 8B. Satisfaction with physical and office properties. Student satisfaction with social and extra-curricular components (6B) ranked most closely correlated with overall student satisfaction, however it had one of the lowest mean satisfaction scores as ranked by SBA students, 3.39 out of five. Satisfaction with preparation for career or graduate school (7B) ranked the lowest only 2.87 out of 5, yet it had the second highest importance score for student, 4.08. The scores for importance/satisfaction with teaching in subject matter (2A/2B) were relatively close together and on the higher end, indicating students' satisfaction with the factor and its level of importance were fairly equivalent (3.95 and 3.46 respectively). Finally, satisfaction with physical and office properties (8B) was on the low end, 3.08, while its importance level to students ranked higher with a moderate score of 3.78.

The six factors listed above account for 61% of all variance in which factors were statistically correlated to satisfaction (Fig 7). The results also proved to be statistically significant past $p < .001$ degree (Fig 8). The individual factors also proved to be significant below the $p < .05$ degree (Fig 9).

Figure 7

Model 6 R Square	Adjusted R Square	Std. Error of the Estimate
.610	.586	.63527

Figure 8

Model 6	DF	F	Significance
Regression	61.766	25.508	< .001**
Residual	39.550		
Total	101.316		

**Statistically significant p < .01

Figure 9

Model 6 Standardized Coefficient	Standardized Beta	t	Significance
6B	.383	4.969	< .001**
7B	.215	2.701	.008**
2B	.212	2.835	.006**
7A	-.248	-3.168	.002**
2A	.203	2.608	.011*
8B	.189	2/315	.023*

*Statistically significant p < .05
**Statistically significant p < .01

Gender, grade level, GPA and race were not correlated significantly with variances in factor relation to overall satisfaction when analyzed via MANOVA. Current major and employment were significantly correlated to factor relation to overall satisfaction when analyzed

via MANOVA (Fig 10). Under the major variable, IT majors ranked their satisfaction with physical office properties (8B) higher than the other majors F (8, 92) = 2.054, p = .048. While GPA overall was not a significant variable in relation to overall factors, low GPA respondents (2-2.5) and high GPA respondents (3.5-4), both ranked the importance of teaching in subject matter (2A) as more important than fellow respondents F(4, 100) = 3.051, p=.020 p score of .020. Under the job variable, those who had jobs on campus ranked the importance of teaching in subject matter (2A) higher than those with jobs off campus and those without jobs F(2, 92) = .5.055, p= .008. Those with jobs on campus also ranked the importance of preparation for career or graduate studies (7A) higher than other respondents F(2, 92) = 4.662, p= .012. Finally, while race overall was not an overall significant variable, Hispanic respondents ranked importance of teaching in subject matter (2A) higher than their counterparts, followed by African American respondents F(4, 75) = 2.913, p= .027.

Figure 10

Variable	Pillai's Trace	F	Sig.
Gender	Λ_{Pillai} = .023	F(6, 86) = .339	.914
Class	Λ_{Pillai} = .201	F (18, 258) = 1.027	.429
Major	Λ_{Pillai} = .693	F (48, 552) = 1.502	.019*
GPA	Λ_{Pillai} = .222	F (24, 392) = .961	.518
Job	Λ_{Pillai} = .271	F (12, 176) = 2.297	.010**
Race	Λ_{Pillai} = .384	F (24, 292) = 1.292	.167

*Statistically significant p < .05
**Statistically significant p < .01

Limitations:

While my survey demonstrated relatively high Cronbach's alpha scores, if the survey were to be used in the future it would be beneficial to test for both Revelle's beta and McDonald's hierarchical omega. The high Cronbach's alpha scores indicate that the survey tool is a tool worth refining, but Cronbach's alpha is not sensitive to "clumps" in the subscales (Schmitt, 1996). "Clumps" in the scale indicate that there is more than one factor being measured in one subscale. Revelle's beta is a measure of internal reliability that is sensitive to clumps in the scale score and reveals the worst case or lowest possible split-half reliability for the scale. McDonald's hierarchical omega is another measure of internal reliability that focuses on whether the items in the scale cohesively form one scale or subscale. If the scale has high Cronbach's alpha but low Revelle's beta and McDonald's hierarchical omega then the researcher would be alerted to the fact that perhaps the scale has clumps, i.e. is measuring more than one thing not necessarily part of the same subscale (Zinbarg, Revelle, Yovel and Li, 2005). If the survey were to be given again, refining the survey tool using Revelle's beta and McDonald's hierarchical omega would be beneficial.

Conclusion:

This study developed a new questionnaire for measuring student satisfaction for the Andrews University School of Business Administration. After developing and administering the survey to undergraduate students, my first step was to test for Cronbach's alpha. The scale scores for the survey had relatively high alpha scores per scale, which had positive indications for its validity as a measurement tool. Next, I ran a correlation matrix which clearly demonstrated high correlations between factors measured and overall student satisfaction. Then through forward stepwise regression analysis six factors were identified as most closely

correlated with overall student satisfaction: 6B. Satisfaction with social and extra-curricular components, 7B. Satisfaction with preparation for career or graduate school, 2B. Satisfaction with teaching in subject matter, 7A. Importance of preparation for career or graduate school, 2A. Importance of teaching in subject matter and 8B. Satisfaction with physical and office properties. Finally, I was able to see how these factors varied in correlation with overall satisfaction across differing demographic sectors. As such, IT majors ranked satisfaction with physical office properties higher than other majors. Students with jobs on campus ranked importance of teaching in subject matter and the importance of preparation for career or graduate studies higher than students with jobs off campus or without jobs. Both low and high GPA respondents ranked importance of teaching in subject matter higher than their fellow students. And finally, Hispanic respondents followed closely by African American respondents ranked importance of teaching in subject matter higher than their counterparts.

These findings confirm past conclusions found during a review of previous studies. For example, both Tessema et al. (2012) and Corts et al. (2000), identify academic advising and preparation for career or graduate studies as highly correlated to student satisfaction. My research indicated that Andrews University SBA students also found preparation for career or graduate studies as impactful to their overall satisfaction. However, in line with research by Letcher and Neves (2010), academic advising had little impact on overall student satisfaction according to my research.

It was interesting to note that neither satisfaction with religious components nor importance of religious components had any impact on overall student satisfaction. A subject for further study could include reasons why religion is not impactful to overall student satisfaction with an academic department at a Christian university. Also, further studies could include

developing strategies to improve the quality of key factors such as social and extra-curricular components or career and graduate school preparation to increase overall SBA satisfaction.

My research is significant due to its potential usefulness for the Andrews University School of Business Administration. First, due to its high internal correlation measures, the SBA can utilize my survey when making decisions about developing and improving their program for future students. And second, due to its theoretically sound basis in past research on student satisfaction, this survey has the potential to be an important assessment tool for the SBA.

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