Spring 4-2010

ACT Scores as Predictors of Success: A Correlation Study between ACT Scores and the Lindenwood University Business Capstone Course

Karolina Lapinska-Schneider
Lindenwood University

ACT Scores as Predictors of Success: A Correlation Study between ACT Scores and the Lindenwood University Business Capstone Course

by

Karolina Lapinska-Schneider, MBA

A Dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the

degree of

Doctor of Education

School of Education

ACT Scores as Predictors of Success: A Correlation Study between ACT Scores and the Lindenwood University Business Capstone Course

by

Karolina Lapinska-Schneider, MBA

This dissertation has been approved as partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education

Dr. Joseph Cernik, Dissertation Chair	Date: April 27, 2010
Dr. Renee Porter, Committee Member	Date: April 27, 2010
Dr. Sherrie Wisdom, Committee Member	Date: April 27, 2010

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Karolina Lapinska-Schneider

Signature: K. Lapińska-Schneider Date: 4/27/10

Acknowledgements

I would like to give a special thanks to all of my committee members: Dr. Joseph Cernik, Dr. Renee Porter, and Dr. Sherrie Wisdom without whom, I would never have been able to complete my work.

I would like to thank Dr. Edward Morris, Dean of SB&E for permission to do the study.

I also would like to thank Dr. Beth Kania-Gosche, Dr. Angela Holden, Jeff Weinrich, and Dr. Stanley Coker for all of their assistance.

Thanks to my husband and family for all their support and encouragement.

Abstract

Business schools across the nation, to meet the accreditation standards of the Association of Collegiate Business Schools and Programs (ACBSP), must incorporate results of certain outcomes assessments for evaluation of programs efficacy and continuous improvement purposes. The Educational Testing Service Major Field Test in Business Administration (ETS MFT-B) helps business institutions to evaluate their programs and to make improvements through changes in the curriculum.

This study examined if the ACT scores, Cumulative Grade Point Average, and Term Grade Point Average determined the performance on the ETS MFT-B. The sample consisted of 59 business students enrolled in the Management Policy course at Lindenwood University's School of Business and Entrepreneurship (SB&E) in the Spring of 2008 to Spring of 2009. The findings indicated a statistical significance between the ACT scores and the ETS MFT scores. The Cumulative and Term Grade Point Averages did not indicate statistically significant relationships with student's performance on the ETS MFT.

Keywords: ACT scores, ETS Major Field Test, Accreditation, and Grade Point Averages.

Table of Contents

List of Tables

List of Figures

List of Appendices

Chapter One: Introduction

Background

Business Administration has been one of the most popular and sought out college majors for the last 30 years (Moore, 2008). For the last decade, Business Administration and management gained the number one spot on the most popular college major list prepared by the Princeton Review. The global economic situation or the reasonable starting salaries for business major graduates might be the reason why so many students choose to major in Business Administration (Davis, 2007; Lebedinskaya, 2006). With the popularity of business degrees it is important for business schools to raise their standards and monitor their performance to provide the best quality of education for their students. Business schools like the University of Texas-Austin, McCombs School of Business and others across the country are raising their standards and requirements by creating separate criteria for admittance to offset the high demands of business majors (Damast, 2009). Lindenwood University School of Business and Entrepreneurship (SB&E) is also raising its standards. Similarly to other business schools across the nation, the School of Business and Entrepreneurship has experienced significant enrollment growth. From 2003 to 2008 the student enrollment has increased by 48% in the undergraduate program and by 18% in the graduate program. Unlike other business schools, the SB&E does not have separate admission criteria. However it requires students to take certain pre-requisite courses as well as to complete major subjects with a C grade or above in order for the student to graduate with a major in business. In addition to raising the

standards and the quality of its business programs, the School of Business and Entrepreneurship decided to use the Educational Testing Service Major Field Test in Business Administration (ETS MFT-B) as an external assessment of core business competencies in its undergraduate program. After a successful run of the pilot test in the Fall of 2007 for the 25 randomly selected undergraduate business seniors, the ETS MFT became a part of students' senior capstone course. Beginning in Spring of 2008, the ETS MFT is administered to all students enrolled in the BA 430-Management Policy course. Students, in order to enroll in the Management Policy, must be in their final semester of senior year before graduation.

The School of Business and Entrepreneurship (SB&E) is located on Lindenwood University's main campus. The undergraduate business program was initiated in 1970, quickly followed by the introduction of the graduate program five years later. The SB&E is considered one of the largest business schools in the St. Louis area. The greater St. Louis metropolitan area accounts for the largest student population at the School of Business and Entrepreneurship. A large portion of the SB&E student base consists of athletes and first generation college attendees. The international students make up approximately 28% of the undergraduate program and about 36% of the graduate program. In addition to the diverse student population, the institution sets itself apart from other business schools with highly qualified instructors and an emphasis on small business and faculty-student relations (Lindenwood University, 2009b).

Lindenwood University

Lindenwood University is an independent, nonprofit, accredited four-year liberal arts institution located in St. Charles, Missouri. Lindenwood, unlike other universities and colleges in the area, is a student-focused "teaching university," and students are its most important stakeholders. The school was founded in 1827 and currently offers over 100 degree programs to roughly 14,500 students. Students can choose programs in the schools of "American studies, business and entrepreneurship, communication, education, fine and performing arts, human services, humanities, science, and individualized learning" (Lindenwood University, 2009a, para. 3).

The Problem

Lindenwood University has been accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools (HLC) since the beginning of the 1900's. Besides the HLC accreditation, institutions seeking specialized accreditation have been on the rise. The accreditation process requires from its institutions a lot of time, money and formalities; however, despite all the negatives, the growing trend of specialized accreditation ensures the quality and standards of programs in business and other fields of study (Jones, 2003, para. 5; Lavelle, Gloeckler & Porter, 2007, p. 68). Recent endorsements for Schools of Human Services and Education encouraged the School of Business and Entrepreneurship to follow this successful path. Lindenwood University's School of Business and Entrepreneurship is now in the process of moving toward the

Association of Collegiate Business Schools and Programs accreditation (ACBSP). The ACBSP, among other specialized accrediting institutions, requires evidence to determine if the accrediting institution's mission is being executed and if student learning is actually occurring (Bycio & Allen, 2007). Assessment becomes an essential component of this process; therefore, many business departments throughout the nation use Educational Testing Services Major Field Test in Business Administration (ETS MFT-B) as proof that the ACBSP content courses are a part of the business school's curriculum (Bush, Duncan, Sexton & West, 2008). Business schools use the ETS MFT in Business Administration to measure student achievement, to determine school progress and to evaluate the existing programs.

The ETS MFT in Business Administration is a multiple choice assessment that contains two sections. Every section contains 60 questions. Students have an hour to complete each segment of the test. Unlike the SAT, students are not penalized for guessing or for providing an incorrect answer. The 120 questions cover broad areas that the students should know when graduating with a Business Administration degree. The content of the test includes questions from the fields of accounting (15%), economics (13%), management (15%), quantitative analysis (11%), information systems (10%), finance (13%), marketing (13%), legal and social environment (10%), and international issues. While testing, students are prohibited from bringing calculators, cell phones, textbooks, and other items that could interfere with the legitimacy of the test. The only items that students have access to while the test is in place are the test books, answer sheets, and pencils. Before the exam,

students have the ability to see a small sample of the test by going to the ETS MFT Business Administration website. The sample does not contain actual questions that will be on the test. It is in place to help students see the format of the exam.

The ETS MFT in Business Administration was selected in the Fall of 2007 by the School of Business and Entrepreneurship at Lindenwood University "because of its national reputation, as well as its validity and reliability" (Jonas, Weimer & Herzer, 2001). The Major Field Tests (ETS MFT) is also one of the most popular and easy to implement external outcomes assessments available (Bagamery, Lasik & Nixon, 2005). ETS MFT meets the Kuder-Richardson Formula, which means that decisions can be made about individuals based on the internal reliability coefficient (Black & Duhon, 2003). The School of Business and Entrepreneurship is continuing to use the ETS MFT in Business Administration as a way to assess the students' mastery of business core knowledge.

Many opponents of the ACT and SAT argue the use of standardized testing claiming that not everyone is a good test taker. The challengers provide some alternatives to admission and outcomes assessment testing. According to some, admission lotteries, class rank, high school grades and curriculum rigor should be used as a measure for college admittance (Zwick, 2007, p. 420). Some also suggest using admission interviews or a graded writing sample as a fair way for entering college. Opponents of standardized testing imply that recommendation letters from school guidance and civic communities can be used as an alternative to college entrance admission testing (Drew University, n.d., para. 12). However, neither grade

point averages nor recommendations are consistent from school to school. All above measures are highly subjective because of grade inflation and the level of rigor.

Although critics of standardized testing do not find the tests ideal, any standardized testing score provides colleges, universities, and other schools with some important and useful information. Standardized tests allow a direct comparison of students and have predictive validity for students' success in college (May, Falconer, & Nowka, 2007). The scores of the college entrance admission exams, American College Test (ACT) and SAT Reasoning Test (SAT), demonstrate students' subject-specific knowledge, their ability to analyze and interpret the data and, also, their abilities to draw conclusions.

In terms of reliability and validity, the ACT and the SAT are considered equal. Some question the tests' validity as there are many tests preparatory organizations that will promise to raise students' ACT or SAT scores significantly. However, in accordance to the National Association for College Admission Counseling (NACAC) "on average, test preparation efforts yield a positive but small effect on standardized admission test scores. Contrary to the claims made by many test preparation providers of large increases of 100 points or more on the SAT, research suggests that average gains are more in the neighborhood of 30 points" (2009, p. 1). Tests to be qualified under the standardized test category "must meet psychometric standards for reliability, validity, and lack of bias" (Mitchell, 2006, p. 3). Indeed, some students might do better on one test than the other, but if a student takes either exam several times, he or she will receive almost the exact score

(Mitchell, 2006, p. 3). In addition to the NACAC, College Board (2006) noted that in the past students that took the SAT for the second time were able to increase their total score by approximately 2% (30 points). More recent studies indicate that students that took the test for the second time decreased their total score by seven points (North Carolina Department of Instruction, 2008, p. 4).

A standardized test is defined as a testing instrument that is proctored, scored, and interpreted in a standard manner (Testing and Evaluation, 2008, para. 3). According to Peterson and Neill, the purpose of the standardized testing is to improve student learning and to "provide information to help students learn better" (1999, para. 6). The logic behind the ACT and the SAT, other than to measure individual students' college readiness and to help students meet the criteria for certain scholarships, is college admission and course placement. All standardized test scores are a significant predictor of students' future success in college including "grades, licensure passage, obtaining the degree" (Jaschik, 2007, para.6). The meta-analysis study was also able to conclude that the predictions are valid for all races despite previous assumptions of the standardized testing being biased to ethnic groups other than white (Jaschik, 2007).

As a whole, the ACT and the SAT scores are helpful in demonstrating the academic progress of schools, districts, and states. The scores allow the community to see how the schools in their district and other districts are performing (West Virginia Department of Education, n.d., para. 2). Standardized tests' results help many policy-makers and state legislatures to ensure program efficacy and school

accountability (Peterson & Neill, 1999). Increased accountability in postsecondary education means that schools need to demonstrate, particularly through assessment, that their resources are being used efficiently and more effort is being put toward student achievement (Black & Duhon, 2003). Scores from many standardized assessments are also commonly used in curriculum and program alterations. Virginia Military Institute used ETS MFT in Business to pinpoint areas of concern and to add additional courses based on the test results (Bush, Duncan, Sexton &West, 2008). The School of Business and Entrepreneurship at Lindenwood University is currently in the process of reviewing its own assessment techniques and, as well as the majority of higher education institutions that use ETS MFT, to ensure that the exam is the most appropriate summative outcomes assessment. The ETS MFT results were also intended to create a benchmark for the undergraduate program at the School of Business and Entrepreneurship. The main intent of using the ETS MFT was to establish a baseline against other colleges and universities offering business programs. The results of the test and comparisons to the national average provide the SB&E with a benchmark. This benchmark allows the faculty to evaluate the curriculum and to adopt appropriate methods to effectively improve the program. In spite of varying opinions on the subject of testing, many universities and colleges continue to use the Major Field Tests as a measure of a student's success. To name a few, Cornell University, University of Nebraska at Omaha (UNO), University of Missouri-Columbia, and Purdue University have used ETS MFT in Business Administration for the last three years as part of their program assessment.

Purpose of the Study

The purpose of this study was to examine the correlation between student composite scores on the ACT and Business Capstone Performance of college seniors at Lindenwood University who are enrolled in the undergraduate capstone course. This study contains data for students enrolled in BA 430 Management Policy course in the 2008-2009 academic year at Lindenwood University. The research includes several inputs such as ACT composite scores, Cumulative Grade Point Averages (CUGPAs) and term GPAs (TGPA) of 59 undergraduate business seniors. Primary output for this research consists of scores on the ETS MFT in Business Administration. The researcher will investigate what inputs have the most influence on students' performance on the ETS MFT exam through use of a multiple regression analysis. The following are the criteria for the data set of the study:

- Students majoring in Business Administration (declared business major despite the double majoring or emphasis area)
- Students enrolled in the BA430 Capstone course (Management Policy)
- Students in their final semester before graduation
- Students who provided their ACT scores when being admitted to the university
- Students who took the ETS MFT exam

The effort of the study is to conclude whether the positive correlation between the ACT scores and Business Capstone Performance for university seniors indeed exists. The study will answer the following questions:

1. How well can Lindenwood University students' performance on the ETS MFT exam be predicted?
2. Do Cumulative Grade Point Average and or Term Grade Point Average predict ETS MFT performance?
3. Do ACT scores predict the ETS MFT performance better than the GPA?

Hypothesis Statements

Null hypothesis # 1. There is no correlation between the ACT scores and ETS MFT scores.

Alternative hypothesis # 1. There is a correlation between the ACT scores and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 2. There is no correlation between Cumulative Grade Point Average and ETS MFT scores.

Alternative hypothesis # 2. There is a correlation between Cumulative Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 3. There is no correlation between Term Grade Point Average and ETS MFT scores.

Alternative hypothesis # 3. There is a correlation between Term Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Significance of the Study

The insights of the study will help to determine if there is a positive correlation between the ACT admission scores and the Business Capstone Performance. According to Sewell, the students' SAT scores and business major were positive significant predictors (2004). The study contained information for 245 business students from the University of North Carolina at Charlotte. Although the purpose of the study was to determine the university's grading policy, some important information was captured regarding the SAT scores in the Business Administration program. If the correlation indeed does exist, remedial or supplemental programs could be added for undergraduate students who have entered the university with a lower than average ACT score. This is significant because the business school would have the ability to recognize and prevent any early signs of a student's educational struggle. At the time of study, the ETS MFT scores were not a part of the student's overall capstone course grade and or a determinant of the student's graduation with a major in business. Eventually, the School of Business and Entrepreneurship is considering putting more emphasis on students' ETS MFT scores; therefore, an early alert system for students at risk would be a great way to ensure that all students are equipped with the proper tools and knowledge to perform well on the test.

A correlation between the ACT scores and Business Capstone Performance study is worth examining because it will help ensure the positive relationship between business school learning values and its curriculum. Once the business school is aware of what is lacking, it can improve the curriculum and provide individuals with more support to raise the scores. Schools across the nation strive to develop programs that allow their students to succeed. Colleges and universities' main curricular purpose is to create their programs with "knowledge base that includes the terminology, concepts, and theories" (Stoloff & Feeney, 2002, p. 92). In order to measure students' knowledge, schools and departments use ETS MFT as an assessment tool. The ETS MFT in Business Administration has been fully administered at the School of Business and Entrepreneurship since the Spring semester of 2008. As easy as the implementation of the ETS MFT has been, the scores on the test have brought some unanswered questions. Findings of this study may be helpful for the School of Business and Entrepreneurship as well as other business schools to determine the extent the ACT scores and students' cumulative and term GPAs have on the prediction of ETS MFT performance. The results of this study might also encourage other business schools to offer additional capstone assessments such as portfolios or projects that are more skill oriented rather than just knowledge based.

Increasing criticism of standardized testing in general and college entrance exams specifically have led some institutions to drop their score requirements. The National Center for Fair and Open Testing (2003) lists higher learning institutions throughout the United States that have full or partial free admittance. Full free

admittance universities (e.g. University of Maine at St. Kent) usually require a personal essay or a letter of recommendation instead of a standardized test score. Washington State University does not require the ACT or SAT scores unless the candidate does not meet school's criteria in terms of GPA or class rank. Universities that either requires the ACT or SAT scores only for certain programs (e.g. Northern Kentucky University) or require a submission of some other standardized test (e.g. Hamilton College) are described as partial free admission universities. The list also contains schools that use ACT or SAT scores predominantly for placement as well as for students studying in states other than theirs and more. The test optional schools' main purpose is to "deemphasize the use of standardized tests by making admissions decisions about substantial numbers of applicants who recently graduated from US high schools without using the SAT or ACT" (National Center for Fair and Open Testing, 2003, para. 1). Currently, Lindenwood University requires from its applicants to submit their ACT or SAT scores with some exceptions, international students, transfer students and students that graduated from high school over the period of five years (Lindenwood University Undergraduate Catalog, 2009c). If the results of this study indicate little to no correlation between the ACT scores and business capstone performance, or strong correlation between the GPAs and business capstone performance, the faculty of Lindenwood University could assume that submission of the entrance exam scores for students majoring in business would be unnecessary.

To provide a better understanding of the study it is vital to get familiar with the School of Business and Entrepreneurship business course characteristics. Every business student beyond the Lindenwood University General Education curriculum of 51 credit hours and the business core requirements of 39 credit hours must decide on one of 11 undergraduate major areas of study such as: Accounting, Business Administration, Economics, Entrepreneurship, Finance, Human Resources, International Business, Management Information Systems, Marketing, Retail Merchandise, and Sport Management (Lindenwood University, 2009b). Based on the data of 534 students enrolled at the School of Business and Entrepreneurship, it is difficult to identify the "typical business major". Although there is no real majority in terms of business major that students are pursuing, three majors stand out based on the popularity for instance: Business Administration, Accounting, and Sport Management. The least sought out major at the SB&E based on the enrollment in the Fall of 2009 was Economics. The reason for such a low enrollment in the Economics major was its recent addition to the majors of study as of Fall of 2009.

Each major at the School of Business and Entrepreneurship requires a completion of 21 to 39 core business credit hours based on the major of study (e.g. Business Administration requires 21 where Sport Management, 39 hours). Once again, depending on the business field of study, additional elective course work ranges from 11 to 20 hours. Students, in order to graduate with a business degree regardless of their major of study, must complete a total of 128 credit hours. If a business student decides to change a major, he or she may do so by the completion of

a Declaration of Major or Change of Advisor form. A non-business student in order to transfer to the SB&E must meet with the Dean of the school as well as with the SB&E faculty member.

The 2007 School of Business and Entrepreneurship's candidacy for the ACBSP accreditation requires a snapshot of what business students should know. In order to be accredited, certain criteria and standards must be met. The accreditation institutions require evidence for student learning outcomes and continuous improvement efforts. The ETS MFT that was chosen by the School of Business and Entrepreneurship because of its scholastic acceptance nationwide and its benchmarking purposes should be investigated to gain the certainty that this is the best tool in measuring student achievement (Jonas, Weimer & Herzer, 2001; Bush, Duncan, Sexton & West, 2008). If this assessment is not appropriate for students at this university, perhaps another instrument or an additional instrument should be used that more accurately represents the standards and criterion of this institution.

Limitations of the Study

This study has many limitations. Participants in this research have taken the ACT exam in their senior year of high school. Although "the ACT is the most widely accepted college entrance exam" according to the ACT (2009), it does not have to be taken by all students, especially by the international ones. Therefore, international students and some domestic students are excluded from the sample for this research study. Standardized tests themselves create a concern for the study. According to Mirchandani et al. (2001), students that perform well on one standardized test, will

most likely do well on other standardized tests. The study also noted that many standardized tests are not associated with students learning and their actual knowledge (Mirchandani et al., 2001).

Although the ETS MFT is a course requirement at the School of Business and Entrepreneurship, the performance on the ETS MFT exam as opposed to other business schools is somewhat secondary, creating a limitation for the study. At the time of research, the ETS scores were not a part of the capstone course's overall grade. According to Terry, Mills, and Sollosy (2008), students' performance on the Major Field Test increased considerably when the test scores were a part of the students' capstone grade. The study was conducted at West Texas A&M University in Canyon, Texas. The sample size consisted of 150 students that took the ETS MFT exam in the five year period starting from 2002. Student motivation was found to be significantly related to MFT success (Bycio & Allen, 1997). To make the ETS MFT results as legitimate as possible, Bycio and Allen in their 1997 study used incentives like extra bonus points for a certain percentile of students in order to take the test seriously. When the proper material and standards are covered throughout the program, the School of Business and Entrepreneurship can seek similar methods and eventually count students' performance on the ETS MFT exam in the course grade.

Also, at the time of study, the SB&E curriculum itself was still in question. The School of Business and Entrepreneurship is currently in the process of reviewing the business curricula and adapting it to meet the needs of the ACBSP accreditation. The ETS MFT individual results allow the evaluation of the program by each

competency area that needs greater attention in the curriculum. Once the pursuit of the accreditation is complete and the proper curriculum is in place, this no longer would create a barrier for a future study of this type.

Demographics

Another limitation is that the study was concluded in one institution; therefore it cannot be widely generalized. For potential future studies, more than just one institution as well as both domestic and international students should be included. A large portion of the SB&E's student population comes from the greater St. Louis metropolitan area and surrounding counties. Approximately 30% of the undergraduate students are athletes. About 28% of the total SB&E population consists of the international students. A majority of undergraduate students enrolled at the SB& E are males. Approximately 97% of undergraduate students attend the SB&E full-time (refer to Ch. 3 for additional information).

Glossary of Terms

The following terms are used in this document and defined to ensure the clarity for the reader:

ACBSP

According to the ACBSP Website (2008),

ACBSP is a specialized accrediting organization that reviews the quality and integrity of business degree programs. In addition to accreditation of all business programs, ACBSP offers separate accreditation of the accounting program within the business unit. Accreditation in accounting is optional and

> separate and requires the business unit to establish and maintain business accreditation. Accreditation by ACBSP is based on an independent evaluation of an institution's business school or program by a group of professionals which include faculty and academic administrators in the field of business. (ACBSP, 2008, p. 5)

Accreditation

For the business unit in this study, accreditation is defined as a rigorous process that an organization must go through to indicate a high level of educational quality and encouragement of continuous improvement.

The American College Test (ACT)

According to ACT Organization (2009),

> The ACT® test assesses high school students' general educational development and their ability to complete college-level work. The multiple-choice tests cover four skill areas: English, mathematics, reading, and science. The Writing Test, which is optional, measures skill in planning and writing a short essay (ACT, 2009, para. 1).

For the purpose of this study only student's composite ACT scores will be considered.

Business Capstone Performance

For this study, Business Capstone Performance includes all undergraduate degree seniors in the School of Business and Entrepreneurship who took ETS MFT examination of the business curriculum. The performance on the test itself is

secondary. It is student's responsibility to take the test. The inability to participate in the Major Field Achievement Test examination will signify student's incapacity to follow the requirements, therefore failure to pass the course and to graduate.

Grade Point Average (GPA)

For the purpose of the study, two undergraduate grade point averages will be considered, the student's cumulative GPA and student's term GPA. The researcher intended to use students' major GPA instead of the term GPA however due to a significant amount of transfer students, students' most current term GPA was a better representative variable along with the cumulative GPA. Lindenwood University uses grades A, B, C, D, and F to compute students' grade point average in the undergraduate and graduate business program.

> Lindenwood University operates under the 4.0 grading system. An "A" carries 4 quality points; a "B," 3 quality points; a "C," 2 quality points; a "D," 1 quality point. A grade of "F' carries no quality points and no credit. Thus, a course worth 3 semester hours in which a student earned an "A" would merit 12 quality points. The grade point average is computed by dividing the total number of quality points earned by the total number of hours attempted. Only grades earned at Lindenwood are used in computing the GPA, unless the student is seeking teacher certification. (Lindenwood University Undergraduate Catalog 2009-2010, 2009, p. 9)

Educational Testing Services Major Field Achievement Test-Business (ETS MFT-B)

> According to ETS Organization (2009),
>
> Educational Testing Services Major Field Achievement Test, the ETS Major Field Tests are comprehensive undergraduate and MBA outcomes assessments designed to measure the critical knowledge and understanding obtained by students in a major field of study. The Major Field Tests go beyond the measurement of factual knowledge by helping you evaluate students' ability to analyze and solve problems, understand relationships and interpret material from their major field of study.
>
> ETS offers comprehensive national comparative data for the Major Field Tests, enabling you to evaluate your students' performance and compare your program's effectiveness to those at similar institutions nationwide. (ETS, 2009, para. 1-2)

For the purpose of this study only students ETS MFT composite scores will be considered.

Remedial courses

Remediation can be defined as additional coursework beyond a student's major and general education requirements. Remedial courses' main purpose is to correct deficiencies or improve skills in certain knowledge areas at a college or university level. Lindenwood University does not count transferred remedial courses toward students' total credit hours. For the purpose of this study, remedial work could be incorporated in the business course that would include suggestions and recommendations for and to improve students' standardized test taking skills.

SAT Reasoning Test

According to College Board, the SAT Reasoning Test is a multiple choice standardized college entrance exam that "tests the subject matter learned by students in high school and how well they apply that knowledge-the critical thinking skills (reading, math and writing) necessary to succeed in college" (College Board, 2010, para. 1).

Success

For this study success is a fulfillment of academic requirements defined as enrollment, satisfactory completion of the capstone course and graduation with a minimum of a 2.0 cumulative and term GPA.

Summary

This research study consists of five chapters. Chapter One comprised the problem, purpose, significance, limitations of the study and for additional explanation, a glossary of terms. The problem is that although some colleges and universities are not using college admission exams to determine entrance into their programs, college admission exams, like the ACT, carry some important information about the students' academic abilities. This research study's main concept was to investigate whether a correlation exists between the ACT scores and Business Capstone Performance as determined by GPA and ETS MFT scores.

Chapter Two includes a review of literature. This chapter analyzed and synthesized possible factors that could explain whether the correlation exists between the ACT scores and Business Capstone Performance. Chapter Two contains some

key concepts and general ideas for the use of standardized tests as valid predictors. This chapter also provided the reader with a better understating of terms like accreditation, Major Field Test, outcomes assessments and remedial courses.

The main purpose of Chapter Three is to explain the methodology that is used to perform the research study. Therefore, Chapter Three provides further details about the research strategy as well as the instruments that are utilized in the pursuit of the findings. Chapter Four includes the results of the study and data analysis where Chapter Five provides discussion, conclusions and recommendations for further analysis.

Chapter Two: Review of Literature

Introduction

Many different standardized tests are available. According to Popham (2001), some standardized tests perform their measurement mission splendidly while others can cause harmful educational consequences to students. Some standardized tests' intentions are to show the student's knowledge of a particular subject, some to predict the student's future college performance, and others are designed to simply differentiate among test-takers' performance levels. These tests are useful in providing feedback that can aid in curriculum improvement (Edwards, 2006).

Standardized tests can also play a major role in selecting potential students or recruiting new employees. "Trade unions rely on standardized tests to screen candidates for apprenticeship programs" (Strong American Schools, 2008, p. 3). Whatever the industry, from aviation, plumbing to education, use of standardized tests is a common procedure. Although, standardized tests do not tell the whole story and should be used by educators or employers with caution, they are in place for a reason (Delisio, 2007). Why do universities and colleges use ACT's as a part of the admission process? Why do universities and colleges use the ETS Major Field Test as a part of their summative assessment process? The question rests in whether the School of Business and Entrepreneurship should use more or less standardized tests. Do these tests reveal anything? If yes, what do they reveal?

Accreditation

For more than 80 years, accreditation has become an inalienable part of business education in the United States. Postsecondary business schools have been mainly dominated by accrediting institutions like the Association to Advance Collegiate Schools of Business (AACSB), an organization that accredits almost 400 graduate and undergraduate business programs in the United States (AACSB, 2009). However, during recent years, various competing business schools accrediting organizations have emerged, including the Association of Collegiate Business Schools and Programs (ACBSP) and the International Assembly of Collegiate Business Education (IACBE). These institutions, despite the obvious similarities in terms of purpose, vary in expectations, cost and prestige. The AACSB is one of the most high-status accrediting institutions and probably one of the most expensive business accreditations. Universities like Harvard and Columbia business schools are accredited through AACSB. The AACSB is popular among more research oriented institutions, where the less known ACBSP is highly popular among schools centered on teaching. Both the AACSB and ACBSP are acknowledged by the Council of Higher Education Accreditation (CHEA), where the IACBE is not yet considered the national accrediting agency. The IACBE opposed to AACSB, focuses on educational outcomes rather than research and is more popular among international universities than the domestic ones. The IACBE is also the least prescriptive and least expensive out of the three.

Accreditation is a hallmark of quality and provides students and other business-school stakeholders with an objective, third-party assurance that the business school is conforming to the accrediting institution's academic practices, and a widely accepted curriculum. The AACSB, the ACBSP, and IACBE accreditation process, like other service-provider accreditation programs, are similar in purpose to the industry's ISO9000 and ISO4000, which are voluntary global certification standards for quality and environmental management (Munilla et al., 1998). There are three major accrediting institutions such as AACSB, IACBE and ACBSP; all reputable and internationally recognized. However, for the purpose of this correlation study, the ACBSP will be more closely investigated since the focus of this accrediting agency is more in line with Lindenwood's School of Business and Entrepreneurship mission.

The Benefits of ACBSP Accreditation

Many business institutions in the United States are lacking specialized accreditations beyond the Higher Learning Commission. According to Cashill (2007), without the accreditation, "the degree that a degree-granting institution grants would be worth little more career-wise than the gold star your third grade teacher stuck on your times tables homework" (p. 58). Therefore, as the business industry grows, so do the standards. There are at least three well-known business accrediting agencies in the United States. Although, all three serve the same purpose, they differ in terms of standards and criteria. The Association of Collegiate Business Schools and Programs (ACBSP) is known to be more 'teaching' oriented, that said, teaching

universities all over the country in order to stay competitive should pursue this particular specialized accreditation.

ACBSP was acknowledged by the United States Department of Education as a quality accrediting association in 1992 followed by the Council for Higher Education Accreditation (ACBSP, 2007).

> ACBSP is fully devoted to promoting excellence in teaching or learning in business schools and programs in higher learning education. It accomplishes this objective in part by providing assistance to institutions in their attempt to become accredited . . . Accreditation by ACBSP attests to a business unit's high level of achievement in delivering quality education and thereby provides reliable and meaningful guidance to (1) Prospective students who plan to enroll in business degree programs, and (2) employers who plan to hire the graduates of ACBSP accredited business schools and programs. (ACBSP, 2007, p. 2)

Among all, ACBSP is fully dedicated to promoting continuous improvement and student learning. ACBSP accreditation is a strong supporter of growth and progress in terms of curriculum. Lastly, this specialized accreditation supplies colleges and universities with a voice to share ideas and information that could potentially lead to positive changes.

Standardized Admission Tests

Standardized testing has had a significant effect on the admission process of higher education. The main idea of standardized admission tests was to provide

information about a student to colleges and universities. Standardized admission tests also served to improve high school education as well as a way to put some level of organization into the colleges and universities admission processes (Schultz & Rakow, 1999). In the 1970's, Congress recommended schools to utilize standardized testing as a way to improve school programs and curriculum (Edwards, 2006). Currently, the ACT and SAT are the pioneering admission exams in the United States. These two exams are not only used as a tool for the college entrance purposes, but also as tools for predicting a student's success in college (Popham, 2006).

Much debate over the past several years has occurred concerning whether or not it is sensible for colleges and universities to consider standardized test scores on college admissions' decisions. Many colleges and universities have some sort of selective admission processes in place to either admit or deny potential students from entering the institution (Beecher & Fischer, 1999). According to the National Center for Fair and Open Testing, about 775 colleges have test-optional admission criteria.

The admission process at Lindenwood University starts with an application form. Once the applicant's form is completed, potential students are required to provide their high school transcripts, scores from standardized tests unless they are transfer students with 24 or more credit hours and or students that have graduated from high school over the period of five years, and certificates of certain immunizations. Students are encouraged, but not required, to provide letters of recommendation (Lindenwood University Undergraduate Catalog, 2009, pp. 8-9). The test-optional universities, Wake Forest University as an example, require its

applicants to only complete an application form in order to get accepted. Most do not realize that, although, Wake Forest University does not require standardized test scores at the beginning of the admission process, those scores must be submitted eventually. The applicant is left with a choice when he or she feels comfortable enough to provide the score. If the applicant does not feel that the test score truly represents the student's academic ability, he or she can present the score after the admission (Wake Forest University, 2009).

There are many opinions on standardized testing. Some researchers believe that many universities and college admission offices rely too heavily on a student's entrance exam score(s). Scores from standardized tests are known to be easy and efficient quantitative measures. Bigger universities with large applicant pools would have difficulty executing student admission without the use of standardized testing. Many studies have indicated that students' grades throughout their high school career are a far better indicator of how well the students will do in college than the ACT and SAT test scores (Sturgeon, 1994; Thornell & Jones, 1986). On the other side of the spectrum, some research shows that the SAT and ACT were found to be useful in predicting college graduation. Universities across the nation utilize predictive models to predict student's performance on exams like the Praxis with the use of student's SAT scores and GPAs (Gay, Mills & Airasian, 2000). The quicker the universities are capable of identifying students in need, the earlier they will be able to assist them in preparation for the test (Barton, 2008).

According to Adelman (2004), only 7% of students who scored low on the standardized admission test managed to receive an undergraduate's degree in comparison to close to 70% of those with high scores. The Graduate Management Admission Test (GMAT) is also an example of a standardized test that can predict the future performance of applicants in the Executive Master of Business Administration programs (EMBA). The EMBA programs' curriculum is more global and topic oriented in comparison to regular MBA programs. Siegert (2008) was able to conclude that the correlation between students' undergraduate grades and scores from the standardized test such as GMAT were far stronger than other variables, therefore making the GMAT a better predictor of the executive MBA program performance. In addition, supporters of college entrance admission exams say that the standardized test scores are the only common indicator by which to judge potential applicants and provide an equalizing tool to counteract the diversity found among high schools (*Arguments For and Against Standardized Testing in College Admissions*, 2009).

Standardized test advocates argue that based on the statistical data throughout the last 30 years, standardized test scores have been decreasing significantly, yet high school grades have been on the rise. Grade inflation can be defined as an inaccurate assessment of student achievement that has become a significant problem in schools across the nation (Grove & Wasserman, 2004, p. 162). According to Schachter (2008), low ACT or SAT scores are not the only evidence of grade inflation. About

one out of three[1] freshmen college students are in need of remedial courses despite the fact that most of them graduated from high school with a GPA of 3.0 or higher. Additionally, according to Education Equality Project, African-American students are in more need of remediation in comparison to other ethnic groups[2]. A study by Ray (2008) indicated that high school teachers failed to provide adequate grades. Almost no relationship was found between students' GPAs and their performance on the High School Assessment Program in Math and English indicating grade inflation in both subjects. Since grade inflation does exist in many high schools, the standardized test scores provide universities with a better way to consistently compare student knowledge and aptitude (*Arguments For and Against Standardized Testing in College Admissions*, 2009, n.d.). The remaining few studies examining standardized testing reveal that admission standards and criteria should be maintained. However, all students should have a chance to be admitted despite whether they are identified as at risk students or not (Fearing, 1989).

The American College Test

There are many different variables that are currently being used in order to predict students' success in college and to identify students at risk, like ACT scores, SAT scores, high school rank, and high school and college GPA (Fearing, 1989). The ACT was introduced in 1959 by the University of Iowa, Professor E. F.

---

[1] Strong American Schools and Ed. 2008. *Diploma to Nowhere*.

[2] White (31%), Latino (41%), Native American (41%), and African-American (42%). National Center for Education Statistics (2007).

Lindquist (University of Iowa News Release, 2009). Primarily, the ACT was intended to determine high school student's skills and knowledge that they had already learned throughout four years of high school, and the skills and knowledge that would be necessary for their college experience.

The ACT currently evaluates the student's knowledge in four content fields: Math, English, Reading, and Science. The scale to report the student's achievement ranges from 1 to 36 points in each content field (ACT, 2009, para. 1). In 2005, a new writing portion was added as an optional section for students (Focareto, 2006). In 2008, about 1.4 million high school students from all 50 states took the ACT and 1 out of 3,300 scored a maximum of 36 points (ACT, 2009, para. 4-5).

According to the ACT (2009) the average ACT composite score for 2008 was 21.1, a slight decrease of 0.01 from a year before (ACT, 2009). The average composite ACT score for undergraduate students at Lindenwood University enrolled in the fall semester 2009 is 22. Out of the 4,655 traditional undergraduates, 2,867 students submitted a composite ACT score for admission. Those who did not may be the international students, transfer students or students that that have been out of high school for longer than five years. This does not include students that entered the university with an early college start or students that attend the LCIE, Lindenwood University's individualized program for adults.

Many different factors are correlated with college entrance exam scores. A study by Focareto (2006) compared the ACT scores and GPAs of 80 private and non-private high school seniors. The researcher was able to determine that a relationship

existed between students' ACT scores and their GPAs but also what type of high school they attended. According to Focareto, private high school seniors had lower GPAs and higher ACT scores, where non-private high school seniors had higher GPAs and lower ACT scores when applying for college admission. As indicated in Table 1, a majority of students at Lindenwood University School of Business and Entrepreneurship came from public high schools. Approximately 83% out of 534 students enrolled at the SB&E in the Fall 2009 attended public schools. This would explain the relatively low ACT composite scores for students enrolled at the Lindenwood University. Students attending private schools scored higher on their ACT versus the students who attended a non-private or public school (*Timms 12th grade report: ACT Assessment data: Q and A*, 1998). This study indicated that high school GPAs can vary significantly from school to school therefore they should not be used as a determining factor in college entrance admission.

Table 1

Numbers and percentages of private and public students attending the School of Business and Entrepreneurship

Level	Private	% Private	Public	% Public
Freshman	36	19%	156	81%
Sophomore	25	16%	130	84%
Junior	22	19%	93	81%
Senior	6	8%	66	92%
Total	89	17%	445	83%

Note. Data are for 534 students enrolled at the SB&E in the Fall of 2009.

Not only the type of school, but the type of courses taken may be another factor correlated with ACT scores. In a study by Carroll (2004), the ACT scores were slightly higher for students who had taken college-prep courses versus the ones that

did not. The students with prep courses not only scored higher than the students with no preparatory background but also scored above the national average. Carroll's study indicates that the ACT prep-courses can be beneficial in raising students' scores; however, other studies indicate that higher socioeconomic status students have an advantage in college admission processes (Carnevale & Rose, 2004, p. 129). As opposed to Carroll's research, the Samuels (2008) study indicated that districts that spent 40 percent more hours on the ACT preparation versus the ones that devoted only 20 percent of their time reported lower scores.

The ACT results proved to be an effective predictor of graduation and dropout rates for students attending the same university or college freshman to senior year (Stumpf & Stanley, 2002). According to the research on graduation rates, Stumpf and Stanley demonstrated that knowledge of students' ACT scores can reduce universities' dropout rates significantly (2002). A study by Reilly and Stettler (1972) provided enough evidence to support the candidates' Certified Public Accountant (CPA) exam success based on the students' ACT or SAT scores. It is worth noting that the ACT has changed since the 1970's. The example of one of the changes was an optional writing portion added in the mid 2000s. However, the large sample of 187 students used for the study clearly indicated the predicting abilities of the standardized admission testing. This study pointed out that the ACT or SAT scores may not be the perfect measure of students' knowledge; however, they do significantly predict students' success on the CPA exam and therefore should be used in a selection process of admission for students' pursuing an advanced accounting

degree. In addition, a more recent study by Howell and Heshizer (2005) indicated that there was no correlation between the age of a person that attempted to pass the CPA and the actual passing of the examination. The study found that the CPA examination was positively correlated with variables such as the ACT or SAT scores, a school's business accreditation, as well as whether the candidate had a graduate degree or not. The higher the ACT or SAT scores the lesser of a chance individuals had to fail the CPA exam.

The ACT was not only considered a good predictor of students' graduation rate but a good identifier of students receiving a grade of C and above their first-year in college. According to the ACT (2010), a minimum score was recognized to predict student's readiness in their freshmen year of college. Students with the following minimum scores on their ACT have a "50% chance of obtaining a B or higher or about 75% chance of obtaining a C or higher: English (18), Math (22), Reading (21), and Science (24)" (p. 5). The ACT results predicted students' success in nursing courses, but it also best predicted state board exam performance for minority baccalaureate students (Boyle, 1986). In Schultz & Rakow's (1999) study, HOBET, a health entrance exam showed just a slight advantage in terms of predicting college success than the ACT. However, due to the homogeneity of the sample and high scores used in both ACT and HOBET, the correlation was too small to make a final judgment and recommendations were made for future studies.

Similarly, Noble (n.d.) intended to find a relationship among ACT scores and students' high school averages in college admission for African-American, Caucasian

and Hispanic students from over 50 different institutions. With the use of a regression method, the researcher was able to conclude that despite the lower ACT scores and high school grades for African-American students, the ACT scores or high school GPA was a better predictor of first year success for African-American versus the Caucasian students. According to Noble (n.d.) using both the ACT scores and high school averages when admitting students to colleges and universities allows these institutions to "increase the likelihood of students' academic success and persistence in college"(p. 29).

Educational Assessment and Major Field Test-Business

Assessing and measuring student learning is vital for some institutions that are trying to raise the quality of their undergraduate as well as graduate education. In contrast to the ACT, SAT, or any other general education outcomes exams, assessment in the major is directly related to particular content. Results of major-field outcomes assessments, in most cases, can be tied to specific curricular changes (Pike, 2000). There are several tests currently on the market that measure a student's performance through outcomes assessments. Since the ongoing task of many business colleges and universities is assessment, most institutions choose the Educational Testing Services Major Field Achievement Test-Business (ETS MFT-B) exam as a measure of the student's knowledge in the business area (Lasik, Nixon, & Bagamery, 2005).

Accrediting institutions such as Association of Collegiate Business Schools and Programs (ACBSP) require certain criteria from its institutions. That criterion

includes verification of student learning outcomes and continuous improvement efforts. ETS MFT-B is considered highly reputable among colleges and universities in terms of validity and reliability (Jonas, Weimer, & Herzer, 2001). Bycio and Allen (2007) in a study on factors associated with performance on the Major Field Test, found enough data that support the criterion validity of the test. The data analysis in the study by Bycio and Allen consisted of 132 business students' SAT scores (Verbal and Math), ETS MFT scores, GPAs (business and major) and University GPAs. The results of the study revealed a moderately strong correlation between the ETS MFT in Business Administration and GPA in business. Although the results of the Bycio and Allen study were encouraging, they would have been more promising if the SAT scores' relationship with the ETS MFT scores was less significant. Despite the findings, many institutions that were asked to provide evidence that their business schools and programs are aligned with the ACBSP or the AACSB mission use ETS MFT-B as a tool of measuring the student's performance (Bycio & Allen, 2007).

ACBSP recommends its institutions to cover certain content areas also known as common professional components. These include "accounting, economics, finance, international issues, legal or social environment, management, marketing, and quantitative or information systems" (ACBSP, 2009, pp. 41-42). Although there are multiple ways to provide evidence of a student's learning, ETS MFT-B is considered to be one of the top measures of a student's learning achievement. ETS MFT-B is a multiple choice test that evaluates the extent to which students have gained information in Business (Bycio & Allen, 2007). The test was developed in

1989 by the Educational Testing Service. Over 500 institutions currently administer ETS MFT as a way of assessing their students. The test itself contains 120 questions. Students have two hours to complete the test. ETS MFT reports, once completed by students, are then sent to the ETS office for scoring. It takes approximately three weeks to receive the scores. The final report of the test contains students' individual scores (scale of 120-200), subgroup scores (if applicable), and the school's overall performance. The biggest advantage is that all institutions that use ETS MFT-B can assess their students against the national average. The test itself is easy to administer, and the grading process is included in the cost of the assessment (Mirchandani et al., 2001). According to the Harding University's College of Business, "approximately 80,000 students from 469 business programs across the nation took this assessment in 2004. Over 600 universities use the Major Field Test as a measurement tool throughout the year" (Harding University, "Student Accomplishments", 2005, para. 13). Despite the extensive use of the Major Field Test, not much research has been done. One study by Bycio & Allen indicated that the Major Field Test in Business performance was closely related to the student's business core course GPA, but it also revealed that the ETS MFT in Business Administration scores were predicted by the student's cumulative GPA as well as the student's ACT and SAT performance (1997). The results of the study were quite positive in regards to the ETS MFT-B functions. However, the validity of the assessment should be further examined.

Correlation studies of ACT or SAT Scores

Correlational studies involve a collection of data to indicate whether a relationship between two or more experimental variables exists and if so, to what extent. The purpose is to determine relationships between variables or to use the relationships to make a prediction (Gay, Mills & Airasian, 2000). In a study by Townsend and Nack (2007), several variables including the ACT scores, High School GPAs, and High School Rank were compared to predict college entry and college success. With the use of multiple regression measure, data for 58 randomly selected students was examined. According to Townsend and Nack (2007), High School Rank did not prove to be a valid determinant of first year college success, however, correlation of ACT scores and High School GPAs did. Although High School GPAs proved to be the best predictor of first year college success, the ACT scores in combination with High School GPAs explained 20.3% variance in the freshmen success rate. In a study by Bridgeman, Burton, and Pollack (2008) over 26 colleges were examined to explain the importance of high school grades and standardized test scores on college success. Similarly to Townsend and Nack (2007), High School GPAs proved to be a bit better determinant of college Cumulative GPAs. However, the SAT scores proved to predict the Cumulative GPAs better than High School GPAs for minority males as well as for Asian and African-American females. The SAT scores also proved to be a better predictor of college success than parental education level.

Marsh, Vandehey, and Diekhoff (2008) found a positive relationship between students' standardized test scores and their cumulative GPAs. Both the ACT and SAT scores proved to partially predict student's cumulative GPAs in psychology. In combination with the General Psychology exams, the SAT and ACT scores provided approximately 40% explanation for students cumulative GPAs. Similarly, a study by Focareto (2006) determined that a slight correlation existed between GPA and ACT scores of private and non-private applicants. The SAT scores also proved to be useful in predicting student achievement (Ray, 2008). Ray found significant positive correlation between the SAT Math and SAT Verbal scores, and High School Assessment Program in Math and English (2008).

Moffatt (1993) examined the predictive strength of the SAT scores for 570 nontraditional students enrolled in the undergraduate program. The population sample consisted of mostly Caucasian students ranging from the age of 16 through 60 years old. Based on the results, Moffatt concluded that there was a correlation between the SAT scores and Grade Point Average for Caucasian students under the age of 30. The SAT proved to be a good predictor of student's under the age of 30 years in terms of their four year academic success. However, the SAT showed no predictive validity for African-American students and students who took the test over the age of 30 with the exception of Caucasian students. The verbal section of the SAT was a valid predictor for African-American students, first semester and cumulative GPAs for students over the age of 30 years (1993).

In addition, researchers, Schultz & Rakow (1999) examined the relationship between the ACT scores, the Health Occupation Basic Entrance Test (HOBET) scores and college GPA. According to the study, HOBET was a slightly better predictor of college success over the ACT based on students' GPAs. This could be because the HOBET and coursework were predominantly health oriented. The correlation could have resulted differently if the sample was more heterogeneous and lower scores on both exams were used as a part of the study.

Outcomes assessments

Specialized accrediting institutions have certain standards and criterion that need to be followed in order for the school to receive and remain accredited. Schools that pursue certain accreditations must be able to provide sufficient evidence that student learning takes place and that continuous improvement is a part of their processes. To demonstrate student learning outcomes, this project was introduced and initiated. There are many ways of assessing student learning. The traditional method involves standardized testing such as a Major Field Test. The ETS MFT popularity and its high demand are based on its high acceptance throughout universities across the nation. ETS MFT is also known to be one of the most dependable and legitimate tools for student outcomes purposes (Jonas, Weimer & Herzer, 2001). However, as with any standardized test, the Major Field Test raises some major concerns.

Standardized outcomes tests have been a common practice since the mid 1800's. The tests were developed to monitor the quality of instruction, broaden

teaching practices, and provide a benchmark for other schools and teachers. In regards to assessing educational outcomes versus admission exams, standardized tests as direct program measures have been known to provide "a greater understanding of actual student achievement" (Zeis, Weronska & Fuller, 2009). Standardized tests as outcomes assessments are considered one of the fastest to administer, most cost-effective and most efficient ways to assess a large portion of students (Black & Duhon, 2003). The process of test management is fairly simple. It usually requires a test order, test administration, test shipment, and report of the test scores. Assessments like the Major Field Achievement Test have explicit directions that are significantly time conscious and, compared to more involved assessments, are considered unbiased. The evidence of the ETS MFT being gendered-based or age-based has shown no difference on the ETS MFT performance according to the 1997 study (Bycio & Allen). Another concern of using standardized exams as measures of students' learning was that test performance may not be related to students' actual knowledge and abilities, but their test taking skills (Mirchandani et al, 2001). Research has shown that although the test-taking ability is a factor in ETS MFT performance, one of the strongest predictors was the student's business core courses GPA (Bycio & Allen). To create a better understanding of the ETS MFAT test administration at the School of Business and Entrepreneurship, it is important to mention a couple of the facts that could have an effect on scores. The Major Field Test takes place twice a year for December and May graduates, once in the Fall and once in the Spring semester. The administration of the test usually takes place in the

sixth or seventh week of classes in a student's last semester before graduation. The examination is taken in a designated area on campus over the period of two days. Students are asked to choose a day and time they would like to take the exam. The School of Business and Entrepreneurship designates four sessions per semester to accommodate all students, two morning and two afternoon sessions. Morning sessions usually start at nine although that was not the case in the pilot and in the Spring of 2008, and Fall 2008 testing. The afternoon session takes place at 1 o'clock. The night session (6 o'clock p.m.) was offered in the Spring of 2008, and Fall of 2008. Due to the low number of students that took the test in the evening hours, beginning Spring of 2008, the session was no longer being offered. All testing takes place in the middle of the week. No weekend testing is offered at this time.

Remedial Courses

According to the College Board, a non-for-profit association, approximately 77% of freshmen and sophomore standing college students took remedial Math or similarly corrective courses, followed by 35% remedial writing courses, 30% English remedial courses and 28% remedial reading courses during the 2003-2004 academic year. Some studies have shown that as many as 40% of students have some significant deficiencies in the above disciplines and are required to take at least one remedial course in their college career (College Board, 2009, para. 18). The statistics clearly indicate that students entering college are not adequately equipped throughout high school to meet the college standards and criteria. According to Taylor (2006), students who have completed a remedial course with a grade of C and above have a

higher likelihood of passing their freshmen year of mathematics course and continue their education until all the coursework is completed for graduation than students that did not take a remedial course.

The number of institutions offering remedial classes, the total number of corrective courses, and the amount of students getting help from the remedial courses has increased significantly in last decade. A recent study by the National Association of Scholars has revealed some alarming information as well. According to the NAS researchers (2002), "when given a test covering four areas of general knowledge, American college seniors score at about the same overall level as did high school graduates of fifty years ago" (para.7). The study was able to identify that the 2002 college seniors had shown improvement towards questions concerning writing, music, and science versus the mid century high school seniors. The questions pertaining to geography had shown no significant difference. However, the recent college seniors' scores were poorer on questions dealing with history versus high school graduates from the mid century. Overall, the researchers indicated that the 21st century college graduates fall far below the former college school students of the 1950's in terms of cultural knowledge. The cultural knowledge consisted of broad questions in music, geography, science, and history. Based on the results of the survey, colleges and universities might not only need remedial courses, but they might need to redesign modern education in a way to provide future college graduates with actual knowledge without emphasizing their shortcomings (National Association of Scholars, 2002).

Postsecondary schools, in order to increase the probability of their students' success, should offer supplemental courses (Noble, n.d.). Assuming that a positive relationship exists between the ACT scores and the Major Field Test in Business, business students admitted to the program with a lower ACT score should be advised to take part in a remedial or supplemental program. Schools could also incorporate the remedial work in any core business course that would serve students with suggestions and recommendations. This type of coursework would help by improving test-taking skills and other deficiencies that students may possess.

Summary

This chapter comprised the literature review for the following areas: Accreditation, the benefits of ACBSP accreditation, American College Test (ACT), standardized testing, Educational Testing Services Major Field Achievement Test-Business, correlation studies, outcomes assessments, and remedial courses. The main idea of this chapter was to provide some key concepts and to what is known about the subsequent topics. This literature review contains information that will help the reader to become familiar with the study. This chapter's notion was to investigate some possible factors that could explain whether the correlation exists between the ACT scores and Business Capstone Performance. Several studies utilized similar methodology to this one, which will be outlined in the next chapter.

Chapter Three: Methodology

Introduction

This correlation study attempted to determine whether a positive relationship exists between two or more quantifiable variables. The purpose of this study was not to establish a cause-effect relationship. A variety of statistical strategies were used to analyze the relationship between the ACT scores and Business Capstone Performance. This chapter's main effort was to present the typical methodology aspects such as the research perspective, research questions, independent and dependent variables, hypotheses statements, context and access, procedures, methods and instruments used to collect data, participants, and data analysis.

Research Questions

The study addressed the following research questions:

1. How well can Lindenwood University students' performance on the ETS MFT exam be predicted?
2. Do Cumulative Grade Point Average and or Term Grade Point Average predict ETS MFT performance?
3. Do ACT scores predict the ETS MFT performance better than the GPA?

Independent Variables

ACT scores. Composite ACT scores for the 59 undergraduate business seniors enrolled in the BA430 Management Policy course at the SB&E were used in this research.

Cumulative GPAs. Cumulative Grade Point Averages for the 59 undergraduate business seniors enrolled in the BA430 Management Policy course at the SB&E were used in this research.

Term GPAs. Term Grade Point Averages for the 59 undergraduate business seniors enrolled in the BA430 Management Policy course at the SB&E were used in this research.

Dependent Variable

ETS MFAT. ETS MFAT for the 59 undergraduate business seniors enrolled in the BA430 Management Policy course at the SB&E were used in this research.

Hypotheses

There are three hypotheses for this research study. It is expected to see a positive correlation between the following variables:

Null hypothesis # 1. There is no correlation between the ACT scores and ETS MFT scores.

Alternative hypothesis # 1. There is a correlation between the ACT scores and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 2. There is no correlation between Cumulative Grade Point Average and ETS MFT scores.

Alternative hypothesis # 2. There is a correlation between Cumulative Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 3. There is no correlation between Term Grade Point Average and ETS MFT scores.

Alternative hypothesis # 3. There is a correlation between Term Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Research Perspective

With the use of the quantitative research approach, the researcher intended to find if a positive relationship or a correlation exists between the ACT scores and Business Capstone Performance as defined by GPA and ETS MFT scores. One of the researcher's job responsibilities at the School of Business and Entrepreneurship was the ETS MFT administration. The primary investigator was involved in collection, organization, and distribution of the ETS MFT scores among the faculty at the School of Business and Entrepreneurship. With full access to the students' ETS MFT scores, the researcher made a decision to use the scores for the research of this study.

This researcher used Microsoft Excel to format and to analyze the data. Histograms were used "to summarize the data in frequency distribution" (Evans, 2007, p. 49). Descriptive statistics were used to organize and describe the data. "To characterize relationship between the variables" the researcher used the regression analysis technique (Evans, 2007, p. 200). A scatter plot was used to show whether

the relationship between the variables was linear or not. The Pearson correlation coefficient method was utilized to indicate the degree of the relationship among the variables.

Context and Access

The study took place on Lindenwood University's main campus. The researcher used secondary data provided by the Office of Academic Services through the Information Register for Informatics. As of February 2009, the researcher gained the permission to obtain the data; however, a complete set of data was not attainable until October 2009. The Institutional Review Board (IRB) proposal was approved on October 1, 2009 allowing the researcher to pursue the study. At no time did the researcher have access to names of students. Students were only identified by ID number so that scores on the two assessments could be paired by students and analyzed.

Procedures

The ACT and GPA data were collected by gaining permission from the Lindenwood University Provost to retrieve the information from university's database called CAMS. CAMS is also known as the Comprehensive Academic Management System that "helps colleges and universities manage the entire student life cycle from admissions to alumni relations" (Three Rivers Systems, 2008, para. 2). The ETS Major Field Tests' results' permission was obtained earlier in the program through the School of Business and Entrepreneurship's Dean. The ETS MFT scores were retrieved by the researcher from the School of Business and Entrepreneurship shared

folder stored on the Z- drive on the University's computer server available to the researcher herself, some faculty, and the dean.

The letter of permission obtained through the Vice President for Academic Affairs contained explicit directions explaining the way the data was to be retrieved and who would be assisting the researcher with the request. The data request was submitted to the Office of Academic Services, the Information Register for Informatics as indicated in the permission letter. This request pertained to students enrolled in the BA 430 Management Policy course in the Spring of 2008 through the Spring of 2009. The researcher was interested in students' ACT scores, students' Cumulative Grade Point Averages their senior year in college, and their business course GPAs. The researcher intended to match the ETS MFT scores with the data requested through the Office of Academic Services based on students' names or ID. Due to the Family Educational Rights and Privacy Act (FERPA), all educational institutions that obtain funds or any monetary assistance from the US Department of Education must protect the privacy of student educational records (FERPA, 2009). Therefore, the researcher was not allowed to personally collect and organize additional raw data that contained names or student IDs.

To collect the data in accordance to FERPA, the researcher, with the help of a dissertation committee member, transferred students' names or IDs and their ETS MFT scores from the PDF file located in the shared folder into a Microsoft Excel document. Once that data was in the correct format, the list was transported to the Information Register of Informatics. The Information Register of Informatics was

able to produce a confidential report for the listed students that contained all additional information requested by removing the names and assigning random numbers to each matched set of data. At the time of the data request, the researcher's intent was to obtain the information for all business students that were enrolled in the BA 430 Management Policy course, also known as the capstone course in the Spring semester of 2008 through Spring semester 2009. Approximately 418 business students were enrolled in the capstone course in the subsequent period of time. The requested data was obtained for all 418 students.

The researcher obtained the ACT, GPA and Major Field Tests report electronically and formatted it in the Microsoft Excel document. Since the university admission processes vary from student to student, a majority of individuals did not meet the criteria for the study. Domestic students are now required to take either the ACT or SAT college admission test in order to be accepted to the university. However, these requirements were different when students were admitted to the university four to five years ago. The international or non-domestic students did not fall under regular admission processes and thus were not included in the sample.

The majority of non-domestic students take the Test of English as a Foreign Language also known as TOEFL rather than the ACT or SAT. Some international students do not take any test to be admitted to the university. Unfortunately, due to the purpose of this study, a large number of business students, predominantly international students, had to be dropped from the sample. Since only 59 students

met the researchers' criteria for this study, all 59 complete data sets were used for analysis.

Methods and Instruments Used to Collect Data

Lindenwood University's database, CAMS was used to obtain student's ACT scores, cumulative GPAs and term GPAs by the Information Register for Informatics. Due to FERPA, the researcher did not take part in the collection of data that included student names or their ID numbers. Lindenwood University's School of Business and Entrepreneurship shared folder on the University's computer Z drive was used to attain the students' scores from the Major Field Tests by the researcher's committee member. The committee member was kind enough to format the data from the Major Field Tests and send it to the Information Register for Informatics that was then able to match and produce the final report that included the additional data requested. The researcher used a Microsoft Excel 2007 spreadsheet to organize and analyze the data.

Participants in the Study

For this study, the sample consisted of 59 undergraduate students from Lindenwood University School of Business and Entrepreneurship. Lindenwood University is a medium sized, private, liberal-arts university located in the Midwest. The university offers a variety of bachelors, masters, and doctoral degrees. The majors of the 59 students included all business degrees: "Accounting, Business Administration, Economics, Entrepreneurship, Finance, Human Resource

Management, International Business, Management Information Systems, Marketing, Retail Merchandising, and Sport Management" (Lindenwood University, 2009b, para. 2). Some students used in the sample pursued more than one degree. However, despite double majoring, each student's first major was conferred in business. Each student majoring in business with the exception of Human Resource Management, Arts Management and Sport Management, was also required to complete the business core curriculum beyond the University's General Education and major electives requirements (Table 2).

Table 2

SB&E Undergraduate Business Core Curricula (Lindenwood University, 2009b)

Course Number	Course Description	Credit Hour
BA 20000	Principles of Financial Accounting	3
BA 20100	Principles of Managerial Accounting	3
BA 21100	Microeconomics	3
BA 21200	Macroeconomics	3
BA 24000	Introduction to Information Systems	3
BA 32000	Principles of Finance	3
BA 33000	Principles of Management	3
BA 35000	Principles of Marketing	3
BA 36000	Business Law I	3
BA 37000	Introduction to Management Science	3
BA 43000	Management Policy	3
COM 30300	Business Communications	3
MTH 13100 And or MTH 14100*	Quantitative Methods Statistics	3-6
Total Business Core Credit Hours		39

Note: *Human Resource Management, Arts Management and Sport Management majors require one Math Course instead of two as is the case for all other business majors.

In addition to providing a better description of the School of Business and Entrepreneurship, Table 3 refers to the school's demographics for the Spring semester of 2009. As indicated in Table 3, the SB&E ethnicity is predominantly Caucasian, followed by African American and Hispanic. A small percentage of the university's population consists of Asian and Native Americans. The total population of the SB&E is made of 27.8% International students with 96.4% in attendance fulltime.

Table 3

Demographics for the SB&E

	Full-time			Part-time			Combined Grand
Count of Ethnicity	Female	Male	Total	Female	Male	Total	Total
American Indian and Alaskan Native	1	2	3	-	-	-	3
Asian	1	3	4	-	-	-	4
Black	25	31	56	4	3	7	63
Hispanic	7	9	16	-	1	1	17
Non-Resident Alien	98	241	339	1	2	3	342
Unknown	19	63	82	-	7	7	89
White Non-Hispanic	303	383	686	12	14	26	712
Grand Total	454	732	1186	17	27	44	1230

Note. Dashes (-) represent data that was not reported.

Based on the sample of 534 students enrolled at the School of Business and Entrepreneurship in the Fall of 2009, a major portion of the student population originates from the greater St. Louis metropolitan area, St. Charles County making up the largest portion. First generation college attendees account for a slight majority of Lindenwood undergraduate students. Approximately 30% of the Lindenwood University undergraduate program consists of athletes. According to the Lindenwood

University Athletics (2010) Lindenwood competes with 46 varsity teams in the National Association of Intercollegiate Athletics (NAIA) and the Heart of America Athletic Conference (HAAC) associations. The SB&E student population of 1,465 is fairly diverse. The international student population segment consists of 28% undergraduate and 36% graduate program. As of Fall of 2009 approximately 751 international students are studying at Lindenwood University, representing over 80 different countries in which 427 are completing their business degrees at the School of Business and Entrepreneurship. Referring to Table 3, the SB&E undergraduate student population is predominantly male (over 60%), and a mix of full-time (96%) and part-time students (4%) (Lindenwood University ACBSP Preliminary Questionnaire, p. 3, para. 6).

To create a better understanding of the characteristics of the sample, the researcher took the liberty to present the data indicated by students themselves on the ETS MFT student information sheet from Spring of 2008 through Spring of 2009. According to a study by Cassady (2001), 89 undergraduate students were asked to self-report their GPAs. Based on the findings, the author concluded that students' self-reported GPAs were extremely close to the university's official records. Table 4 and Table 5 in combination with Figure 1 and 2 represent student's self-reported Major Grade Point Average (Table 4) and student's self-reported Cumulative Grade Point Average (Table 5). As shown in Table 3 and Figure 1, a large majority of students at the SB&E self-reported their Major Grade Point Average in the 3.00-3.49 range, followed by the 2.50-2.99 range.

Table 4

Summary of students self-reported major grade point average*

Major GPA*	Number of students	Percent of students
3.50-4.00	85	21.6%
3.00-3.49	167	42.4%
2.50-2.99	110	27.9%
2.00-2.49	30	7.6%
1.00-1.99	1	0.3%
>1.00	0	0.0%
No response	1	0.3%
Total	394	100.0%

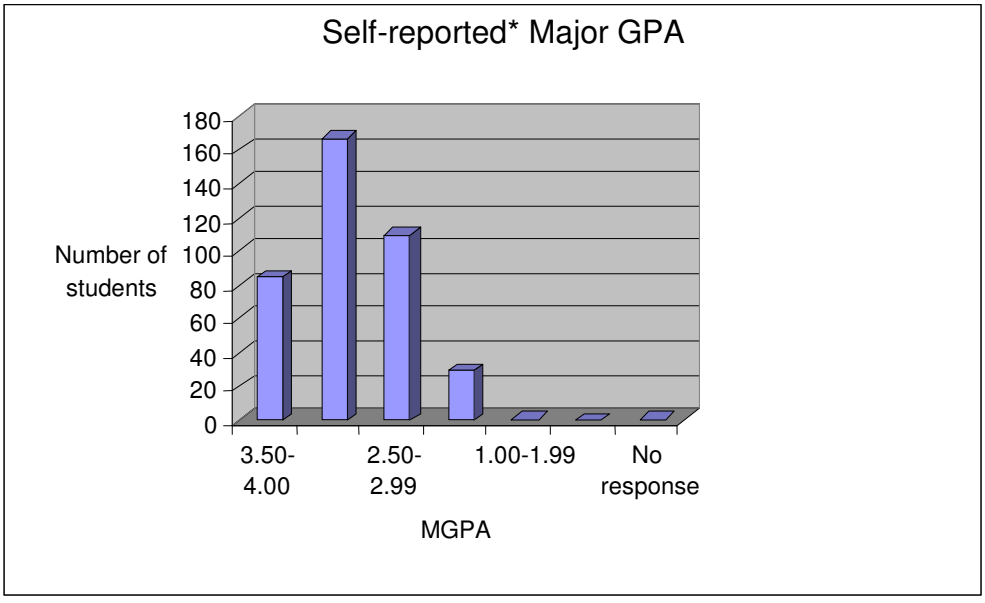

Figure 1. BA440 students self-reported* Major Grade Point Average for Spring of 2008 through Spring of 2009.

As shown in Table 5 and Figure 2, a large majority of students at the SB&E self-reported their Cumulative Grade Point Average in the 2.50-3.49 range, which is in line with the actual Cumulative Grade Point Average mean that can be located in Chapter Four of this study under the descriptive statistics.

Table 5

Summary of students self-reported Cumulative Grade Point Average

CUGPA*	Number of students	Percent of students
3.50-4.00	64	16.2%
3.00-3.49	148	37.6%
2.50-2.99	132	33.5%
2.00-2.49	44	11.2%
1.00-1.99	4	1.0%
>1.00	0	0.0%
No response	2	0.5%
Total	394	100.0%

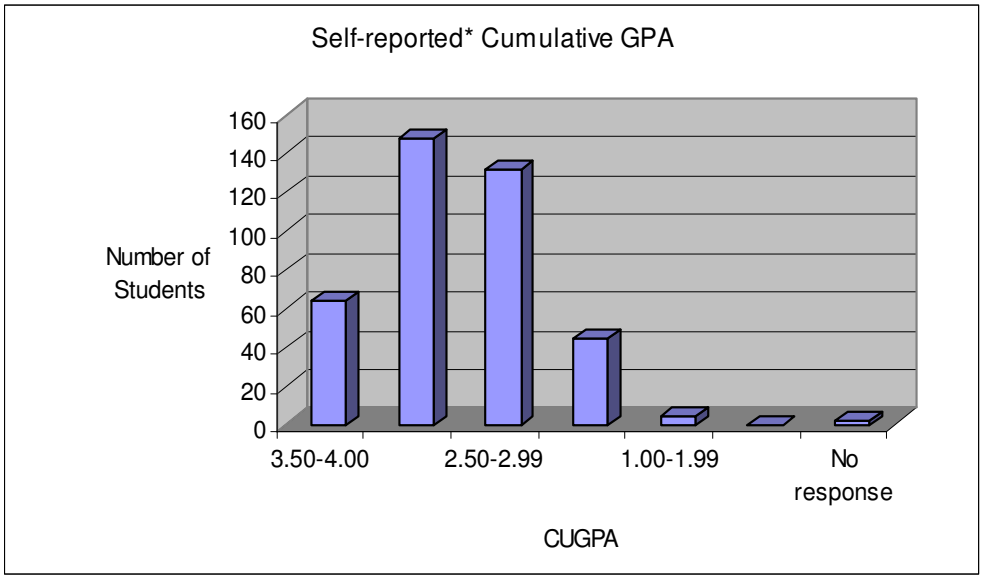

Figure 2. Student's self-reported* Cumulative Grade Point Average for Spring of 2008 through Spring of 2009 enrolled in the BA430 Management Policy course.

Data analysis

The data was collected from the Spring of 2008 through the Spring of 2009. The sample included all students enrolled in the BA 430 Management Policy course, who took both the ACT as a part of the admission process and the ETS Major Field Exam as part of the capstone course. The study uses variables such as the ACT and the Major Field Test scores as well as the students' cumulative and term GPA. All domestic and international undergraduate college seniors in the School of Business and Entrepreneurship are required to take the Major Field Test, a nationwide outcomes assessment exam. ETS MFT-Business tests students' business knowledge and helps to ensure that the correct curriculum is being taught throughout the division. The following strategies for data analysis were used in the study:

Histograms

The histogram "is a graph that displays the data by using contiguous vertical bars of various heights to represent the frequencies of the classes" (Bluman, 2008, pp. 48-49). Histograms were used to visually illustrate the frequency distributions.

Correlation Analysis

The data was analyzed using the correlation analysis method, which is the most appropriate measurement if both variables are considered "normal and assumptions are not markedly violated" (Leech, Barrett & Morgan, 2005). The correlation analysis is a measure that determines the relationship among the variables in the range starting at -1.00 to +1.00 (Bluman, 2008). The following study investigated whether a relationship existed between the ACT and Business Capstone Performance, as defined by GPA and ETS MFT score, using the Pearson correlation coefficient as a measure. It is expected to see a positive correlation between the variables. According to Bluman (2008), any values that fall near +1 will signify a positive relationship, values closer to -1 will signify a negative relationship, and any values that will fall near to 0 will indicate no relationship.

Regression

Simple regression is a measure utilized when two variables are used to predict the type of the relationship (Bluman, 2008). The research used the simple regression method to study the relationship among the following three independent variables: ACT scores, Cumulative GPAs, and Term GPAs; and the dependent variable: the ETS MFAT scores.

Multiple Regression is a measure utilized when "two or more independent variables are used to predict one dependent variable" (Bluman, 2008, p. 523). The research used the multiple regression method to study the relationship among the following variables: ACT scores and Cumulative GPAs, ACT scores and Term GPAs; and the dependent variable: the ETS MFAT scores.

The significance of the Correlation Coefficient and P-value

The significance of the correlation coefficient as well as the P-value method determines if the value of r is significantly high enough to conclude if the relationship between the variables is not just due to chance (Lane, 2001). The significance of the correlation coefficient and the P-value measure were used to predict if the Cumulative GPAs and Term GPAs were statistically significant.

ANOVA

Analysis of Variance (ANOVA) is a measure used to test the means of three or more samples (Bluman, 2008). This study referred to the ACT scores as the first predictor, second predictor was the Cumulative Grade Point Average, third Term Grade Point Average. The ETS MFAT scores for the Spring of 2008 through Spring 2009 was the dependent variable.

Scatter Plots

A scatter plot is defined as "a graph of the ordered pairs (x, y) of numbers consisting of the independent variable x and the dependent variable y" (Bluman, 2008). This study used scatter plots as a way to illustrate the relationship between the

variables such as the ACT and ETS MFAT; CUGPA and ETS MFAT; and TGPA-ETS and MFAT.

Summary

This chapter covered the following methodology aspects: Research perspective, context and access, procedures, methods and instruments used to collect data, participants, and data analysis. This correlation study used data for 59 undergraduate business seniors enrolled at Lindenwood University School of Business and Entrepreneurship in the Spring of 2008 through Spring 2009. With the use of the Academic Services, this quantitative research involved four variables: ACT scores, Cumulative GPAs, Term GPAs and the ETS MFT scores.

There are many different ways to conduct research. The purpose of this chapter was to present the best method that fit the objective of the study, as well as the method introduction and justification. The data of this study was analyzed through a variety of measures. Histograms were used to describe the frequency of distribution. Descriptive statistics were used to present the mean and the standard deviation of the sample. The Pearson Correlation Coefficient method was used to indicate the relationship between the variables where the multiple regression was used to explain the variability of the sample. Additional methods were used to strengthen the study as well as to provide more information. The following Chapter Four discusses the results of this research based on the methodology of this chapter.

Chapter Four: Presentation of Data

Introduction

The purpose of this research was to find a relationship between students' ACT scores and their business capstone performance. The study meant to determine if there is a significant correlation between students' ACT scores, their ETS MFT scores, their cumulative and Term Grade Point Average (TGPA).

The School of Business and Entrepreneurship utilizes the Major Field Test in Business Administration (ETS MFT-B) to assess the students' business knowledge and skills learned throughout the program. To determine what factors contribute to students' performance on the ETS MFT exam is crucial. Results of this study will assist the School of Business and Entrepreneurship in making sure that the students are equipped with the adequate skills to take the ETS MFT exam. The findings of this research study will also assist the Lindenwood University Admission Office in determining whether more emphasis should be put on the students' college admission testing scores.

Analysis of Data

In this section of Chapter Four, the data will be set for the analysis. The dependent variable consists of the ETS MFT scores for 59 undergraduate business seniors at Lindenwood University School of Business and Entrepreneurship. The independent variables will consist of students' ACT scores, Cumulative Grade Point Averages (Spring 08, Fall 08, Spring 09 semesters), and Term Grade Point Averages (Spring 08, Fall 08, Spring 09 semesters). The Microsoft Excel 2007 edition was

used to analyze the data. The researcher's first step was to examine each variables used in the study. It is a common practice among researchers to use stem plots or histograms to examine the shapes of distribution for each variable.

To describe the data and to determine the appropriate statistical method to analyze the data, the researcher used the statistical graph called the histogram. The first step is a formation of a frequency table. According to Lane (2001), "a frequency table is constructed by dividing the scores into intervals and counting the number of scores in each interval" (para.1). Once the frequency table is created (refer to Table 6), the histogram is made (Figure 3). The intervals are responsible for the shape of the histogram, as histograms can take many shapes to indicate the distribution. The most common distribution shapes are bell-shaped, uniform, j-shaped, reverse j-shaped, right of left skewed, bimodal, u-shaped and more. In the present study on the ACT scores and Business Capstone Performance, the distribution for the ETS MFT scores was bell-shaped meaning it had a single peak, and it was somewhat similar on both sides. Therefore, the researcher was able to indicate that the data values for that particular variable were normally distributed with a very slight positive skew (Figure 3). No visible outliers were present. Outliers can be defined as data points that are extremely high or low versus the remaining data points and as points that do not appear to be a part of the same set (Malloy, 1997).

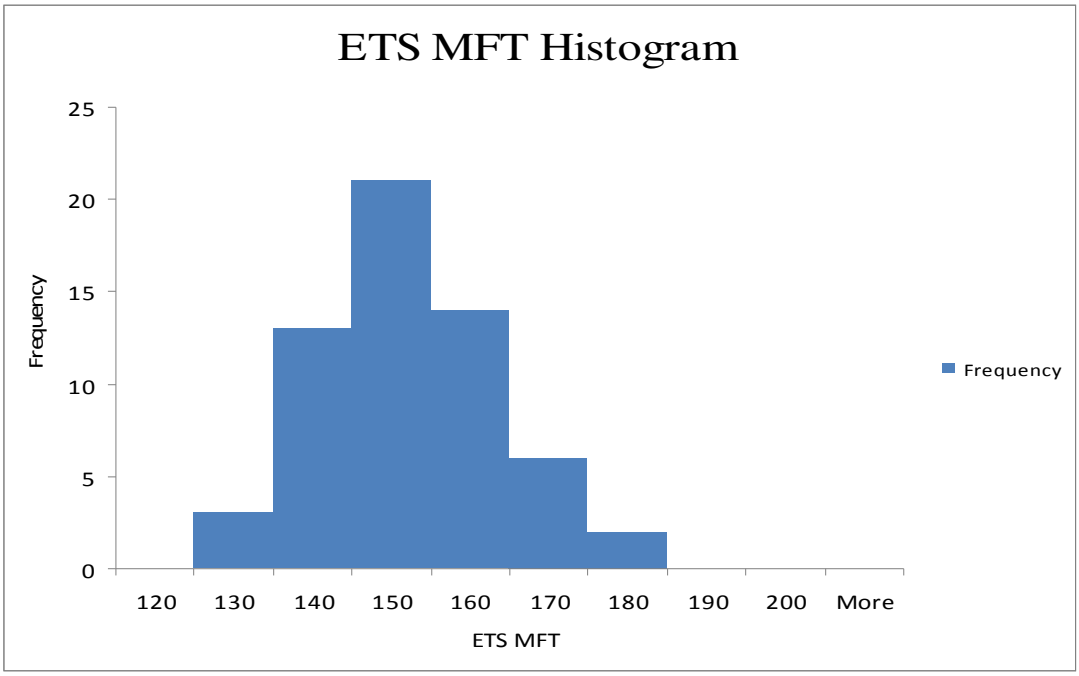

Figure 3. ETS Major Field Test Histogram

Table 6

ETS MFT Frequency

ETS Range	Frequency	Percent
120-130	3	5.08%
140-150	34	57.63%
160-170	20	33.9%
180-190	2	3.39%
200	0	0%
Total	59	100%

The shape of the histogram for the ACT scores based on the frequency table (Table 7) as it was for the ETS MFT scores was also somewhat normally distributed.

An outlier in the right tail of the graph was visible, however, it did not significantly influence the overall sample size (Figure 4).

Table 7

ACT Frequency

ACT Range	Frequency	Percent
15-18	8	13.56%
19-22	28	47.46%
23-26	18	30.51%
27-30	4	6.78%
31-33	1	1.69%
Total	59	100%

The shape of the histograms for the GPAs data values was more positively skewed. As opposed to the ETS MFAT and ACT frequency tables, Table 8 and 9 showed intervals to be more alike rather one of the intervals being a larger value. Although the mean, median and mode fell close to one another for both the CUGPA (Figure 5) and TGPA (Figure 6), most data values were located to the right of the median. The TGPA had two modes making it shaped more bimodal, where the CUGPA had only one distinctive peak with some visible outliers.

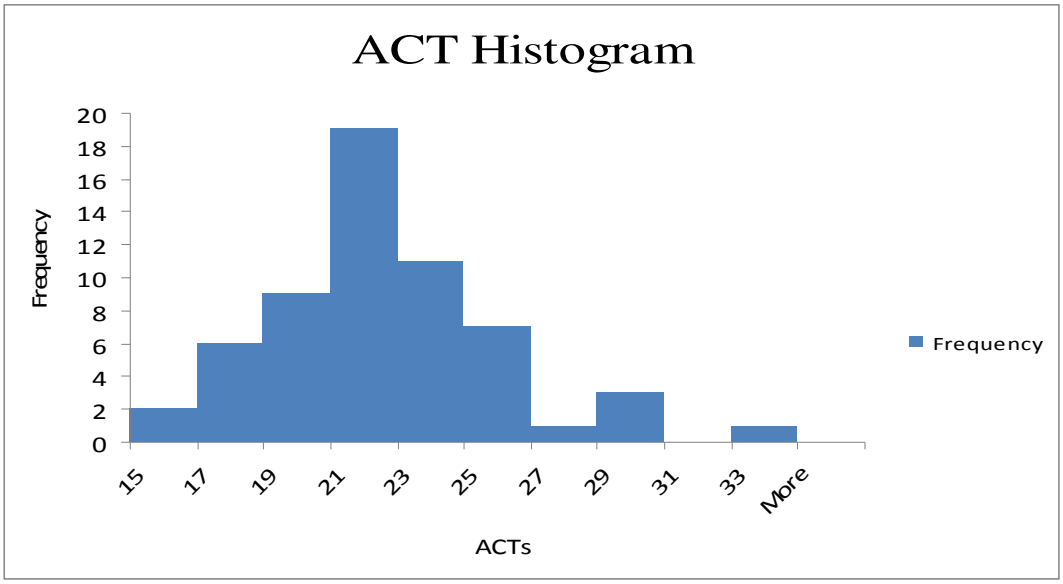

Figure 4. ACT Histogram

Table 8

CUGPA Frequency

CUGPA Range	Frequency	Percent
2.1-2.39	8	13.56%
2.4-2.69	10	16.95%
2.7-2.99	15	25.42%
3-3.29	14	23.73%
3.3-3.59	8	13.56%
3.6-3.89	3	5%
3.9-4	1	1.69%
Total	59	100%

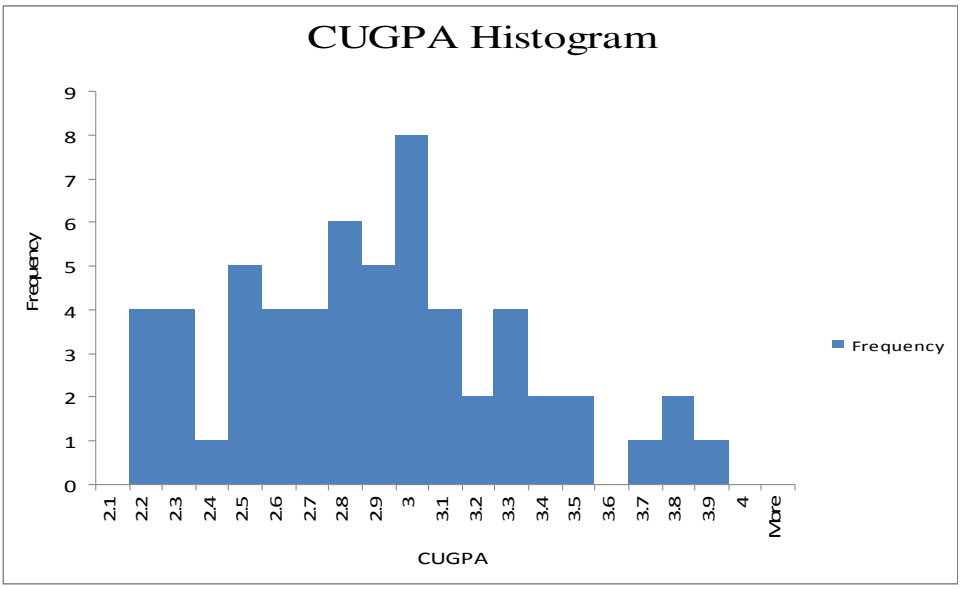

Figure 5. Cumulative Grade Point Average Histogram

Table 9

TGPA Frequency

TGPA Range	Frequency	Percent
1.5-1.99	1	1.69%
2-2.49	15	25.42%
2.5-2.99	19	32.2%
3-3.49	12	20.34%
3.5-3.99	9	15.25%
4	3	5.1%
Total	59	100%

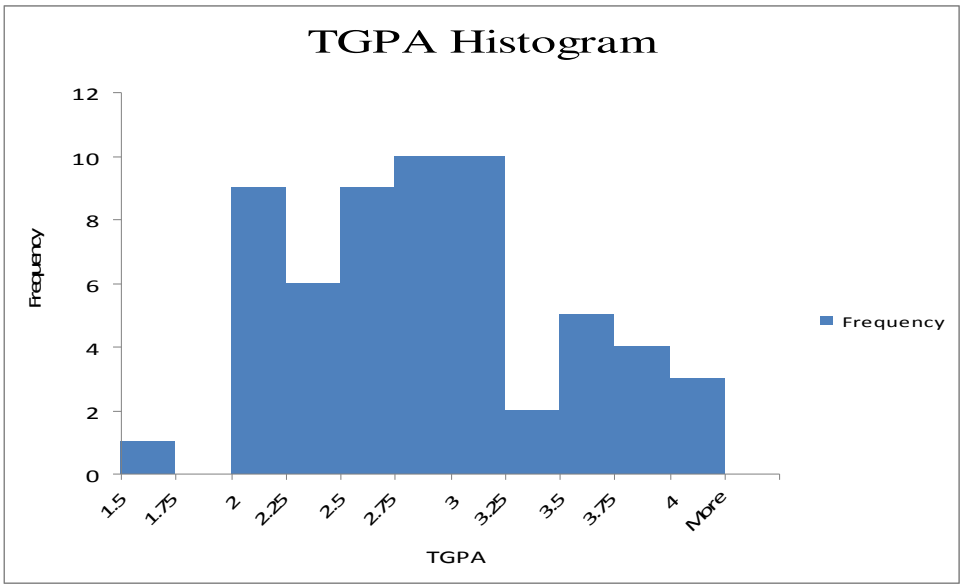

Figure 6. Term Grade Point Average Histogram

Descriptive Statistics

The average ACT score for the 59 students enrolled in the capstone course in Spring 2008 through Spring 2009 semesters was 21.2. The mean of the ETS MFT scores for the subsequent time was 147.4. The mean of the Cumulative Grade Point Average for the 59business students was 2.83 where the Term Grade Point Average was 2.69. For more additional data refer to Table 10.

Table 10

Descriptive Statistics for the ACT, ETS MFT, TGPA, and CUGPA

Variable	Mean	Median	Mode	Std. Deviation	Sample Variation	Range	N
ACT	21.2	21	21	3.361	11	17	59
ETS MFT	147.4	144	144	10.815	117	47	59
CUGPA	2.83	2.84	2.8	0.427	0.18	1.74	59
TGPA	2.69	2.68	2.75	0.599	0.36	2.5	59

Correlation

Correlation measure allows quantitative studies to indicate whether a relationship exists among two or more variables. Correlation analysis is a technique used commonly to figure out the strength of the association between the variables (Bluman, 2008). There are many ways to interpret the relationship between the variables based on the correlation coefficient method. One is based on Salkind's (2009, p. 127) interpretation of the correlation coefficient table (Table 11). As specified earlier, values that fall near to +1 or -1 signify a strong relationship where values closer to 0 show no association. Based on this correlation analysis (Table 12) and in accordance to Table 11, the researcher was able to conclude that a strong correlation existed between the ACT and ETS MFT scores. The correlation between the ETS MFT and Term Grade Point Average based on the correlation coefficient interpretation table was mild. Therefore, it was fair to say that according to the results of this study, the ETS MFT and TGPA did not have much in common. Similarly, the Cumulative GPA had a mild relationship with the ETS MFT scores.

Table 11

Correlation Coefficient Interpretation (Salkind, 2009)

Size of the Correlation	Coefficient General Interpretation
.8 to 1	Very strong relationship
.6 to .8	Strong relationship
.4 to .6	Moderate relationship
.2 to .4	Weak relationship
0.0 to .2	Weak or no relationship

Referring to Table 12, the correlation between the ACT and ETS MFT scores was r = +0.67. The correlation between the Cumulative GPA and the ETS MFT was r = +0.28. The correlation coefficient between the Term GPA and the ETS MFT was r = +0.26. Despite the different sizes between the correlations, all seemed to indicate a positive relationship since r, as pointed out in Chapter Three, ranges from -1 to +1. However the ACT and ETS MFT scores, as opposed to the Term and Cumulative GPAs, correlation of r = +0.67 was relatively closer to +1, suggesting a strong positive correlation therefore making the ACT scores directly related to the performance on the ETS MFT exam. The scatter plots at the end of this chapter will provide a better interpretation of the correlation results.

Additionally, the researcher was able to find that a moderate correlation existed between the ACT and Term Grade Point Average as well as between the ACT scores and Cumulative Grade Point Average. There was a strong autocorrelation between the GPAs; however that finding was uncertain since those variables were dependent on one another.

Table 12

Correlation Analysis

	Term GPA	*Cumulative GPA*	*ACT Score*	*ETS MFT Score*
Term GPA	1			
Cumulative GPA	0.789660463	1		
ACT Score	0.40893239	0.470596516	1	
ETS MFT Score	0.257764926	0.285696364	0.670237747	1

Note. N = 59.

Regression

This study used Microsoft Excel 2007 version to process the raw data (see Appendices A, B and C for complete lists). The descriptive statistics data analysis, correlation and regression methods were used to analyze the relationship between the ACT and business capstone performance based on the information in the Appendix D. Table 13 refers to all variables, where Table 14 shows the data analysis that was performed between variables for seniors enrolled in the BA 430 Management Policy in the Spring of 2008 through Spring of 2009.

Table 13

Variable Definitions

1.	ETS MFT	Major Field Achievement Test Business Administration scores
2.	ACT	American College Testing composite scores
3.	CUGPA	Cumulative Grade Point Average
4.	TGPA	Term Grade Point Average

Table 14

Data Analysis

Simple Regression		
Independent Variable		Dependent Variable
ACT scores	And	ETS MFT
CUGPA	And	ETS MFT
TGPA	And	ETS MFT
Multiple Regression		
Independent Variable		Dependent Variable
ACT & CUGPA	And	ETS MFT
ACT & TGPA	And	ETS MFT

The assumption for this study, when using the regression method, is that the association among the variables, the independent and the dependant variable (Table

14) is linear and that the residual is normally distributed. A simple, linear regression analysis was performed to determine whether there is a relationship between the ACT scores and business capstone performance. The correlation analysis results showed that there is a positive relationship between the ACT scores and business capstone performance. Referring to Table 15, the ETS MFT- ACT scores simple regression equation for the 2008-2009 business college seniors at Lindenwood University indicated 44% (adjusted r^2 =.4396) of the variance in the ETS MFT that can be predicted from the ACT scores. The other 56% of the variance was unexplained. The unexplained amount is called the coefficient of alienation or nondetermination (Bluman, 2008).

The regression analyses explained 5% (adjusted r^2 = 0.05) of the variation in the ETS MFT scores when Term GPA alone was used as a predictor. The remaining 95% of the variation can be explained by variables other than the TGPA.

The regression analyses explained 6% (adjusted r^2 = 0.065) of the variation when Cumulative GPA was used to explain the variance in the ETS MFT scores. The remaining 94% of the variation was unexplained within the scope of this study.

In addition, a multiple regression on all variables was performed. When both variables were combined, little was added to the prediction. The ACT scores in combination with TGPA and the ACT scores with CUGPA explained even less of the variance in the ETS MFT results making it a non significant predictor in the study. Overall, the ACT scores proved to provide the strongest explanation for the ETS MFT performance.

Table 15

Regression Analysis with ETS MFT as a dependent

Dependent Variable	r	R Squared (Coefficient of determination)	Adjusted R squared	Standard Error of the Estimate	T
CUGPA	.285	.081	.065	10.455	2.250
TGPA	.257	.066	.050	10.541	2.308
ACT	.670	.449	.439	8.096	6.818

Hypothesis Statement

The null hypothesis' main purpose was to assume that any difference or significance in a data set could occur due to chance. In order to reject or accept the null hypothesis, one must know the statistical significance of their study. Despite the statistical method, usually the small p-value would indicate that the findings of the study are statistically significant. If the p-value equals or is larger than the alpha level, the researcher would interpret the findings as not statistically significant possibly due to chance.

Null hypothesis # 1. H_0: There is no correlation between the ACT scores and ETS MFT scores

Alternative hypothesis # 1. H_1: There is a correlation between the ACT scores and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 2. H_0: There is no correlation between Cumulative Grade Point Average and ETS MFT scores.

Alternative Hypothesis # 2. H_1: There is a correlation between Cumulative Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

Null hypothesis # 3. H_0: There is no correlation between Term Grade Point Average and ETS MFT scores.

Alternative Hypothesis # 3. H_1: There is a correlation between Term Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

The researcher was able to reject the null hypothesis and conclude that there is a significant relationship using the F test value of 46.48, p-value of .00000000638505, which is then the alpha $\alpha= .05$ for a 95% confidence interval when testing the ACT scores. At $\alpha =.05$, the p-value of .02827 indicated a rejection of the null hypothesis and support for a relationship when testing the CU GPA. There was a rejection of the null hypothesis and a support for a relationship at the p-value of .04872 when testing the TGPA. All three variables indicated a positive relationship with the ACT demonstrating at a significant level. The researcher was able to reject the null hypothesis of no relationship for all three variables. There is a positive statistically significant relationship between the ACT scores and the ETS

MFT scores, not likely due to chance based on the adjusted r^2 of .449. Since the GPAs' correlation numbers were very mild in the correlation analysis and p-values being quite high in order to make a judgment whether the relationship is significant or simply due to chance, the researcher decided to use the test of significance and the p-value method. Both methods indicate if the variables are far away from 0 to decide whether they really are indeed statistically significant.

The significance of the Correlation Coefficient

T-test Method

Hypothesis Statement:

Research hypothesis 1. H_0: There is no significant relationship between Cumulative Grade Point Average and ETS MFT scores.

$H_{1:}$ There is a significant relationship between Cumulative Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

t=2.244 (refer to Appendix E for calculations)

Research hypothesis 2. H_0: There is no significant relationship between Term Grade Point Average and ETS MFT scores.

$H_{1:}$ There is a significant relationship between Term Grade Point Average and ETS MFT scores.

H_0: $\rho=0$

H_1: $\rho\neq0$

t=2.004 (refer to Appendix F for calculations)

The null hypothesis at the 95% confidence interval was rejected. Based on the t test formula for the correlation coefficient as well as the t test table which indicated a critical value of 1.96, the researcher was able to conclude that there is a significant difference between the value of the Term Grade Point Average and 0, and, also between the Cumulative Grade Point Average and 0.

P-value Method

With the p-value method, the result for t-test hypothesis is supported. The t-value for the CUGPA is t=2.2444 and for the TGPA is t=2.004. With the degrees of freedom (d.f.) of 57, both the CUGPA and TGPA t test values for the two-tailed test was 1.960 yielding a P-value<0.05. Since the P-value is less than .05, the researcher rejected the null hypothesis as previously stated for the t test and noted that there was evidence to support a significant relationship between the GPAs and ETS MFT exam.

Analysis of Variance (ANOVA)

The ANOVA method is used to compare three or more means. The Microsoft Excel ANOVA analysis is shown in Table 16.

Hypothesis Statement

H_0: $\mu_1=\mu_2=\mu_3$. There is no difference between the means (μ).

H_1: At least one of the means (μ) is different from the others.

The critical value for the ANOVA claim is approximately 3.15 based on $\alpha=.05$ (degrees of freedom, numerator d.f.N. =2 and degrees of freedom, denominator d.f.D. =56). Using the information from Table 16, the F test value for the following

variables are: ACT=46.49, CUGPA=5.06, and TGPA=4.06. The researcher, after a closer look at the variables in comparison to the critical value, rejected the null hypothesis, stating that there is enough evidence to conclude that at least one mean is different from the others (ACT 46.49>3.15; CUGPA 5.06>3.15; TGPA 4.06>3.15).

Table 16

ANOVA Summary for the F-test significance

Variable	Source	Sum of Squares (SS)	Degrees of Freedom	Mean of Square (MS)	F
ACT	Regression	3,048	1	3,048	46.49
	Error	3,737	57	66	
	Total	6,785	58		
CUGPA	Regression	554	1	554	5.06
	Error	6,231	57	109	
	Total	6,785	58		
TGPA	Regression	451	1	451	4.06
	Error	6,334	57	111	
	Total	6,785	58		

Note: Values entered are rounded.

Scatter Plots

According to Anderson, Sweeney and Williams (2008) the rejection of the null hypothesis does not necessarily mean that X and Y values are corresponding in a linear slope. To indicate whether the relationship is linear, the researcher examined the scatter plot and the residual plot. Based on the scatter plot analysis (Figure 7) the researcher was able to conclude that there is a positive linear association between the independent variable of ACT scores and the dependent variable of the ETS MFT performance. Additionally, the r-squared, also known as coefficient of determination r^2 =.4492, indicated that moderate correlation existed between the two variables.

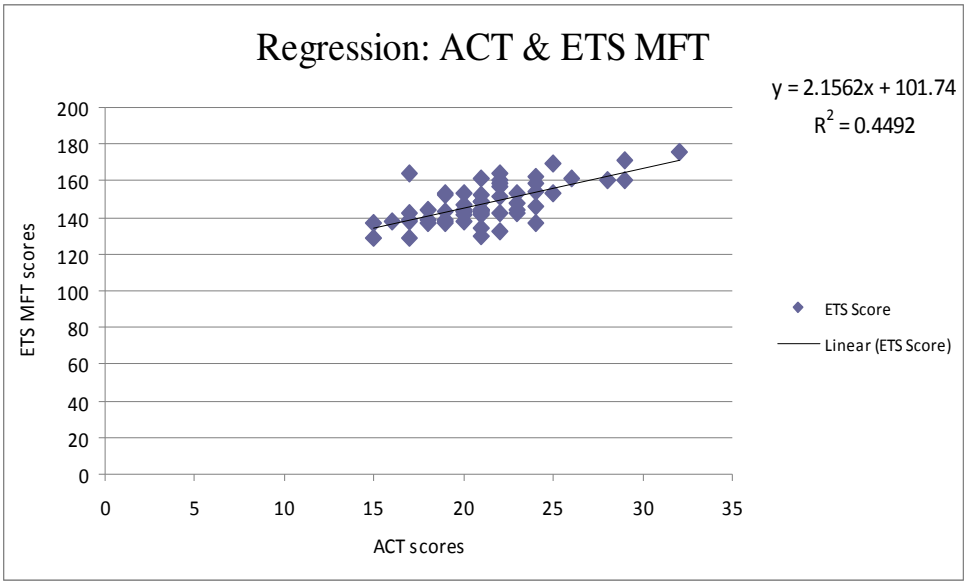

Figure 7. Scatter Plot based on the ETS MFT & ACT correlation

However, it is known that the regression line on the scatter plot tends to over or under predict the actual values therefore it is advised to take a deeper look at the residual plot. The researcher, to indicate whether a natural variation indeed is present, included the residual plot of the regression analysis on the ACT and ETS MFT scores. Figure 8 shows the values on the residual plot being randomly dispersed. The placement of variables in Figure 8 indicated a natural variation of residuals about the center.

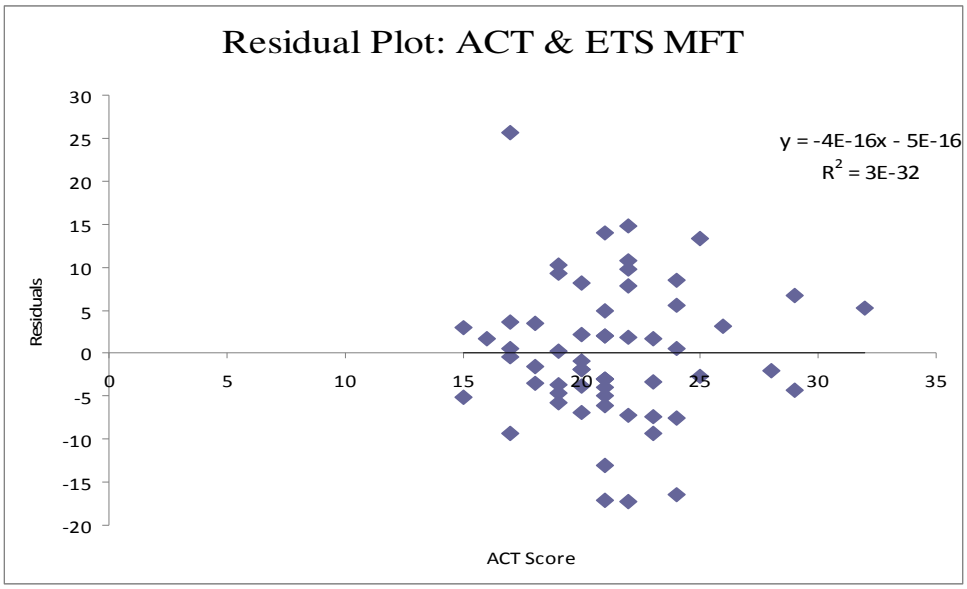

Figure 8. Regression of the ETS MFT scores with ACT scores

Additionally, based on the scatter plot analysis (Figure 9 & 10) the researcher was able to conclude that there is a positive linear relationship between Cumulative Grade Point Averages (Figure 9) and ETS MFT as well as between Term Grade Point Averages (Figure 10) and ETS MFT performance.

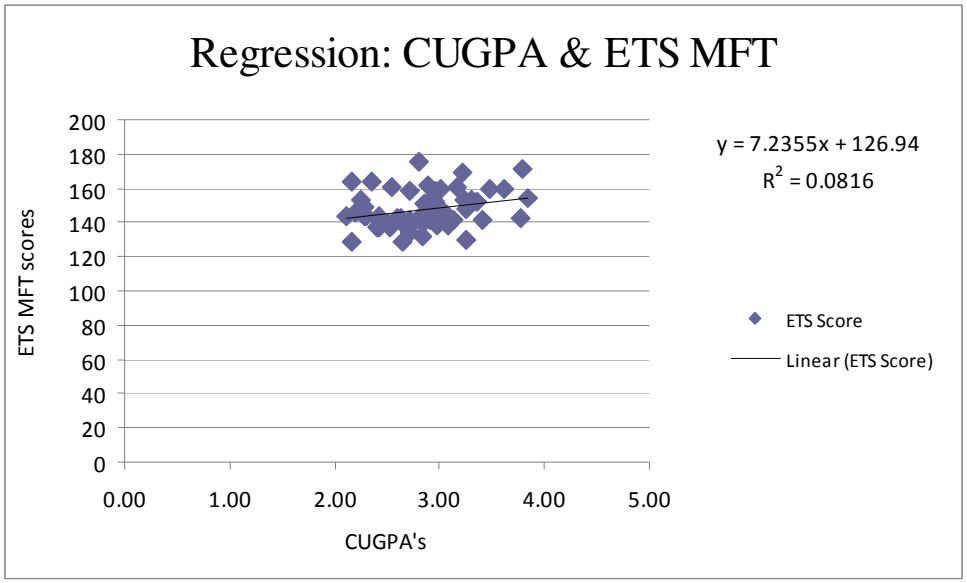

Figure 9. Scatter plot based on the correlation of ETS MFT & CUGPA

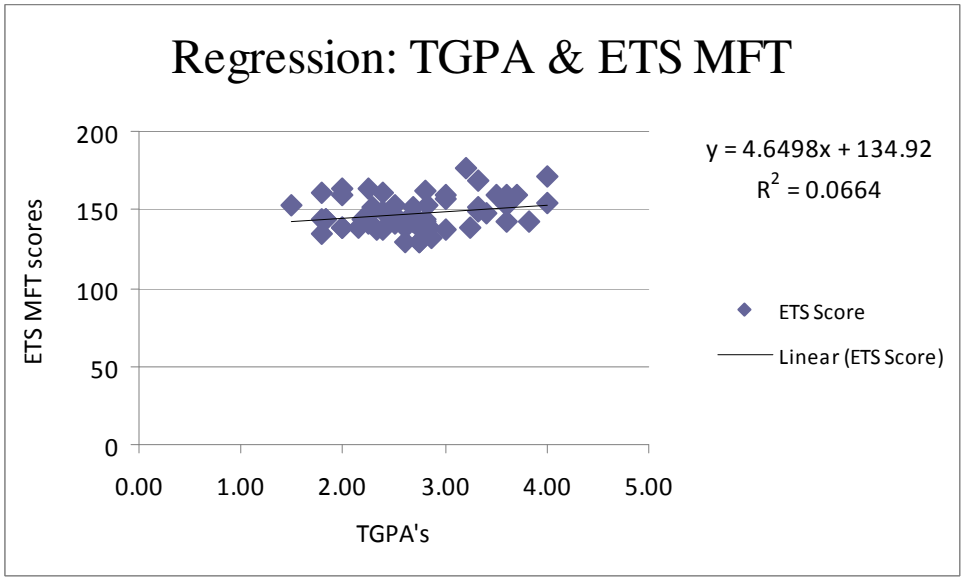

Figure 10. Correlation of ETS MFT scores with Term Grade Point Average

Summary

This chapter covered the following data analyses: Histograms, descriptive statistics, correlation, regression, and significance of the correlation coefficient, ANOVA and more. Based on the results of the study, all null hypotheses were rejected, and the researcher was able to conclude that there is a positive relationship between ACT scores and Business Capstone Performance. The purpose of the following chapter is to discuss the results, provide some recommendations and potential suggestions for further studies.

Chapter Five: Conclusions, Discussion, and Recommendations

Conclusions

The researcher attempted to discover whether there was a positive relationship between the ACT scores and business capstone performance and whether the ACT and cumulative and major GPAs could explain the performance of students on the ETS MFT exam. The researcher was also interested in finding out which variable best predicted the performance on the ETS MFT exam.

Several conclusions can be drawn based on the findings of this study. First, it was ascertained that based on the regression equation, ACT scores explained most of the variation in the ACT-ETS MFT Business Administration scores. This finding partially proved the statement that "students who do well on one standardized test, tend to do better on other standardized tests" (Bagamery, Lasik & Nixon, 2005, p. 59). A study by Bagamery, Lasik & Nixon indicated that students that have taken the standardized admission exam despite their scores will do better on any other standardized test versus the students that have not taken the ACT or the SAT.

Secondly, the researcher found that students' cumulative GPAs explained a very small variation, meaning that the ETS MFT performance can be explained by factors other than the cumulative GPA. This finding was partially consistent with some studies which found undergraduate cumulative GPAs to be less significant predictors in the ETS MFT performance (Bagamery, Lasik & Nixon, 2005, p. 58) and inconsistent with those that that found undergraduate cumulative GPAs to be the most

significant factors in predicting student's ETS MFT scores. However, it is worthy to note that the previous findings on the ETS MFT performance did not have as mild GPA results as the current study.

Thirdly, the term GPA explained an even smaller portion of the variation in the ACT-TGPA regression than the Cumulative Grade Point Average. Additionally, the researcher investigated the variance in the ETS-ACT & CUGPA and in the ETS-ACT & TGPA. The combination of scores and GPAs did not increase the predictability level therefore making the ACT scores themselves the best predictor of the ETS MFAT performance. In a study by Bycio & Allen (2007), GPAs provided more explanation in terms of variance on the ETS MFT performance than the current study. However, despite the higher variances in the Bycio & Allen research, the GPAs were still not the main factor that could explain students' performance on the ETS MFT exam, therefore making the results of this study somewhat aligned with the previous findings.

Discussion

Results of this research demonstrate that the ACT score can be a valid predictor of the ETS MFT Business Administration exam performance at the Lindenwood University School of Business and Entrepreneurship. Findings of this study reveal that the Cumulative Grade Point Average and Term Grade Point average cannot reliably predict students' performance on the ETS MFT exam. However, the results and finding of this study regard Lindenwood University School of Business

and Entrepreneurship only and should not be generalized for institutions other than the one listed above.

As research shows, students who have taken a standardized test are more likely to do better on the ETS MFT exam than students who have not taken any standardized test at all, such as transfer and international students, deserve further exploration. Based on the Bagamery, Lasik, and Nixon study of 169 students, previous participation of students in any standardized testing meant a better performance on the ETS MFT exam (2005). Further study is also suggested in terms of factors that attribute to students' performance on the ETS MFT Business Administration exam other than the ones within the study such as major, time, gender, and environmental factors. It is important to take into consideration what time of the year and day students are being tested. According to the University of Michigan warmer weather has a positive effect on health and disposition (Serwach, 2004). Therefore students may perform better on the test for the duration of spring and summer rather than fall and winter seasons. Student scores may also vary significantly due to stress, illness or low energy level associated with the season. According to Black and Duhon (2003), there was a significant correlation between students majoring in Business, gender and their ETS MFT score. Students majoring in Management performed worse on the ETS MFT exam in comparison to other majors. Male students' performance on the ETS MFT exam was relatively higher in comparison to female students. Although Bagamery, Lasik, and Nixon (2005) did not

find majors to be a determinant factor of students ETS MFT performance, it is advisable to consider these factors in further research.

It is suggested to further extend the study by adding the additional ETS MFT scores and perhaps revise the perceived significance of certain variables. It is important to understand the newness of the ETS MFT at the School of Business and Entrepreneurship. Data used in this study came from the first year and a half of the ETS MFT full administration at Lindenwood University. Each additional semester brings more ETS MFT scores that, when examined, could possibly improve the predictability of GPAs on the ETS MFT performance or provide more supplementary information. Further study is also suggested to possibly examine the correlation between students' ETS MFT subscores with grades in core courses or perhaps with quantitative courses like Microeconomics and qualitative courses such as Principles of Marketing. These findings could help in identification of deficiencies and topics that need immediate attention.

Results of this research might be strengthened if the sample size was considerably larger and if more than one school was explored throughout the study. Results might have been also strengthened had the international students been used in this research although, according to Terry, Mills, and Sollosy (2008), there was no correlation between the international student status and ETS MFT performance. Nevertheless, it would be interesting to perhaps incorporate international students' TOEFL scores to examine potential predictability of performance on the ETS MFT exam.

Recommendations

It is highly recommended for the Lindenwood University School of Business and Entrepreneurship to continue collecting students' ACT scores when being admitted to the university. Based on the results of the study, identifying which undergraduate business students were admitted to the university with low ACT scores would be helpful in detecting students that will have a difficult time performing on the ETS MFAT. It is recommended for the School of Business and Entrepreneurship to ensure that all students are equipped with the proper tools and or knowledge to perform well on the ETS MFT test. Faculty that teaches at the School of Business and Entrepreneurship, especially those that teach core and capstone courses, should become familiar with the format of the test. Appropriate assistance or supplemental programs would be ideal. The School of Business and Entrepreneurship should perhaps offer an additional class or incorporate some preparatory work for the test into the capstone class if time permits.

Conducting the department analysis of the ETS MFT results by subsection to strengthen the curriculum is highly recommended. Using a similar format for regular testing to ensure students' familiarity with the design of the test would be advisable. Similarly to other institutions, asking the BA 430 Management Policy faculty to take the ETS MFT exam to understand which topics students are being tested over could be very valuable to the SB&E.

It is recommended for the School of Business and Entrepreneurship to share the findings of this study throughout the school of business and other schools on campus.

The results of the study might be helpful to other schools at Lindenwood University that are possibly looking into using the ETS MFT exam in their fields of study.

Considerably low scores of the SB&E students on the ETS MFT as well as in certain areas of the test against the national norms suggest that appropriate changes to the curricula should be made. The School of Business and Entrepreneurship should interpret the data more precisely in terms of validity and reliability, and adjust the curriculum for future program and course improvements.

Summary

The standardized admission tests, although not ideal, are valid predictors of college readiness. The summative outcomes assessments such as the ETS MFT are not perfect either, however, they do provide a quick benchmark of student's business knowledge against the national norm. This research, as indicated in previous studies on the ETS MFT, found the performance on the Major Field Test in Business Administration to be highly correlated with the ACT scores rather than students' GPAs. It is therefore difficult to conclude whether the ETS MFT exam is the best tool to measure student's knowledge in a business field of study. Any program implementations based on the results of this research should be consequently addressed with great caution.

References

ACT Inc. (2010). *Using your ACT results*. Iowa City, IA: ACT.

Adelman, C. (2004). *Principal indicators of student academic histories in postsecondary education, 1972-2000*. Washington, DC: U.S. Department of Education, Institute of Education Sciences.

American College Test [ACT]. (2009). ACT overview. Retrieved March 30, 2009, from ACT Web site, http://www.act.org/aboutact/index.html

American College Test [ACT]. (2009). America's most widely accepted college entrance exam. Retrieved September 29, 2009, from ACT Web site, http://www.act.org/aap/

American College Test [ACT]. Facts about the ACT. Retrieved September 29, 2009, from ACT Web site, http://www.act.org/news/aapfacts.html

Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2008). Testing for significance. *Modern business statistics* (pp. 588-598). Mason, OH: South-Western College Pub.

Arguments For and Against Standardized Testing in College Admissions. (2009, February 3). Retrieved April 12, 2009, from http://www.ecampustours.com/collegeplanning/testtakingsatact/argumentsforandagainststandardizedtesting.htm

Association of Collegiate Business Schools and Programs [ACBSP]. (2007). The accreditation process for associate degree institutions. Retrieved April 6, 2010, from ACBSP Web site, www.acbsp.org/download.php?sid=13

Association of Collegiate Business Schools and Programs [ACBSP]. (2008). The process for obtaining the accreditation. Retrieved October 1, 2009, from ACBSP Web site, http://74.6.239.67/search/cache?ei=UTF-8&p=ACBSP+is+a+specialized+accrediting+organization+that+reviews+the+quality+and+integrity&fr=yfp-t-501&u=www.acbsp.org/download.php%3Fsid%3D26&w=acbsp+specialized+accrediting+accreditation+accredited+organization+organizations+reviews+review+quality+integrity&d=SrbQat29Tftd&icp=1&.intl=us&sig=QExXnNlHmuEjApR1fRUpNQ--

Association of Collegiate Business Schools and Programs [ACBSP]. (2009). ACBSP standards and criteria for demonstrating excellence in baccalaureate/graduate degree schools and programs. Retrieved February 3, 2009 from ACBSP Web site, http://www.acbsp.org/p/cm/ld/fid=80

Association to Advance Collegiate Schools of Business [AACSB]. (2009) Accreditation. Retrieved April 10, 2009, from AACSB Web site, http://www.aacsb.edu/accreditation/

Bagamery, B. D., Lasik, J. J., & Nixon, D. R. (2005, September). Determinants of success on the ETS Major Field Exam for students in an undergraduate multisite regional university business program. *Journal of Education for Business*, 55-63.

Barton, M. L. (2008). *A study of the response to accountability and standardized testing in a state university system: Predictive models, gatekeeping strategies,*

and intervention in teacher education. (Doctoral dissertation, 2008). Retrieved January 28, 2010, from ProQuest LLC (3315409).

Beecher, M., & Fischer, L. (1999). High school courses and scores as predictors of college success. *The Journal of College Admissions*, 163, 5-9.

Black, H. T., & Duhon, D. L. (2003). Evaluating and improving student achievement in business programs: The effective use of standardized assessment tests. *Journal of Education for Business*, 79 (2), 90-98.

Bluman, A. G. (2008). *Elementary statistics: a step by step approach* (4th ed.). New York: McGraw Hill.

Boyle, K. (1986). Predicting the success of minority students in a baccalaureate nursing program. *Journal of Nursing Education*, 25 (5), 186-192.

Bridgeman, B., Burton, N., & Pollack, J. (2008). Predicting Grades in College Courses. (Cover story). *Journal of College Admission*, (199), 19-25. Retrieved from Academic Search Premier database.

Bush, H. F., Duncan, F. H., Sexton, E. A., & West, C. T. (2008). Using the major field test-business as an assessment tool and impetus for program improvement: Fifteen years of experience at Virginia Military Institute. *Journal of College Teaching & Learning*, *5*(2), 75-88. Retrieved January 2, 2010

Bycio, P., & Allen, J. S. (1997). An evaluation of the educational testing service major field achievement test in business. *Journal of Accounting Education*, *15*(4), 503-515.

Bycio, P., & Allen, J. S. (2007, March). Factors associated with performance on the educational testing service (ETS) Major Field Achievement Test in Business (ETS MFT-B). *Journal of Education for Business*, *82*(4), 196-201. Retrieved April 7, 2009, from MasterFILE Premier database.

Carnevale, A. P., & Rose, S. J. (2004). Socioeconomic status, race/ethnicity, and selective college admissions. In R. D. Kahlenberg (Ed.), *America's Untapped Resource: Low-Income Students in Higher Education*. Century Foundation Press. Retrieved October 6, 2009, from http://www.tcf.org/Publications/Education/carnrose.pdf

Carroll, C. A. (2004, September 1). ACT scores show a slight increase. *Education week*. Retrieved April 13, 2009, from http://www.edweek.org/login.html?source=http://www.edweek.org/ew/articles/2004/09/01/01scores.h24.html&destination=http://www.edweek.org/ew/articles/2004/09/01/01scores.h24.html&levelId=2100

Cashill, J. A. (2007, August). AQIP redefines the American academy. *Ingram's*, 58-60.

Cassady, J. C. (2001, June). Self-reported GPA and SAT scores. *Practical Assessment Research and Evaluation*. Retrieved January 28, 2010, from ERIC Digest (ED458216).

College Board. (2010). *About the SAT Reasoning test*. Retrieved January 24, 2010

College Board. (2009). *Tuition increases continue to slow at public colleges*. Retrieved April 19, 2009, from College Board Web site, http://www.collegeboard.com/press/releases/150634.html

Damast, A. (2009, September 24). Business: Big major on campus. *BusinessWeek*. Retrieved January 7, 2010

Davis, H. (2007, January 2). Most popular majors. *The most popular journal*. Retrieved January 7, 2010

Delisio, E. R. (2007, May 18). *Beyond standardized testing: District focuses on assessing the whole child*. Retrieved May 1, 2009, from http://www.educationworld.com/a_admin/admin/admin490.shtml

Drew University (n.d). SAT/ACT optional admissions consideration. Retrieved September 20, 2009, from http://www.drew.edu/cla/admissions.aspx?id=798&#satoptional

Educational Testing Services Major Field Achievement Test [ETS MFAT]. (2009). *Major Field Tests overview*. Retrieved March 11, 2009, from ETS Web site, http://www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vgnextoid=f119af5e44df4010VgnVCM10000022f95190RCRD&vgnextchannel=86f346f1674f4010VgnVCM10000022f95190RCRD

Edwards, N. T. (2006). The historical and social foundations of standardized testing: In search of a balance between learning and evaluation. *Shiken: JALT Testing and Evaluation*, *10*(1), 8-16. Retrieved April 19, 2009, http://jalt.org/test/edw_1.htm

Evans, J. R. (2007). *Statistics, data analysis, and decision modeling* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Family Educational Rights and Privacy Act [FERPA]. (2009). *General*. Retrieved May 9, 2009, from FERPA Web site, http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html

Fearing, A. (1989). *What research says about the effect of academic enrichment on the success rate of baccalaureate students* (Thesis). Retrieved April 7, 2009, from ERIC (ED308738).

Focareto, N. C. (2006). *Private vs. non-private: A correlational study between ACT and GPA* (Master's thesis). Retrieved April 7, 2009, http://www.ohiolink.edu/etd/send-pdf.cgi/Focareto%20Nicole.pdf?acc_num=marietta1147440821

Gay, L. R., Mills G. E., & Airasian P. W. (2000) *Educational Research: Competencies for analysis and applications* (9th ed.). New Jersey: Prentice-Hall, Inc, 321-27.

Grove, W. A., & Wasserman, T. (2004). The life-cycle pattern of collegiate GPA: Longitudinal cohort analysis and grade inflation. *Journal of Economic Education*, *35*(2), 162-164. Retrieved from http://www.tcf.org/Publications/Education/carnrose.pdf

Harding University, College of Business. (2005). *Year in review 2004-2005*. Retrieved April 12, 2009, http://www.harding.edu/business/review.html

Howell, C., & Heshizer, B. (2005, November). AACSB Accreditation and Success on the Uniform CPA Exam. *Journal of Applied Business and Economics*, 9-17.

Jaschik, S. (2007, February 23). *A defense of standardized tests*. Retrieved October 14, 2009, from http://www.insidehighered.com/news/2007/02/23/tests

Jonas, P. M., Weimer, D., & Herzer, K. (2001). *Comparison of traditional and nontraditional undergraduate business programs*. Retrieved April 12, 2009, from http://www.the-best-colleges.com/Comparison-of-Traditional-and-Nontraditional-Undergraduate-Business-Program.html

Jones, R. C. (2003). *Global accreditation trends*. Retrieved September 14, 2009, from http://www.worldexpertise.com/global_accreditation_trends.htm

Lane, D. (2001). *Hyperstat, Second Edition* (2nd ed.). Cincinnati: Atomic Dog Publishing.

Lasik, J. J., Nixon, D. R., & Bagamery, B. D. (2005). Determinants of success on the ETS business Major Field Exam for students in an undergraduate multisided regional university business program [Electronic Version]. *Journal of Education for Business*, 9, 55-63.

Lavelle, L., Gloeckler, G., & Porter, J. (2007, March 19). Does your b-school make the grade? *BusinessWeek*, 68-73

Lebedinskaya, M. (2006, August 15). FOXNews.com - What Should I Study in College? Hot Majors, Hot Jobs - College Life | Guide | Universities . *Breaking News | Latest News | Current News - FOXNews.com*. Retrieved April 5, 2010, from http://www.foxnews.com/story/0,2933

Leech, N. L., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for intermediate statistics* (2nd ed., pp. 49-50). Mahwah, NJ: Lawrence Erlbaum Associates.

Lindenwood University Athletics. (2010). About Lindenwood Athletics. *Lindenwood University Athletics*. Retrieved April 9, 2010, from http://www.lindenwoodlions.com/sports/2009/7/6/aboutLU.aspx?tab=aboutluathletics

Lindenwood University (2009). ACBSP preliminary questionnaire. Lindenwood University, School of Business and Entrepreneurship.

Lindenwood University (2009a). About Lindenwood University. Retrieved September 20, 2009, from http://www.lindenwood.edu/about/

Lindenwood University (2009b). About the School of Business and Entrepreneurship. Retrieved September 20, 2009, from http://www.lindenwood.edu/business/about.cfm

Lindenwood University Undergraduate Catalog 2009-2010. (2009c). Undergraduate Admissions (pp. 8-10).

Malloy, T. (1997). Basic Probability. *Department of Psychology. The University of Utah*. Retrieved April 9, 2010, from http://www.psych.utah.edu/aoce/web-text/Central_Tendency/

Marsh, C., Vandehey, M., & Diekhoff, G. (2008). A Comparison of an Introductory Course to SAT/ACT Scores in Predicting Student Performance. *JGE: The Journal of General Education*, *57*(4), 244-255. Retrieved from Academic Search Premier database.

May, R., Falconer, V., & Nowka, H. (2007). Relationship of economics and business core course grades and ratings. In E. M. McNertney (Ed.), *Southwestern Economic Review* (Vol. 33, pp. 33-34). Fort Worth: Texas Christian University.

Mirchandani, D., Lynch, R., & Hamilton, D. (2001, September). Using the ETS Major Field Test in Business: Implications for Assessment. *Journal of Education for Business*, *77*(1), 51. Retrieved April 7, 2009, from MasterFILE Premier database.

Mitchell, R. (2006, February 15). A guide to standardized testing: the nature of assessment. Retrieved October 21, 2009, from http://www.centerforpubliceducation.org/site/apps/nlnet/content3.aspx?c=lvIXIiN0JwE&b=5111771&content_id=%7BE4D00C3D-BAD8-49AE-977B-C8A1A13026B8%7D&notoc=1

Moffatt, G. (1993). The Validity of the SAT as a Predictor of Grade Point Average for Nontraditional College Students. Retrieved from ERIC database.

Moore, J. C. (2008, June 2). Business most popular major in U.S. colleges. *Ventura County Star*. Retrieved January 7, 2010

Munilla, L. S., Bleicken, L.M., Miles, M. P. (1998). Social responsibility and AACSB accreditation standards: How ISO 14000 can integrate environmental issues into the marketing curriculum. *Marketing Education Review*, 8 (3), 57-65.

National Association for College Admission Counseling [NACAC]. (2009). *Preparations for college admission exams*. Retrieved January 10, 2010, from

http://www.nacacnet.org/PublicationsResources/Research/Documents/TestPrepDiscussionPaper.pdf

National Association of Scholars [NAS]. (2002, December 18).*Today's college students and yesteryear's high school grads: A comparison of general cultural knowledge* Retrieved April 20, 2009, http://www.nas.org/polReports.cfm?Doc_Id=85

National Center for Fair & Open Testing. (2003). *Accredited Institutions (Alphabetical) That Do Not Use SAT I or ACT Scores for Admitting Substantial Numbers of First-Year Students to Bachelor Degree Programs*. Retrieved January 9, 2010, from http://www.nldline.com/sat_and_act_free_schools.htm

Noble, J. (n.d.). *The effects of using ACT composite score and high school average on college admission decision for racial/ethic groups*. Thesis, Retrieved January 2, 2010

North Carolina Department of Instruction. (2008). *The North Carolina 2008 SAT report*. Retrieved October 18, 2009, from http://74.6.146.127/search/cache?ei=UTF-8&p=average+increase+in+ACT%2FSAT+scores+from+the+first+time+to+second+time&fr=yfp-t-701&u=www.dpi.state.nc.us/docs/accountability/reporting/sat/2008/satreport2

Peterson, B., & Neill, M. (1999). Alternatives to standardized tests. *Rethinking School Online*, *13*, 3. Retrieved September 14, 2009, from http://www.rethinkingschools.org/archive/13_03/assess.shtml

Pike, G. R. (2000). Assessment measures: The Major Field Tests. *Assessment Update*, *12*(1), 12-13.

Popham, W. J. (2006). Branded by a test [Electronic Version]. *Educational Leadership,* 63.7, 86-87. Retrieved April 10, 2009, from http://www.ascd.org/publications/educational_leadership/apr06/vol63/num07/Branded_By_a_Test.aspx.

Popham, W. J. 2001). *The truth about testing: An educator's call to action* (pp. 1-5). Alexandria, VA: Association for Supervision and Curriculum Develop.

Radford University. (2009). Psych. Research I Guide to SPSS. Retrieved October 6, 2009, from http://www.runet.edu/~jebucy/spssguide11_0.pdf

Ray, S. (2008). Standardized Tests as Measurements of Achievement: Does the High School Assessment Program (HSAP) Measure Up? *Online Submission*, Retrieved from ERIC database.

Reilly, F. K., & Stettler, H. F. (1972). Factors influencing sucess on the CPA examination. *Journal of Accounting Research*, 308-321. Retrieved January 2, 2010

Research Randomizer. (2009). *Random Numbers*. Retrieved April 12, 2009, from the Research Randomizer Web Site, http://www.randomizer.org/form.htm

Salkind, N. J. (2009). *Statistics for people who (think they) hate statistics*. Thousand Oaks, California: Sage Publications (CA).

Samuels, C. (2008). ACT Test-Prep Backfiring in Chicago, Study Warns. *Education Week*, *27*(39), 6-7. Retrieved from Academic Search Premier database.

Schachter, R. (2008, December). Remedial nation. *University Business*, 52-56. Retrieved May 1, 2009, http://www.universitybusiness.com/viewarticle.aspx?articleid=1180

Schultz, B., & Rakow, E. A. (1999, November). *A validity study comparing the ACT and the HOBET entrance examinations for health-care students.* Paper presented at the Annual Meeting of the Mid-South Educational Research Association, Point Clear, AL.

Serwach, J. (2004, October 25). Warm weather boosts mood, broadens the mind. *The University Record Online*. Retrieved January 31, 2010

Sewell, E. (2004). Grade Dropping: An emperical analysis. *Journal of Economic Education*, 24-32. Retrieved January 9, 2010

Siegert, K. O. (2008, March). Executive education: Predicting student success in executive MBA programs. *Journal of Education for Business*, 221-226.

Stoloff, M. L., & Feeney, K. J. (2002). The Major Field Test as an assessment tool for an undergraduate psychology program. *Teaching of Psychology*, *29*(2), 93.

Strong American Schools. (2008, August). *The test of seriousness: students achievement and performance-based compensation*.

Stumpf, H., & Stanley, J. C. (2002). Group data on high school grade point averages and scores on academic aptitude tests as predictors of institutional graduation rates. *Educational & Psychological Measurement*, *62*(6).

Sturgeon, T. V. (1994). Creating a standardized, systematic, and testable rating framework for competitive admission. *The Journal of College Admission*, 145, 6-13.

Taylor, J. M. (2006). *The effects of a computerized-algebra program on mathematics achievement of college and university freshmen enrolled in a developmental mathematics course*. (Doctoral dissertation, Texas State University San Marcos, San Marcos, TX. 2006). Retrieved April 7, 2009, from ERIC (EJ816612).

Terry, N., Mills, L., Sollosy, M. (2008). Student grade motivation as a determinant of performance on the business major field ETS exam. *Journal of College Teaching & Learning*, *5*(7), 27-30. Retrieved on October 21, 2009, from http://www.cluteinstitute-onlinejournals.com/PDFs/1045.pdf

Test of English as a Foreign Language. (n.d.). Tests Directory. Retrieved May 9, 2009, from ETS Web site, http://www.ets.org/portal/site/ets/menuitem.fab2360b1645a1de9b3a0779f1751509/?vgnextoid=69c0197a484f4010VgnVCM10000022f95190RCRD

Testing and Evaluation. Complete Human Diseases and Conditions. Gale Group. 2008. Retrieved October 1, 2009, from Encyclopedia.com Web site, http://www.encyclopedia.com/doc/1G2-3497700386.html

Thornell, J. & Jones, R. (1986, November). *The college admission equation: ACT scores versus secondary school grade performance*. Paper presented at the Annual Meeting of the Mid-South educational Research Association, Memphis, TN.

Three Rivers Systems. (2008). *CAMS enterprise modules*. Retrieved from http://www.threerivers-cams.com/ModulesandPortals/tabid/58/Default.aspx

Timms 12th grade report: ACT Assessment data: Q and A. (1998, February 24). Retrieved April 13, 2009 from ACT Web site, http://www.act.org/news/releases/1998/02-24-qa.html

Townsend, M. M., & Nack, D. L. (2007). *Are High School GPA, Rank in High School Graduating Class or ACT scores adequate predictors of college freshmen success?* (Doctoral dissertation, 2007). Retrieved January 27, 2010, from ProQuest LLC (3372344).

Truell, A. D., & Woosley, S. (2008). Admission Criteria and Other Variables as Predictors of Business Student Graduation. *College Student Journal*, *42*(2), 348-356.

University of Iowa News Release. (2009, August 21). *ACT marks 50th anniversary of founding at Old Capitol on UI campus*. Retrieved January 9, 2010

Wake Forest University (2009). Admissions. Retrieved December 7, 2009, from http://admissions.wfu.edu/apply/sat.php

West Virginia Department of Education. (n.d.). *Mathematics ACT Guide*. Retrieved October 14, 2009, from http://74.6.146.127/search/cache?ei=UTF-

8&p=High+stakes+tests+are+nothing+new.++The+Imperial+bureaucracy+of+China+was+the+first+example+of+a+civil+service+based+on+meritocracy%2C+determined+by+perform

Zeis, C., Weronska, A., & Fuller, R. (2009, January 1). Value-added program assessment using nationally standardized tests: insights into internal validity issues. *Journal of Academy of Business and Economics*, 1-17. Retrieved January 2, 2010

Zwick, R. (2007). College admission in twenty-first-century America: The role of grades, tests, and games of chance. *Harvard Educational Review*, *77*(4), 419-420. Retrieved October 21, 2009, from ProQuest (1419868901).

Appendices

Apendix A

Raw data for Spring Semester 2009

ID	TermGpa	UgCumGpa	ACT COMP	ETS MFT
1	3.13	2.54		121
2	1.00	1.73		124
3	0.80	1.81		124
4	2.29	2.79		124
5	2.60	2.35		126
6	3.40	3.18		126
7	1.50	1.68		126
8	2.17	2.23		127
9	2.81	3.09		127
10	2.67	2.41		127
11	2.81	2.95		128
12	2.75	2.66	17	129
13	2.60	2.16	15	129
14	2.40	2.27		131
15	3.00	2.74		131
16	2.00	2.43		132
17	3.33	3.30		133
18	2.17	2.74		133
19	1.50	2.23		133
20	2.25	2.35		134
21	2.42	2.54		134
22	3.17	2.90		134
23	3.25	3.09		135
24	1.92	2.70		135
25	3.50	2.73		135
26	2.25	2.33		135
27	2.75	2.45		136
28	3.60	3.45		136
29	2.00	2.43		136
30	1.00	2.03		136
31	2.80	2.42	19	137

32	1.80	2.16		137
33	2.40	2.52	24	137
34	2.00	2.16		137
35	3.40	3.13		138
36	3.25	2.98	17	138
37	2.85	3.05		138
38	1.50	2.50		138
39	2.85	3.08	16	138
40	2.00	2.43	19	138
41	2.13	3.10		138
42	2.43	2.47		138
43	2.20	2.49		139
44	2.75	2.65	18	139
45	3.40	3.11		139
46	2.40	2.87		139
47	2.00	2.35		139
48	3.00	3.33		139
49	2.60	2.84	19	139
50	3.14	2.91		139
51	3.17	3.14		139
52	2.00	2.17		140
53	3.17	3.40		140
54	2.20	2.31		140
55	2.00	2.48		140
56	3.14	3.32		140
57	3.47	3.03		141
58	1.33	2.11		141
59	2.40	2.70		141
60	2.20	2.25		141
61	2.25	3.12	21	141
62	4.00	3.34		142
63	3.40	3.48		142
64	2.25	2.43	23	142
65	2.80	2.71	17	142
66	1.50	2.66		142
67	3.60	3.41	22	142
68	2.83	3.16		142
69	3.00	2.45		143
70	3.71	3.35		143
71	3.83	3.77	21	143
72	3.50	3.41		143
73	2.00	2.61		143

74	2.20	2.29	23	144
75	2.50	2.50		144
76	3.20	2.57		144
77	3.00	3.16		144
78	2.80	3.08	21	144
79	3.57	3.76		144
80	1.80	2.11	21	144
81	2.20	2.43		145
82	2.83	2.74		145
83	3.75	3.31		145
84	1.15	2.03		146
85	3.53	3.39		147
86	1.20	2.19		147
87	2.17	2.66		147
88	3.50	2.96		147
89	3.33	3.70		148
90	3.40	3.25	23	148
91	2.93	3.02		148
92	3.00	2.77		149
93	3.20	3.31		149
94	3.00	3.00		150
95	4.00	3.61		150
96	2.75	3.34		150
97	2.83	3.04		150
98	3.75	3.69		151
99	1.60	2.21		151
100	2.69	2.85	22	151
101	3.08	3.17		151
102	3.50	3.12		152
103	3.75	3.13		152
104	2.25	3.09		152
105	3.50	2.96		152
106	2.80	2.96		152
107	3.75	3.24		152
108	3.60	3.78		152
109	3.33	3.35	21	152
110	2.50	2.92	20	153
111	2.83	3.23	23	153
112	2.75	2.98		153
113	2.45	2.79		154
114	2.60	3.34		155
115	3.60	3.80		155

116	2.80	3.19		155
117	3.25	3.16		155
118	4.00	3.97		156
119	1.79	2.18		156
120	3.83	3.48		156
121	2.00	2.15		156
122	2.75	3.14		157
123	3.00	2.96		157
124	3.20	3.04		159
125	3.60	2.97	24	159
126	4.00	3.86		159
127	3.00	2.28		159
128	3.50	3.61	29	160
129	3.00	3.02	22	160
130	3.08	3.08		161
131	1.80	2.55	21	161
132	2.40	3.16	26	161
133	4.00	3.98		162
134	3.60	3.17		162
135	2.80	2.89	24	162
136	3.80	3.86		163
137	2.25	2.16	17	164
138	2.00	2.36	22	164
139	4.00	3.94		164
140	3.33	3.31		165
141	3.50	3.81		166
142	2.00	2.68		166
143	4.00	3.96		167
144	3.67	3.64		167
145	4.00	3.71		167
146	3.50	3.37		167
147	3.75	3.92		170
148	3.00	3.00		170
149	3.75	3.77		172
150	3.00	3.61		173
151	3.20	2.80	32	176
152	1.33	2.09		177
153	3.50	3.60		182
154	4.00	3.68		184
155	3.00	2.70		188
156	2.25	2.54		
157	1.50	1.95		

158	1.75	2.85		
159	0.00	2.29		
160	3.25	3.78	19	
161	0.00	1.98		
162	2.93	3.39		
163	3.36	3.07		
164	3.00	3.00		
165	1.75	1.67	31	

Appendix B

Raw Data for Spring Semester 2008

ID	TermGpa	UgCumGpa	ACT COMP	ETS MFT
1	3.40	3.71		140
2	2.50	2.28		145
3	3.17	2.87		147
4	3.50	3.74		163
5	3.33	3.79		139
6	2.20	2.94		144
7	3.50	3.03		134
8	3.00	3.23		149
9	1.33	1.92		
10	3.17	3.11		153
11	2.60	2.61		143
12	2.83	2.14		167
13	3.83	3.05		154
14	3.20	3.24		160
15	2.25	2.52		138
16	2.80	2.96		160
17	3.00	3.46		152
18	2.40	2.75		140
19	0.80	2.00		
20	2.14	2.60		142
21	3.17	3.05		135
22	4.00	3.98		179
23	2.85	2.61		
24	3.25	3.04		138
25	1.75	2.65		159
26	3.12	2.62		147
27	3.75	3.48		128

28	2.75	3.26	21	130
29	3.44	2.91		147
30	3.50	3.03		140
31	2.00	1.96		146
32	2.50	2.92	20	144
33	1.83	2.30	21	144
34	2.17	2.38		149
35	3.40	3.50		166
36	2.00	2.31		137
37	4.00	4.00		167
38	2.46	2.82		135
39	1.00	2.16		131
40	2.28	2.32		
41	1.50	2.21		156
42	1.80	2.72	21	134
43	2.77	2.80		130
44	4.00	3.01		166
45	2.00	2.88		151
46	2.29	2.97	19	152
47	2.00	2.36		134
48	3.75	3.77		161
49	2.00	2.19		144
50	2.33	2.57		144
51	2.20	2.34		
52	2.25	2.37		129
53	3.33	3.33		162
54	2.50	3.02		
55	1.86	2.09		134
56	1.83	2.76		131
57	3.60	3.57		156
58	3.75	3.71		165
59	0.75	2.42		134
60	2.29	2.23		127
61	3.06	3.49		139
62	2.31	2.85		
63	3.00	2.57		137
64	2.00	2.03		150
65	2.20	2.60		148
66	1.67	2.54		144
67	4.00	4.00		183
68	3.00	2.96		151
69	1.83	2.43		139

70	2.00	2.64		162
71	3.20	2.85		142
72	4.00	3.84		169
73	2.33	2.50		130
74	3.80	3.90		152
75	3.60	3.44		134
76	3.33	3.24		155
77	2.20	2.13		148
78	3.00	2.81		149
79	3.50	3.22		171
80	3.77	3.43		149
81	0.74	2.04		135
82	1.50	2.79		147
83	2.86	3.36		
84	3.92	3.08		142
85	2.31	2.35		132
86	2.50	3.59		153
87	3.40	2.88		147
88	3.25	3.52		165
89	3.00	3.20		143
90	3.40	3.48		162
91	2.85	2.53		
92	1.00	2.03		140
93	2.40	2.88		147
94	2.88	2.77		132
95	2.50	3.36		149
96	3.60	3.14		138
97	3.08	3.25		
98	3.75	3.21		177
99	2.50	2.73		148
100	3.57	3.13		153
101	2.50	2.88	20	147
102	3.77	3.05		159
103	2.20	2.45	19	
104	1.50	1.81		126
105	2.25	2.63		127
106	3.00	3.44		
107	3.44	3.57		153
108	3.50	3.63		153
109	3.20	2.95		145
110	3.75	3.85		170
111	2.83	2.75		141

112	1.83	2.42	18	144
113	2.29	2.79		147
114	2.21	2.61		145
115	3.61	3.66		
116	2.71	3.23		136
117	3.00	3.08		138
118	2.83	2.64		140
119	1.75	2.11		143
120	2.75	2.51		136
121	3.00	2.41	15	137
122	1.17	1.98		124
123	3.25	3.09		146
124	4.00	3.19		152
125	3.00	2.65		143
126	2.40	2.92		144
127	2.60	2.80	20	143
128	2.25	2.79		
129	3.08	3.59		164
120	3.31	2.77		130
121	2.36	2.36		130
122	1.25	2.15		
123	2.33	3.01		140
124	3.00	2.58		140
125	1.60	2.29		140
126	2.25	2.30		
127	3.06	2.83		149
128	2.25	2.90		142
129	2.92	3.00		150
130	2.62	3.18		143
131	2.25	2.20	24	146
132	3.60	2.98		171
133	3.00	2.92		156
134	2.06	2.14		132
135	3.06	2.75		144
136	2.00	2.40		
137	3.00	3.35		182
138	2.00	2.11		127
139	2.57	2.44		135
140	3.25	3.28		163
141	3.67	3.70		
142	2.16	2.51	17	139
143	4.00	3.79	29	171

144	3.75	3.57		
145	3.14	3.44		135
146	4.00	3.87		157
147	2.60	2.63		148

Appendix C

Raw Data for Fall Semester 2009

ID	TermGpa	UgCumGpa	ACT COMP	ETS MFT
1	2.17	2.27		140
2	2.50	2.95		163
3	3.47	2.80		146
4	2.40	2.29	21	149
5	4.00	3.12		149
6	2.50	2.24		139
7	2.50	3.10		162
8	1.67	1.96		126
9	3.00	2.82		135
10	3.33	3.21	25	169
11	2.83	3.46		146
12	3.71	3.49	28	160
13	2.83	2.51		159
14	2.50	2.90	20	141
15	2.00	2.51		153
16	3.00	2.95		159
17	3.75	3.87		170
18	1.88	1.95		155
19	2.75	3.35		147
20	2.20	2.23		126
21	2.86	3.23		
22	3.75	3.65		157
23	3.19	3.08		160
24	4.00	3.82		166
25	1.50	2.25	19	153
26	2.58	2.86		
27	2.23	2.34		
28	2.50	3.12		152
29	1.77	2.19		138
30	1.00	1.40		
31	2.00	2.72	22	159

32	4.00	3.84	24	154
33	2.50	2.90		
34	3.60	3.43		152
35	1.83	2.26		
36	2.88	2.84	22	132
37	3.50	2.80		143
38	3.00	3.11		162
39	3.00	2.96	22	157
40	2.20	3.18		
41	2.37	2.48		
42	2.50	2.03		136
43	2.33	2.20		138
44	2.80	2.98		152
45	2.50	2.34		
46	3.43	3.27		162
47	2.00	2.54	20	138
48	4.00	4.00		165
49	2.50	2.53		138
50	2.40	2.74		136
51	3.60	3.30	25	153
52	4.00	3.74		151
53	4.00	4.00		170
54	3.40	3.15		165
55	1.80	1.61		127
56	3.00	2.77		
57	3.40	2.85		154
58	4.00	3.92		184
59	2.75	3.07	21	142
60	3.25	2.77		
61	2.50	3.07		
62	2.57	2.41		134
63	2.69	2.60	19	143
64	4.00	3.95		163
65	2.69	2.63	20	143
66	3.40	3.30		160
67	2.31	2.19		133
68	2.56	2.50		138
69	4.00	3.91		160
70	2.25	2.52		148
71	3.75	3.83		157
72	3.40	3.70		153
73	0.75	2.41		128

74	1.67	1.81		
75	3.00	2.37		132
76	4.00	3.90		
77	2.29	2.10		128
78	3.25	3.00		155
79	2.80	2.82		146
80	3.81	3.65		144
81	3.25	3.80		161
82	2.67	3.29		152
83	3.65	3.33		145
84	1.08	2.14		127
85	2.33	2.70	18	137
86	3.33	3.00	21	149
87	3.50	3.23		160
88	1.80	2.32		150
89	2.25	2.74		139
90	3.25	3.76		

Appendix D

Data used for the study

Student ID	Major GPA	Cumulative GPA	ACT COMP	ETS MFT
1	2.75	3.26	21	130
2	2.50	2.92	20	144
3	1.83	2.30	21	144
4	1.80	2.72	21	134
5	2.29	2.97	19	152
6	2.50	2.88	20	147
7	1.83	2.42	18	144
8	3.00	2.41	15	137
9	2.60	2.80	20	143
10	2.25	2.20	24	146
11	2.16	2.51	17	139
12	4.00	3.79	29	171
13	2.40	2.29	21	149
14	3.33	3.21	25	169
15	3.71	3.49	28	160
16	2.50	2.90	20	141
17	1.50	2.25	19	153

18	2.00	2.72	22	159
19	4.00	3.84	24	154
20	2.88	2.84	22	132
21	3.00	2.96	22	157
22	2.00	2.54	20	138
23	3.60	3.30	25	153
24	2.75	3.07	21	142
25	2.69	2.60	19	143
26	2.69	2.63	20	143
27	2.33	2.70	18	137
28	3.33	3.00	21	149
29	2.75	2.66	17	129
30	2.60	2.16	15	129
31	2.80	2.42	19	137
32	2.40	2.52	24	137
33	3.25	2.98	17	138
34	2.85	3.08	16	138
35	2.00	2.43	19	138
36	2.75	2.65	18	139
37	2.60	2.84	19	139
38	2.25	3.12	21	141
39	2.25	2.43	23	142
40	2.80	2.71	17	142
41	3.60	3.41	22	142
42	3.83	3.77	21	143
43	2.20	2.29	23	144
44	2.80	3.08	21	144
45	1.80	2.11	21	144
46	3.40	3.25	23	148
47	2.69	2.85	22	151
48	3.33	3.35	21	152
49	2.50	2.92	20	153
50	2.83	3.23	23	153
51	3.60	2.97	24	159
52	3.50	3.61	29	160
53	3.00	3.02	22	160
54	1.80	2.55	21	161
55	2.40	3.16	26	161
56	2.80	2.89	24	162

57	2.25	2.16	17	164
58	2.00	2.36	22	164
59	3.20	2.80	32	176

Appendix E

The significance of the Correlation Coefficient for CUGPA

H_0: $\rho=0$

H_1: $\rho\neq0$

$t=r\sqrt{n-2}/\sqrt{1-r^2}$

$t=.285\sqrt{59-2}/\sqrt{1-.285^2}$

$t=.285\sqrt{57}/\sqrt{.919}$

$t=.285\sqrt{62.02}$

$t=2.244$

Appendix F

The significance of the correlation coefficient for TGPA

$t=r\sqrt{n-2}/\sqrt{1- r^2}$

$t=.257\sqrt{59-2}/\sqrt{1-.2572}$

$t=.257\sqrt{57}/\sqrt{.934}$

$t=.257\sqrt{61.03}$

$t=2.004$

Vitae

Karolina Lapinska-Schneider, a candidate for Doctor of Education in Instructional Leadership, currently serves as an accreditation consultant to School of Accelerated Degree Programs (LCIE) at Lindenwood University, St. Charles, MO. She holds a Master of Business Administration degree with emphasis on Public Management, Bachelor of Arts in International Business and International Studies from Lindenwood University.