

# **Performance on the Major Field Test in Business: The Explanatory Power of SAT Scores and Gender**

**David F. Bean**

Iona College

**Richard A. Bernardi**

Roger Williams University

The costs of higher education are increasing at disturbing rates (Doost, 1998), and universities and colleges expect this trend to continue for the foreseeable future. One difficulty is that colleges and universities sell their major product (i.e., education) at a price substantially below the cost of production (Flower, 1998). Student and parental resistance, as well as societal pressure, compel colleges and universities to seek additional revenue sources to offset spiraling costs. Consequently, funding from external sources (e.g., government, alumni, corporations, etc.) is a reality of life in today's educational environment (Milano, 2000).

Schmidt (1999) suggests that the days of viewing higher education as an innate good deserving of public moneys, with or without measurable outcomes, are over. For instance, the state of

South Carolina links funding to performance measures. The reality is that Assessment is here to stay, today as a condition of doing business@ (Marchese, 1999, p. 4). This research examines the association between Educational Testing Services= Major Fields Test in business (MFT), which is a widely used assessment and outcome measure, and scholastic aptitude as measured by their SAT Math and Verbal scores and gender.

### **Theory development**

Many institutions continue to have difficulties evaluating academic achievement and growth. As a result of this Aneed voiced by undergraduate institutions for valid, reliable measures of the outcomes

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\*The lead and second authors are involved in several research projects and alternate lead author responsibilities; both authors contribute equally to their published work.

of instruction in the disciplines,@ the Educational Testing Service (ETS,1997, p. 1) and the Graduate Record Examination (GRE) Board developed the Major Field Tests. For many institutions, using

the MFT in business is one way to establish a measure of academic quality and comparability to other institutions.

Because of the need to generate outcome measures for a variety of internal and external users, many institutions use the MFT and consider increasing MFT scores to be prima facie evidence of increasing institutional quality. The importance of assessment to accrediting bodies (i.e., American Assembly of Collegiate Schools of Business [AACSB] and the Accreditation of College Business Schools and Programs [ACBSP]) is evidenced by the National Center for Postsecondary Improvement's survey (1999), which reports that the overriding motivation for student-assessments is to prepare self-studies for accreditation purposes. In particular, the ACBSP (2001) stressed the need for at least one nationally normed measure with respect to outcomes in their accreditation standards that:

[P]rovide results of current levels and trends in key measures and/or indicators of student performance, such as nationally normed or locally prepared tests, portfolios and other end of program analyses, demonstrating that there has been improvement over time, and compare with comparable schools.

This underscores the need for tests such as the MFT, which are easy to obtain and administer and that are flexible enough to provide analytical data regarding the individual disciplines. Although self-assessment instruments are a natural response to address outcome measurement, they may be characterized/viewed as self-serving by impartial reviewers. The unique character of institutionally designed self-assessment instruments make it difficult/impossible to make comparisons among educational institutions.

SAT scores have been shown to be associated with higher grades from high school through college. Bernardi and Kelting (1997) obtained an  $R^2$  of .97 when they mean grade in each range was regressed against the SAT Verbal scores. The same type of regression yielded an  $R^2$  of .98 for SAT Math scores. Bernardi and Bean (1999) found SAT scores were influential in student performance in Intermediate Accounting. SAT scores have historically been associated with performance on the CPA examination (National Association of State Boards of Accountancy [NASBA], 1994). Subjects with SAT Math (Verbal) scores of 600 or more were three times (twice) as likely to pass all four parts of the CPA examination (NASBA, 1994). Our first two research questions address these potential relationships.

RQ1: Does student performance on the Major Field Test in Business associate with their SAT Verbal scores?

RQ2: Does student performance on the Major Field Test in Business associate with their SAT Math scores?

Examinations of the effect of gender on performance report mixed results. While Doran, *et al.* (1991) find that males outperform female students, Tyson (1989) finds that females outperform male students. Indeed, research finds that gender does not influence performance on examinations (Fogarty, *et al.*, 1998). Because of these mixed results, gender became a separate research question in the analysis.

RQ3: Does student performance on the Major Field Test in Business associate with their gender?

### **Subjects and measures**

The sample includes 396 graduating seniors (198 women and 198 men) in the school of business at a medium size regional campus of a large state university. SAT scores came from: the college=s

admissions office, previous colleges, high schools, the College Boards, or the individual student. Control was maintained by having students provide a copy of their original SAT score sheet. In all cases, this was done with the students' permission. Data for SAT and MFT scores are shown in Table 1.

The range of score on the MFT in Business is between 120 and 200. The Comparative Data Guide (ETS, 1997, p. 14) indicates a mean score of 155.1 and median score of 155.0 for a sample of 44,686 business students. Our sample had a mean of 155.3 and a median of 154.9. The percent of questions from each business discipline shown in the descriptive booklet for the Major Field Tests (ETS, 1997, p. 58) are 17% each for accounting, economics, management, quantitative and business analysis, and legal and social environment; 12% for finance, marketing; and 8% for international issues.

### **Data analysis**

Pearson Correlation Coefficients are reported in Table 2. The data indicate that all of the variables were significantly correlated with the dependent variable MFT Score ( $p < .005$ ). There was also a significant correlation between Math and Verbal SAT scores ( $p = .001$ ). However, there was no significant correlation between

Gender and Math SAT score ( $p=.763$ ) and Gender and Verbal SAT score ( $p=.616$ ).

Regression model results are reported in Table 3. The overall model is significant ( $p=.0001$ ) and has an  $R^2$  of .299. Both Gender ( $p=.0003$ ) and Verbal SAT ( $p=.0001$ ) score were significant; however, Math SAT score was not ( $p=.2001$ ). There were no problems with heteroskedasticity and autocorrelated residuals for the model. Although the condition index was over ten, the index dropped to four when SAT Math, which was not significant, was removed from the data set. Diagnostics indicated that several observations could be considered outliers. When the data were analyzed with these outliers removed, the model remained essentially unchanged.

**Table 1.** Variable Data by Gender

<u>Variables</u>	<u>Males</u>	<u>Females</u>
Sample Size	198	198
Major Field Test		
maximum	187.0	186.0
mean	157.0	153.6
minimum	123.0	128.0
SAT Verbal Scores		
maximum	620.0	650.0
mean	432.0	435.5
minimum	240.0	220.0
SAT Math Scores		

maximum	680.0	720.0
mean	526.4	520.3
minimum	310.0	320.0

**Table 2.** Pearson Correlation Coefficients

<u>Variables</u>	MFT Test		SAT
	<u>Score</u>	<u>Gender</u>	<u>Math</u>
SAT Verbal	0.522	-0.025	0.164
	0.000	0.616	0.001
SAT Math	0.142	0.015	
	0.005	0.763	
Gender	0.141		
	0.005		
<u>Gender</u>	Males = 1 and Females = 0		

**Table 3.** Model for Performance on the  
Major Field Test in Business

	<u>dof</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>Significance</u>
Model	3	16641.6	5547.2	55.68	.000
Residual	392	39052.5	99.6		

Total 395 55694.1

	<u>dof</u>	<u>Coefficients</u>	<u>Std Error</u>	<u>tstatistic</u>	<u>P-value</u>
INTERCEPT	1	113.81	3.30	34.47	.000
GENDER	1	3.64	1.00	3.63	.000
SATVERBAL	1	0.07	0.07	12.04	.000
SATMATH	1	0.00	0.03	1.28	.200

Regression Statistics

Multiple R 0.546  
 R square 0.299  
 Adj. R Square 0.293  
 Standard Error 9.98  
 Observations 396

Partial R Squares

<u>Variable</u>	<u>Partial R sq.</u>
SAT Verbal	.272
Gender	.027
Total	.299

GENDER 1 for males 0 for females

**Conclusions**

The Major Field Test in Business is a likely candidate to address the pressures from a variety of stakeholders to demonstrate value added. Indeed, business schools may wish to use the MFT by specialty to satisfy possible future requirements of accrediting bodies to maintain specialty accreditations. This provides an opportunity for

future research on such issues as motivating student participation/performance, administrative burdens of outcome assessment, responsibilities for evaluating/responding to outcome assessment, and other issues.

Our interpretation of the results is that MFT scores and any changes over time should be interpreted with caution. This view is consistent with the guidelines issued by ETS. In our opinion, the data suggests that MFT score changes at an institution may be caused by SAT Verbal score changes. Our analysis suggests that institutions with student populations that are significantly different in terms of SAT Verbal scores should also have significant differences in their MFT scores. This implies that if educational institution A has students with a significantly lower SAT Verbal score than institution B and A has MFT scores above, equal to, or not significantly lower than B, then institution A may be providing a superior education.

The research provides evidence that gender was a significant factor in student scores on the MFT for Business. After SAT Verbal scores, gender accounted for about three percent of the variation explained by the model. While gender was significant, this research only serves to further the debate on gender differences.

The research has several limitations; each of which provides additional possibilities for future research. We were unable to control for important variables such as GPA, instructor, minor, etc., and all observations were from a single institution. Although these and other limitations constrain the ability to generalize the results, the study presents initial evidence that should be useful to administrators and faculty. However, we believe that there are numerous ways to use the MFT in evaluating both outcomes for external concerns such as accreditation and for internal use such as the evaluation of curriculum changes.