

HOW VARIANCES IN BUSINESS SCHOOL RANKINGS AFFECT ENROLLMENT TRENDS AND PRACTICES

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This study examined the effect that variances in the *U.S. News & World Report* rankings have on enrollment trends and practices in both top and non-top 25 business schools. The purpose of this study was to determine whether mobility in the rankings was met with a statistically significant response to the research questions presented. While this was not the first study to look at business school rankings and their effect on enrollment trends, it was the first one to look at recent data associated with this phenomenon, as well as, the first study to utilize panel data in order to determine the answer to its research questions. The four research questions put forth dealt with enrollment numbers, student quality, acceptance rates, and peer assessment scores. The study determined that the research questions are not statistically significant across the board and that one group is more sensitive than the other to variation in the rankings. Possible practical implications for these findings and further research are discussed, as well as, the limitations of the study.

Introduction

Johnson (2006) explained that in today's U.S. society, everything is ranked, compared, ordered, or sorted in some way. There are rankings for almost everything that society engages in: "Top ten tech-savvy cars under 20,000 dollars" (*Kelley Blue Book*), "Best low cost cell phone plans" (*Consumer Reports*), "Top ten best cities for retirement" (*Bankrate*). Consequently, it only

follows that, as a society, there is a "need" to know which business school (and institution in general) can be considered "the best." However, it can become a problem when numeric values are used to determine complex issues such as value, quality, or other intangibles, such as prestige or reputation: It can become even more problematic when all of the variables are reduced to a single numerical value or rank. In addition, the fact that these rankings are handled by for-profit agencies can be concerning to say the least.

This article is part of a larger study by the same author

Institutional rankings can be beneficial, since they allow stakeholders to look at institutions of higher education and compare the inputs and outputs, as well as the outcomes. In some cases, rankings may even provide people with the ability to disaggregate data to a departmental level so that individuals can make actual comparisons amongst institutions to answer specific questions (Usher, 2012). For example, rankings can help an individual determine which school may be best for the course of study he or she wishes to pursue. Students and parents alike look at them as a guide to help them simply answer a much more complicated question: What college is best for them? Rankings have become a measure of quality, and therefore status by many (Bowman & Bastedo, 2009; Karabel, 2005; McDonough, Antonio, Walpole, & Perez, 1998; Stevens, 2007); consequently, attending a specific university that is high in rank may very well portray a cachet of which an individual is proud.

A cause of concern for some is that for years the American higher education system has been trying to identify a valid methodology that measures institutional performance (e.g., President Obama's College Scorecard). But absent it, or at least a consensus for the most reliable measure, many private entities have taken it upon themselves to come up with what they believe are the most valid measures for rating and ranking institutional effectiveness, efficiency, or quality. Absent the aforementioned consensual ranking system, institution leaders have been using ranking publications to attempt to measure their performance and thus benchmark themselves against peer and competitor institutions (Meredith, 2004). The most popular of these rankings is that which appears in *U.S. News* (Altbach, 2012). "Although the media often seek to position their rankings as evaluations of quality, empirical tests of such rankings show that they tend to be rather "noisy" and inconsistent indicators of quality" (Rindova, Williamson, Petkova, & Sever, 2005, p.10).

Problem Statement

Despite the claim by many academic institutions that they pay no attention to the *U.S. News* rankings, they actually do (Ehrenberg, 2005). In fact, there is extensive literature that has shown that rankings actually

affect the behavioral trends at an institution. In order to increase (or maintain) their position in the rankings, institutions have been caught in many questionable practices that have affected not only other institutions but also potential students (Golden, 2001a; Thompson, 2000). These practices have ranged from reporting false data to leading on potential students in hopes that they would apply, in order to augment their selectivity ratio.

Still, students look at these rankings in order to make decisions about what school or graduate school to attend (Bowman & Bastedo, 2009; Hazelkorn, 2007). Nevertheless, while the research regarding the impact of rankings on a student's choice is not definitive, it is quite strong. Mathewson (2015) stated that in a survey by Chegg, researchers found that 77% of students reported college rankings as important in their enrollment decisions; however, this number dropped significantly when targeting students from low socioeconomic status. Still, 40% of all U.S. students have been found to use magazine rankings in one way or another (Hazelkorn, 2007). From an institutional standpoint, this signifies a problem, since there can be a disconnect between the amount of effort an institution devotes to its position in the rankings and the yield that it can bring as pertains to student enrollment and school selection.

There have been many studies of undergraduate students and their responses to rankings (Bastedo & Bowman, 2010, 2011; Bowman & Bastedo, 2009; Dearden, Grewal, & Lilien, 2014; Espeland & Sauder, 2007); however, there have not been many studies that have dealt with graduate schools. And even fewer that have dealt with business schools (MBAs in particular). This is problematic because the MBA has become the most popular postgraduate degree in the US (Byrne, 2014a). In 2012, based on figures from the Department of Education, MBA graduates made up 25.4% of all graduating master's students. This figure is up from 11.2% in 1971, 19.1% in 1981, and 24.6% in 2002 (Vaccaro, 2014). This is the first time in history that advanced degrees in education have surrendered the top position as the most popular degree in the United States (Vaccaro, 2014). Murray (2010) estimated that in 2009 there were 272,219 students enrolled in MBA programs in the United States annually, and this was a conservative estimate.

Companies such as *U.S. News* have been preparing rankings that put many intangibles qualities into a concrete form (such as reputation). Therefore, they do not need to determine what makes a better or a worse MBA program, but instead they create their own set of criteria to determine which programs, in their opinion, help constitute the better business schools. “In little more than a decade, the rankings by these magazines have come to dominate many business schools’ sense-making and action-taking efforts and, perhaps most notably, their focus on the fledgling concept of reputation management” (Corley & Gioia, 1999, p. 319). At times, prospective MBA students may base their decisions as to which business school to attend on which rankings they may have read (such as *U.S. News*, *Business Week*, *Forbes*, or *The Economist*). Safon (2012) used Bruce Keith’s argument from 2001 to explain that reputation is an outcome of the achievements of the academic institutions.

Purpose of the Study

As previously mentioned, there is extensive literature regarding college rankings, student choice, and enrollment trends; yet, the vast majority of articles address undergraduate institutions and first-time students. There is evidence that variances in the *U.S. News* rankings has impacted enrollment trends (i.e., enrollment at an institution, yield, selectivity factor, mean SAT score, mean high school GPA) (Luca & Smith, 2013; Monks & Ehrenberg, 1999a, b); nevertheless, the extent to which this has been studied with regard to business schools is limited. Luca and Smith (2013) have specifically emphasized the impact of the *U.S. News* rankings on applications; however, their study is based on undergraduate rankings, and again, the impact on business schools cannot be explained. The data used in the study by Monks and Ehrenberg are over 15 years old and were calculated by using a different method than the one I intend to use. And again, it is related to undergraduate schools only. The only study that has similarly attempted to look at business schools rankings and enrollment trends was performed by Bednowitz (2000), but the data he utilized and the results of his study are now over 15 years old.

As there has been an increase in exposure to and the popularity of the MBA degree, the popularity of the business school rankings has also increased. Currently, there are nine different business school rankings in the United States (*U.S. News*, *Business Week*, *Forbes*, *Financial Times*, *The Economist*, *America Economica*, *CNN Expansion*, *Business Insider*, and the Quacquarelli Symonds Ranking). This represents an increase of 450% compared to 1990, when only *U.S. News* and *BusinessWeek* existed.

If rankings are tied to the prestige of an institution and prestige has an impact on a student’s decision to attend a particular business school, then it can be hypothesized that as institutional rankings vary, other variables that are tied to rankings will also be impacted. These variables may be correlated with the applicant pool, such as a student’s undergraduate grade point average or Graduate Management Admission Test (GMAT) score. Or these variables might not have to do with the students themselves, but with the institution and how it deals with its applicant pool. Is it admitting the same number of students while keeping the standards for admissions? Or in order to admit the same number of students, does the institution reach further down into its applicant pool? What does this do to the acceptance rate of a particular institution? Does the institution choose to admit fewer students and uphold academic standards? Or does it favor enrollment numbers? This is important because for an institution to be able to maintain its position in the rankings, it may (or not) have to operate in certain ways.

The study presented examined one set of rankings by *U.S. News & World Report*, and how variances in the rankings from year to year impacted (or not) enrollment trends and practices in these institutions. The reason for picking *U.S. News* over any other set of rankings is that, as Ehrenberg (2002) stated, *U.S. News’s* annual rankings are seen as the gold standard of the ranking business. In this study I explored the change in the number of full-time enrolled students year over year and compared that number with the acceptance rate/the selectivity rate, the mean GPA and GMAT scores of the student population, and the peer evaluations scores these institutions received, all while the rankings of the institutions were examined. Therefore, the question, will there be a correlation between

the variances in the rankings (over time) and other (enrollment-specific) actions taken by the institution, was examined. While an institution may not necessarily care about a set of rankings (such as those by *U.S. News*), this does not mean that the institution does not care about the impact that these rankings will have on enrollment.

This study examined the differences between top 25 and non-top 25 business schools, their interaction effect, and different responses to the research questions, since these groups may react to the rankings differently. The reasoning for selecting the top 25 schools is that *U.S. News* did print a magazine edition of the rankings, but this has not happened since 2010. The print edition published a different number of top universities on its first page, but this was often around 45 schools, depending on how many could fit on the page (the number was not consistent from year to year). Since then, its online publication only lists the top 25 business schools on its first page. Therefore, the reader must go to the next page to see the next grouping; making the top 25 a default setting.

Research Questions

1. Is there a relationship between a one-unit change in the rankings (over time) and the enrollment at a specific institution?
2. As the ranking of a specific business school varies, does the acceptance ratio/selectivity rate of the business school change?
3. Has the quality of the students, as measured by their GPA and GMAT scores, changed in response to a one-unit change in the rankings?
4. Have the attitudes of others toward the business school, as measured by a change in the peer assessment score that these institutions receive year over year, changed as a result of the one-unit variation in the rankings?

Should this study not offer the results an individual anticipates, then the validity of this specific set of rankings, as it pertains to enrollment trends and practices, could be questioned, since the argument to follow will be that variance in the rankings does not affect neither enrollment numbers nor institutional yield (or the

characteristics of the incoming class), and therefore, one can question the validity of the rankings (from an enrollment perspective), as well as previous literature on the subject.

This study can be significant because of the potential implications that it may have on three different constituencies: students, researchers, and higher education practitioners. Students will be able to understand whether rankings have been somewhat manipulated by the institution, or whether they actually show a true rank, as they continue to utilize them. Other researchers will be able to utilize the data and findings from the study for further research especially as it pertains to areas of their own interest. Higher education practitioners will be able to further validate preconceived notions regarding the rankings, or develop new ideas regarding them, and as such, create policies.

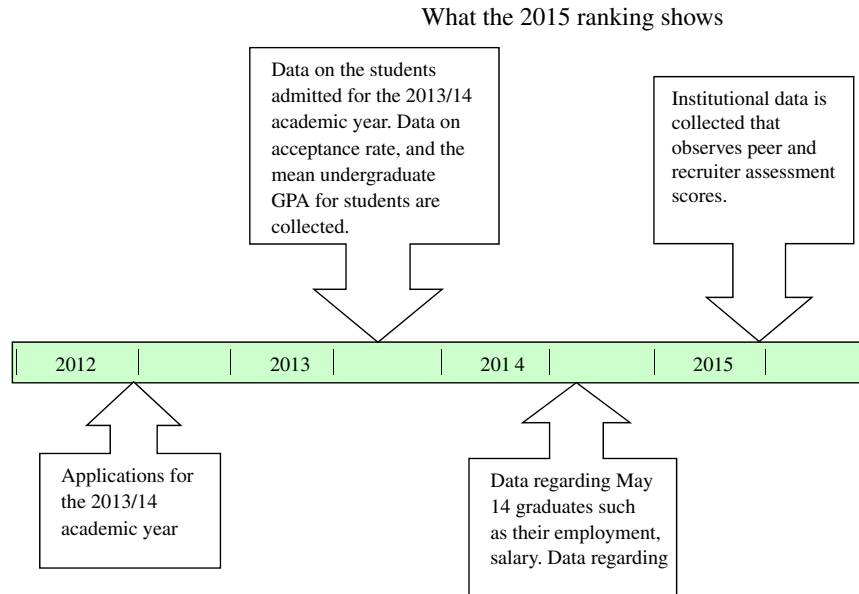
Methodology

DATA

The data selected included eight years of rankings from *U.S. News* business school rankings, from 2008 to 2015. It needs to be noted that the *U.S. News* business school rankings are published a year in arrears; meaning that some of the data are used from the year before. The 2015 rankings are based on data for students who were enrolled that academic year (2014–2015), alumni who graduated or started their employment in May 2014, and employers who hired graduates between May and August 2014. Therefore, it is key to remember that this data set, although it contains the eight most recent years of data, actually included information that may be delayed as much as three years depending at what variable one looks at (see Figure 1).

The reason for selecting *U.S. News* rankings over some of the other rankings is because *U.S. News* is considered one of the major sources for MBA rankings (Dichev, 1999; Pleggenkuhle-Miles, Khoury, Deeds, & Markoczy, 2013). Moreover, as Ehrenberg (2002) has pointed out, the *U.S. News* rankings are the gold standard for institutional rankings. As Griffith and Rask (2007) have pointed out: every year, every college administrator awaits the release of these rankings. And, as Bastedo and Bowman (2010) have stated, the *U.S. News* rankings and the study of their effects have become a small industry in higher education.

Figure 1. 2015 Ranking: Timeline



Therefore, with some of the most prominent names in the institutional ranking industry I inferred that this was an appropriate data set to utilize for the program-level rankings. Moreover, unlike other rankings, those of *U.S. News* allowed me the ability to disaggregate the data to the point necessary, thus combining both the prestige of the ranking and the usefulness (for these purposes) of the data.

SAMPLE AND VARIABLES

The sample for this study is the entire population of ranked business schools for the selected years. Over the period of time these data were gathered, the number of ranked business schools expanded from the top 50 in 2008 to the top 104 in 2015; therefore, only institutions that appeared in the ranking more than once were considered in order to properly conduct the study. If an institution appeared only one year in the rankings, while it was still part of the study, the results were not analyzed, since the goal of this study was to measure the impact of variations in the rankings on institutions (and their other variables) from one year to another. In total, across the eight years of data, 130 institutions were considered. As explained before, the research questions will look at top 25 institutions versus non-top 25 ones (all other ranked institutions in the set that are outside the top 25).

Data Analysis

This study utilized cross-sectional time-series data (panel data) as to describe a causal relationship between the variables over time. Rankings, by nature, have a hierarchical structure; therefore, traditional linear models were not suitable to analyze these types of data because doing so would violate the assumption of independence (Raudenbush & Bryk, 2002). Traditional linear regression models would have most likely allowed for autocorrelation in this data set, since this data was being repeated over time and the values over the years can be related to one another. The data was a panel data set, which provides multiple observations across eight consecutive years, per business school. Panel data allowed the control of variables that changed over time, but not across individual institutions. Doing this will account for individual heterogeneity. With panel data, variables can be included at different levels of analysis, thus allowing for multilevel or hierarchical modeling (Bartels, 2008). A panel data analysis is a form of either longitudinal or cross-sectional data analysis, which allows for a two-dimensional cross-section of data by which institutions can be observed across several time units (Baltagi, 1995). Panel data analysis can explain what, if any, variations transpired in the business schools throughout the years observed. The data used in the

analysis technically contained no missing values, because the entire population of the *U.S. News* business school rankings for the selected years was considered; thus, all business schools were observed the same number of times. Nevertheless, the data in the set are unbalanced because we have missing data in terms of observations for certain years, due to the fact that some business schools entered the ranking one year and exited another or just been ranked for one year. Other institutions may have been ranked every year of the study. It should be noted that data were available only for the years in which the business schools were ranked. This study looked at the differences between top 25 and non-top 25 business schools, their interaction effects, and different responses to the research questions. Also, the reasoning for selecting the top 25 was that *U.S. News* printed a magazine edition of the rankings until 2010 but since then its online publication only lists the top 25 business schools when a person looks these rankings up in its first page, thus having to go to the next page in order to see the next grouping, and therefore, making the top 25 the default setting.

In this case, though, because there are lags for certain characteristics, and an interaction effect is applied to the model, the equation for the study is the following:

$$Y_{it} = \beta_{0i} + \beta_{1i}X_{1it}(t-3) + \beta_{2i}X_{2it} + \beta_{3i}X_{it}X_{2it} + \dots u_{it}$$

where:

Y_{it} is the dependent variable (DV); where i = entity and t = time;

X_1 represents students/institutional characteristics from a non-top 25 business school;

X_2 represents students/institutional characteristics from a top 25 business school;

β_1 is the coefficient for that IV;

α_i ($i = 1 \dots n$) is the unknown intercept for each entity (n entity-specific intercepts); and

u_{it} is the error term.

“In the case of time-series cross-sectional data the interpretation of the beta coefficients would be as X varies across time by one unit, Y increases or decreases by β units” (Bartels, 2008).

Limitations of the Study

U.S. News is considered to be one of the major sources for MBA rankings (Dichev, 1999; Pleggenkuhle-Miles, Khoury, Deeds, Markoczy, 2013); hence, it was the set of rankings that I chose to focus on in this study. However, a limitation of this study is that only one set of rankings was considered, and different students may have used a different set of rankings. Moreover, the data set that was used was limited to the last eight years. In addition, much like Luca and Smith (2013), I was limited in that I did not observe how students learned about the *U.S. News* rankings. While students possibly read *U.S. News*, it is clear that institutions used rankings in advertisements and as a marketing tool. This, although it may be a nonfactor when it comes to applications, raises the question of what is actually causing the effect and, as such, I was unable to make the distinction. Future research could investigate this question.

One of the main concerns with panel data is that it increases the possibility of violating the statistical assumptions needed to offer reliable analysis. The two main concerns are issues of heteroskedasticity and autocorrelation with the error terms. Other limitations of panel data are related to data collection (something not to be concerned with, since this study is looking to utilize the entire population); nonresponse in micro-panels, and cross-country dependency in macro-panels (Baltagi, 1995).

On a larger scale, there are limitations with the data in that *U.S. News* data are not verified: they are self-reported. Student responses may occur at different rates, and they may not reflect actual performance or quality. In fact, in some cases students may not respond to questions (especially as they pertain to salary), and a limitation for all programs in the sample and rankings of business schools. This issue of response rates is also pertinent for the quality assessment scores that were provided by the peer and recruiter surveys. While all of these introduce error, there is no reason to believe that they will change the results of the analysis.

Results

As previously discussed, the research questions focus on the relationship between business school rankings and the enrollment trends at those institutions. The

results are presented to show the differences between top 25 and the non-top 25 business schools and how institutions in these groups react to the research questions. The reasoning behind this grouping is that *U.S. News* lists 25 business schools when one looks these rankings up online; therefore, making the top 25 the default setting.

DESCRIPTIVE STATISTICS

An analysis of the descriptive statistics of the 130 business schools in the data set allows the provides the following tables; the first (see Table 1), which shows means and standard deviations for variables across eight years of data (it should be noted that 124 out of the 130 business schools were ranked in more than one year); the second (see Table 2), provides the same data, but for the year 2015.

Table 1 shows that the mean acceptance ratio for ranked business schools between the years 2008 and 2015 is 37%, with a standard deviation of 16. During this time, some of the most selective business schools had acceptance rates as low as 6.5% (e.g., Stanford) or 11% (e.g., Harvard), whereas the acceptance rates of other institutions were 77% (e.g., Pepperdine) and 60.6% (e.g., Mississippi State).

Table 2 shows the mean acceptance rate for ranked business schools in the year 2015 was 42%, with a standard deviation of 17. Some of the most selective business schools (e.g., Stanford) had an acceptance rate of 6.5% in 2015; yet other institutions, such as

Northern Arizona University, had an acceptance rate of 89%. With a ranking that has been expanded to include 104 business schools (from only 50 in 2008), a lesser selectivity ratio was expected.

Table 1 deals solely with the year 2015. For the year 2015 the variation in enrollment is very large. This can be attributed to the fact that some business schools were outliers. For example, for the year 2015 the enrollment of Harvard Business School was 1,851. Moreover, during the year 2015 there were four other business schools with enrollments larger than 1,000. Juxtaposed to this, there were 29 business schools in the ranking that had an enrollments under 100 students. This affects the variation in the data set.

Table 1 shows the discrepancy in the tuition of the ranked business schools, with the mean being \$37,399 and the standard deviation being 10,771—approximately one-third. The most expensive tuition was \$61,152, and it was for attending the Massachusetts Institute of Technology during the 2015 academic year. The lowest tuition in the sample was \$8,700 for Brigham Young University (Marriot) for the 2008 academic year. When these values are examined (see Table 2), one can see an increase in the tuition values, which is expected, since inflation and cost-of-living expenses are expected to affect these values, when compared with values that also take into consideration numbers from 8 years ago. That said, the mean for the variables in Table 2 is \$40,091 and the standard deviation 11,861.

Table 1. Descriptive Statistics for 2008 through 2015

	Tuition (\$)	Enrollment (full-time)	Average GMAT Score (full-time)	Acceptance Rate (full-time) (%)	Peer Assessment Score (out of 5)
Mean	37,399	343	661	37	3.526
Standard Deviation	10,771.4	349.5	38.9	16.0	0.628

N=130.

Table 2. Descriptive Statistics for FY2015

	Tuition (\$)	Enrollment (full-time)	Average GMAT score (full-time)	Acceptance Rate (full-time) (%)	Peer Assessment Score (out of 5)
Mean	40,091.4	294	649.77	42.40	3.29
Standard Deviation	11,861.51	330.83	44.12	17.82	0.64

N=104.

Average GMAT is an interesting value to examine because, as the rankings have expanded, schools with arguably fewer selectivity standards have been included. Consequently, it can be seen that, as the ranking continued to expand, this value continued to decrease, thus making the data set more variable. Table 1 shows a mean GMAT score of 661, with a standard deviation of roughly 39 for the population. However, as seen in Table 2 (for 2015) the GMAT average drops to approximately 650, yet the standard deviation increases to 44.

The aforementioned explanation regarding the expansion of the rankings can also be used to explain the decrease in the peer selectivity scores, which decreased from 3.52 when looking at the entire data set (see Table 1) to 3.29 when observing only 2015 (see Table 2).

Finally, it should be noted that after running a Hausman test for the data in all of the research questions, the results were always found to be statistically significant; therefore, it was determined that fixed effects were always preferred (over random effects). Moreover, year fixed effects were used to control for economic conditions and other aspects that may have affected all business schools in different years of the study.

RESEARCH QUESTION 1

Is there a relationship between a one-unit change in the rankings (over time) and the enrollment at a specific institution?

The data for enrollment and the *U.S. News* business school rankings are outlined next. The mean enrollment for all business schools in the sample is 342.5. The mean enrollment for the top 25 business schools is 711, whereas the enrollment for business schools outside of the top 25 is 180. Affecting this data are Harvard Business School, with a yearly enrollment of 1,800, and Northern Arizona University (Franke) and West Virginia University, with yearly enrollments of 32 and 34, respectively.

Table 3 shows that, for top 25 schools, as rank improved by one rank (i.e., going from 10 to 9) enrollment decreased by 0.46 (0.52+ -0.06). Yet, in non-top 25 schools, as ranking improved by one rank (i.e., going from 30 to 29) enrollment increased by 0.062. Moreover, the net effect on enrollment for a top

25 institution when compared with a non-top 25 institution was a decrease of 0.52; however, these results were not statistically significant.

This suggests that, in terms of increasing enrollment, graduate business schools negligibly benefit from having a better position in the *U.S. News* rankings, since all the results in this study are not statistically significant. Consequently, for a business school dean, for example, who is looking to boost enrollment, trying to increase its position in the *U.S. News* ranking should not constitute a priority, as it is not likely to yield the desired result, especially if one considers how expensive it could be to boost an institution's position in the ranking. The R^2 value, shows that 9.1% of the variation is explained by this model. The adjusted R^2 helps explain how, after taking the number of covariates into account, this model would help explain 7.32% of the variation.

RESEARCH QUESTION 2

As a specific business school's ranking varies, does the acceptance ratio/selectivity rate of the business school change, too?

The data in terms of acceptance rates and *U.S. News* business school rankings cannot be considered definite. For top 25 schools, Table 4 shows that acceptance rates went down by 0.34 (0.16+ 0.017) percentage points for every one-unit increase in the rank (from 4 to 3). When looking at non-top 25 institutions, with every one-unit change (from 45 to 44), acceptance rates went down by 0.173 percentage points.

Table 3. Research Question 1-Results

Hausman Test

$\chi^2=711.37$ $df=10$ $p\text{-value}<2.2\text{e-}16$

Fixed Effects

	Estimate	Std. Error	Statistically Significant
(Intercept)	313.7858	29.14855	*
Rank	-0.0625	.32262	
Top 25	0.4592	43.8478	
Rank*Top 25	0.5218	1.83461	
$R^2=.0910$			
$R^2=.0910$		Adjusted $R^2=.0731$	

* $p<.05$; $p<.1$.

As a result, it can be argued that as institutions rise in the rankings, they are able to become more selective in terms of the students they accept. Business schools inside the top 25, for each position they improve, decreased their acceptance rate by almost 0.4%. This is a noticeable decrease when one considers that the average acceptance rate of all top 25 business schools across eight years was 25.5%. Therefore, an increase of 0.337% represents an overall increase of 1.32% in the selectivity rate of a business school.

In terms of non-top 25 business schools, the mean acceptance rate was found to be 43.8%; therefore 0.173 represents an increase of only 0.39% in the selectivity rates of non-top 25 business schools. The net effect of a top 25 institution when compared with a non-top 25 institution in terms of acceptance rate was an increase of 0.16%; however, this was not found to be statistically significant.

It can be argued that if an administrator is trying to increase the selectivity rate of a business school, increasing one position, even while outside of the top 25, may not yield impactful results. Conversely, the findings suggest that as business schools fell in the ranking, they tended to increase their acceptance rates. This suggests that these institutions reached further into their applicant pools to maintain similar enrollment numbers. The R^2 value shows that 17.23% of the variation is explained by this model. The adjusted R^2 helps explain how after taking the number of covariates into account, this model explains 13.86% of the variation.

RESEARCH QUESTION 3

Has the “quality” of the students, as measured by their GPA and GMAT scores, changed in response to a one-unit change in the rankings?

Table 5 demonstrates that as *U.S. News* business school rankings improved by one rank (e.g., 5 to 4) the GPA scores of applicants increased. For top 25 schools, the GPA scores increased by 0.008 points for every one-unit increase in the rank (from 4 to 3). When looking at non-top 25 institutions, GPA scores increased by 0.002 points per ranking increase (from 43 to 42). Both of these results are statistically significant.

Consequently, one could argue that as institutions rise in the rankings they are able to accept “better prepared” students—as determined by their undergraduate GPAs—and become more selective about the students they accept. However, business schools inside the top 25 admitted students with an average undergraduate GPA of 3.4; therefore, an increase of 0.008 points per position that an institution rose can be considered underwhelming at best. The increase was 0.24 of a percentage point for each position they escalate.

This is more of an issue when considering non-top 25 business schools, since the mean GPA score for them was also found to be 3.4, but the increase found for a one unit change in the ranking (from 40 to 39) is one-fourth that of the top 25 business schools. In the case of non-top 25 business schools, this increase represents 0.06 of a percentage point for each position that the institution escalates. The net effect on a top 25 institution when compared with a non-top

Table 4. Research Question 2-Results

Hausman Test

$\chi^2=24.942$ $df=10$ $p\text{-value}=.0054$

Fixed Effects

	Estimate	Std. Error	Statistically Significant
(Intercept)	30.6226	2.2943	**
Rank	0.1734	0.0571	*
Top 25	0.3375	7.7668	
Rank*Top 25	0.1641	0.325	
	$R^2=.1723$	Adjusted $R^2=.1385$	

** $p<.001$; * $p<.05$; $p<.1$.

Table 5. Research Question 3 (GPA)-Results

Hausman Test

$\chi^2=20.485$ $df=10$ $p\text{-value}=0.025$

Fixed Effects

	Estimate	Std. Error	Statistically Significant
(Intercept)	3.3870	0.0214	*
Rank	−0.0020	0.0005	*
Top-25	0.008	0.0069	*
Rank*Top-25	−0.006	0.4398	
	$R^2=.0989$	Adjusted $R^2=.0795$	

* $p<.05$; $p<.1$.

25 institution in terms of the GPA of its applicants was an increase of 0.006 points per increase in the rankings.

It can be argued that if an administrator is trying to increase the undergraduate GPA of the full-time students admitted by the institution, an increase of one position will be a conscientious proposition, since the impact of a one-unit increase in the rankings was not found to translate into a large change in the undergraduate GPA of the student population. The R^2 value, showed that 9.89% of the variation is explained by this model. The adjusted R^2 explained how, after taking the number of covariates into account, this model explained 7.95% of the variation.

The data for GMAT scores and *U.S. News* business school rankings cannot be considered definite. GMAT scores can range between 200 and 800, with two-thirds of the test takers scoring between 400 and 600 (GMAC). Table 6 allows displays that for top-25 schools, the GMAT scores went up by 0.897 points ($-0.16 + -0.73$), for every one-unit increase in the rank (from 4 to 3); however, this increase was not found to be statistically significant. When looking at non-top 25 institutions, GMAT scores went up by 0.73 points per ranking increase (from 43 to 42), and this increase is statistically significant.

Consequently, the argument that as institutions rise in the rankings they will be able to accept “better prepared” students—as determined by their undergraduate GMAT scores—and therefore become more selective in terms of the students they accept, is only partly validated by the results of this study. For

institutions inside the top 25, the study showed no statistical significance with the results. When considering non-top 25 business schools, the mean GMAT score was found to be 641. Therefore, what kind of impact does an increase of 0.73 actually have? The net effect of a top-25 institution when compared with a non-top 25 institution in terms of its students’ GMAT scores was found to be an increase of 0.17 points; however, this was not found to be statistically significant.

It can be argued that if an administrator is trying to increase the GMAT scores of the full-time students admitted to an institution, increasing one position in the *U.S. News* ranking will not necessarily yield the desired results, since the impact of a one-unit increase in the rankings was not found to translate to a large change in the GMAT scores of the student population. The R^2 value, showed that 34.48% of the variation is explained by this model. The adjusted R^2 helps explain how after taking the number of covariates into account, this model would help explain 27.72% of the variation.

RESEARCH QUESTION 4

Have the attitudes of others toward the business school, as measured by a change in the peer assessment score that these institutions receive year over year, changed as a result of the one-unit variation in the rankings?

The data in table 7 show that as *U.S. News* business school rankings improved by one rank (e.g., 5 to 4) the peer assessment scores given to these business schools

Table 6. Research Question 3 (GMAT)-Results

Hausman Test			
$\chi^2=15.007$	$df=10$	$p\text{-value}=.1318$	
Fixed Effects			
	Estimate	Std. Error	Statistically Significant
(Intercept)	685.767	3.4012	*
Rank	-0.7310	0.0773	*
Top 25	-0.8969	10.511	
Rank*Top 25	-0.1660	0.4398	
$R^2=.3447$		Adjusted $R^2=.2772$	

* $p<.05$; $p<.1$.

Table 7. Research Question 4—Results

Hausman Test			
$\chi^2=15.007$	$df=10$	$p\text{-value}=.1318$	
Fixed Effects			
	Estimate	Std. Error	Statistically Significant
(Intercept)	3.6635	0.0399	*
Rank	-0.0038	0.0006	*
Top 25	-0.8969	0.0811	
Rank*Top 25	-0.0042	0.0034	
$R^2=.2713$		Adjusted $R^2=.2182$	

* $p<.05$; $p<.1$.

also increased. For top 25 schools, the peer assessment scores were found to go up by 0.008 points for every one-unit increase in the rank (from 4 to 3); however, this increase was not statistically significant. When looking at non-top 25 institutions, peer assessment scores were found to go up by 0.004 points per ranking increase (from 43 to 42), and this increase was found to be statistically significant.

Consequently, the argument that as institutions rise in the rankings they become better perceived by their peers (as determined by their peer assessment scores) has to be evaluated. For institutions inside the top 25, there was no statistical significance in the data. When considering non-top 25 business schools, the mean peer assessment score was 3.1; therefore, an increase of 0.004 points represents an increase of 0.13 percentage points in the overall score. The net effect on a top 25 institution when compared with a non-top 25 institution in terms of the peer assessment scores was found to be an increase of 0.004 points. This was not found to be statistically significant.

It can be argued that if an administrator is trying to increase the reputation of a business school with peers (as measured by the peer assessment scores), then increasing one position in the *U.S. News* ranking will not necessarily yield the desired result, since the impact of a one-unit increase in the rankings was not found to translate to a large change in the perception peers have of an institution. The R^2 value showed that 27.13% of the variation is explained by this model. The adjusted R^2 explains how, after taking the number of covariates into account, this model explained 21.82% of the variation.

CONCLUSION

The purpose of this study was to examine the effect that variances in business school rankings (specifically *U.S. News*) have on enrollment trends and practices. While this has not been the first study to try to examine these effects, it has been the first one to look at this phenomenon over the past 15 years and, consequently, the only one that has looked at the past 8 years of data (2008–2015). Furthermore, this study, unlike others, has attempted to answer questions that have dealt with both objective data (such as enrollment numbers or GMAT scores), as well as subjective data (such as

peer assessment scores). Other studies often focused on either, but not both in one study. Moreover, most recent studies have tended to deal with undergraduate rankings, and often did not address graduate programs or graduate schools in general.

IMPLICATIONS OF THIS STUDY

The findings of this study have implications for many stakeholders in the higher education field; mainly, university administrators, prospective business school students, and researchers. Business school rankings are used by many as a source to determine which business school to attend, work at, or even to send their children to. Thus, rankings are seen as a measure of prestige (Bastedo & Bowman, 2011; Freid, 2005; Sweitzer & Volkwein, 2009). The main goal of this study was to allow administrators to determine the impact that rankings have on their enrollment trends and practices and to assist them in effectively assessing how to best determine strategies to deal with the impact of the rankings of their institution. The findings in this study can assist those who make decisions based on multiple criteria, and not necessarily with the sole purpose of climbing positions in the rankings.

Business school administrators are pursuing better positions in the *U.S. News* ranking (Fee, Hadlock, & Pierce, 2005), since there seems to be an unspoken belief that the payoff for increasing expenditures in specific areas and climbing the rankings results in an increase in prestige, which ultimately turns into an increase in revenue. However, this study found that some of the areas strongly associated with revenue (i.e., enrollment) were not correlated with an increase in the *U.S. News* ranking. Moreover, even in cases where there was statistical significance associated with a specific metric and the ranking increase, business school administrators should consider the financial output versus the potential benefit. Therefore, it should be questioned whether there is a need for business school administrators to continue pursuing improved positions in the *U.S. News* ranking, assuming the ultimate goals of this are an increase in revenue and likely in enrollment. If an increase in revenue is the goal, and this is mainly accomplished via enrollment (as only few institutions can count on enough endowments or donors to offset tuition monies), then relying on an increase in the

ranking does not seem like the best use of resources, especially when one considers the amount of additional resources that are often needed to obtain an increase in the rankings. Between 1995 and 2002 the University of Connecticut invested \$2.3 billion as a strategic decision to improve their position in the undergraduate rankings (Farrell & Van der Werf, 2007), and even after this investment their position has recently dropped from 64 to 67. This happened mainly because other institutions have also been trying to increase their positions in the rankings, also investing heavily to make this happen. Ultimately, while prestige is a nice “perk” for institutions, enrollment is a necessity. Wake Forest (Babcock) closed its full-time MBA program on October 22, 2014, due to declining enrollments and applications over several years (Byrne, 2014c).

An alternative to this ranking-based approach is what some business schools, such as the University of Virginia and UCLA, have done to offset declining state contributions. These business schools decided to become more self-supportive by pursuing a privatization that allowed them to operate with more latitude and gave them the ability to raise tuitions and enrollments at will (Rivard, 2014; Zusman, 2005). They gave up some monies in terms of state funds, but considered these lost monies an investment in terms of the abilities they gained by being able to operate more independently; if an institution was to devote resources to an approach (to increase revenue), this could also be considered as an alternative. It should be noted, though, that with this other approach, these institutions’ reliance on enrollment also became more pronounced.

Something else to consider is that the results of this study differ substantially from the studies of the impact of U.S. News rankings on undergraduate institutions. As Bowman and Bastedo (2009) showed, “for all colleges and universities in the top-25, moving one place in the rankings yields a 1.4 increase in SAT scores, a 0.25% decrease in acceptance rates. The effects of the rankings are far less pronounced for those institutions ranked outside the top-25” (p. 13). Monks and Ehrenberg (1999b) found that “a one-unit increase in U.S. News ranking corresponded to a 0.4% decrease in acceptance rate, a 0.2% increase in yield, and a 2.8-point increase in average SAT score” (p. 2).

When we consider these results with the findings from the present study it can be seen how there does not seem to be a correlation between rankings, enrollment trends, and graduate and undergraduate institutions. This is an area for further study.

SUGGESTIONS FOR FUTURE RESEARCH

This study provides a basis for future research, and it offers possibilities of expanding it in the following ways. First, this research was limited to the *U.S. News* ranking, and there exists the possibility to integrate other ranking systems into the study for a more comprehensive approach. If not, a comparative analysis could be done that juxtaposes both *U.S. News* and another ranking system using data that examines the salary growth of students or the return on investment of the degree (MBA). Second, this study was limited to an eight-year time frame. While this was fairly comprehensive, a larger data set could offer further validation of the results. Therefore, the present study could be replicated with an expanded number of years. Third, as years go by and the data becomes obsolete, this study should be repeated in order to update the existing information to reflect the most current information possible. Also, alternative definitions to certain terms could be used. In other words, measuring the attitudes of others toward the business schools by using the peer assessment scores could be changed to using the recruiter assessment scores or the amount of students hired at graduation. Also, an economic study that explores the salaries of students at graduation, as well as within three and six months of it, could be incorporated. Following this same idea, alumni donations could be tracked and could be incorporated into the study. As Monks and Ehrenberg (1999a) stated, an improved ranking can lead to increase donations from proud alumni. It would be an interesting study to determine whether the prestige associated with these ranked institutions correlates with higher alumni giving.

Finally, although this study has shown that many of the research questions examined in this study were statistically significant, the concept of causality still remains. Do the changes in the rankings actually drive the changes in the variables, or is it the change in the variables that actually drive the changes in the rankings? The model shows a correlation in the data, but

does not show what drives the changes. It would take a qualitative study to determine what specifically drives the decision to enroll or not a certain number of students, to increase or decrease the selectivity rate, and other metrics mentioned in this study.

Afterword

This study has attempted to bridge a gap in the literature found in terms of the *U.S. News* rankings and the institutional responses that occur as any given business school experiences a fluctuation in its rank. The model used can be of help to administrators and researchers who wish to better understand the repercussions of mobility in the rankings. This model was done with the last years of available data and was an empirical study. It should be emphasized that for the years for which the data in the study were derived, there were not big changes in the methodology that *U.S. News* used; however, any changes that did occur were not data driven, but merely a value judgment at best.

The goal of this study was to help others ascertain whether the amount of emphasis placed on the *U.S. News* rankings was warranted. Even in cases where a correlation was found between the ranking change and the variables measured, it would be at the discretion of each individual business school (administrator) to determine whether or not the reward is worth the expense. Yet as business schools make the strategic choice of attempting to rise in the *U.S. News* rankings, they need to understand that the benefits of this ranking increase, at least from the standpoint of the questions posed for this study, may not necessarily be significant; and even when they are measurable, they may be so negligible that the costs associated with the strategic decision could potentially outweigh anything else.

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