

Quality Of Education Outcomes: The Role Of The Graduate Management Admission Test

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ABSTRACT

Although the Graduate Management Admission Test (GMAT) is considered by leading business institutions worldwide as a predictor of success in graduate programs, an issue of contention is whether the introduction of the examination enhances the quality of education outcomes. This study sought to obtain an understanding of this issue, focusing on Masters in Business Administration (MBA) students at the College of Business and Management Science (CoBAMS), Makerere University. The academic achievement of MBA enrollees and their candidature status (i.e., whether candidates progressed normally or not) at the end of their first year of master's studies were adopted as measures of education outcomes. The investigations are based on administrative data of 216 enrollees in the MBA program at CoBAMS in the 2010 and 2011 enrollment cohorts. Unlike the 2010 enrollees, those in the 2011 cohort were admitted to the program on the basis of their GMAT scores. In the analysis, differentials in the candidature status and academic achievement of enrollees before and after the introduction of the GMAT were investigated using the Pearson chi-square and Kruskal-Wallis test statistics, respectively. The results revealed that students who were not admitted to the MBA program on the basis of the GMAT had better education outcomes. This finding diminishes the relevance of the examination in determining the academic competence of candidates suitable for admission. Though the results affirm the bachelor degree achievement as a predictor of success in the MBA program, varying conclusions compared to literature are reached with regard to education outcomes obtained by whether or not the GMAT requirement is waived.

Keywords: Graduate Management Admission Test; Academic Achievement of Enrollees; Makerere University; Uganda

INTRODUCTION

Graduate admission examinations are recognized worldwide as a predictor of the academic competence of candidates suitable for admission to the Master in Business Administration (MBA) program. Consequently, many African institutions have adopted the examinations as a measure of admission to their MBA program based on the recommendations of leading business schools and management education programs in developed countries. In light of the fact that the most academically competent candidates are admitted based on the outcomes of the admission examination, one would expect a change for the better with regards to the learning outcomes of these enrollees in the program. However, a study of BMA graduates at the University of Hartford revealed no difference in academic achievement of students by whether or not the GMAT was taken (Fairfield-Sonn, Kolluri, Singamsetti & Wahab, 2010). All the same, this generalization may not hold for MBA programs in all countries due to variations in: 1) the characteristics of graduate enrollees at various institutions, 2) their academic culture and context, and 3) their learning and policy environment. Certainly, concerning these factors, the gap between developing and developed countries may be significantly wider. In light of this concern, the implementation of an admission test for candidates in various countries, and sometimes disciplines with regard to their education background, may not yield the same results in terms of the quality of education outcomes.

Nevertheless, Navarro, Vitamog, Tierra, and Gonzalez (2011), in their extensive review of literature on the subject, present six qualities of individually administered aptitude tests:

1. They are excellent predictors of future scholastic performance.
2. They provide a method for comparing an individual's performance with that of others in the same situation.
3. They provide a profile of an individual's strengths and weaknesses.
4. They assess differences among individuals.
5. They uncover hidden talents in individuals, thus improving their educational opportunities.
6. They serve as valuable tools for working with handicaps.

Overall, these qualities suggest that improved education outcomes can be expected to follow the introduction of the admission examination. However, this generalization may not hold across all disciplines and/or countries due to variations in the characteristics of graduate enrollees, among other factors. All the same, these qualities indicate the competence of individuals, which is positively correlated with the academic performance of enrollees, as demonstrated in prior studies (e.g., Bariez, 2002; Bajet, 2001; Kaplan & Sacuzzo, 2001; Tolentino, 2010).

In Uganda, and particularly at the College of Business and Management Science (CoBAMS), Makerere University, the Graduate Management Admission Test (GMAT) was introduced in 2011 primarily as a measure of determining admission to the MBA program. Admission to the MBA program, up to and until then, was based on the applicant's prior qualifications, with a particular focus on his or her first degree attained from a recognized university or institution. Other considerations included attainment from any of the following professional programs: Association of Chartered Certified Accountants (ACCA), Certified Public Accountant (CPA), and Certified Investment Management Analyst (CIMA). The introduction of the GMAT brought about a shift in the admission requirement. As much as the first degree and other professional qualifications were considered, admission to the MBA program at CoBAMS from the 2011 cohort onward was mainly based on the total score of all sections of the GMAT. Yet although prior studies have associated better scores on aptitude or admission tests with high academic achievement by university enrollees (e.g., Gregory, 2004; Navarro et al., 2011; Tolentino, 2010; Wamala, Omala, & Kakumba, 2012), the question of whether the introduction of this examination actually improves the quality of education outcomes remains unanswered. The key issue of contention is whether the use of a graduate admission examination directly improves the education outcomes of enrollees in the graduate program. In particular, for MBA enrollees at CoBAMS, Makerere University, it is questionable whether the introduction of the GMAT in 2011 resulted in better education outcomes than achieved by earlier enrollment cohorts. Therefore, this study examined the education outcomes of MBA enrollees at CoBAMS, Makerere University. Characteristics of students who enrolled before and after the introduction of the GMAT admissions criteria were also investigated to iron out possible causes of variations in education outcomes.

DATA AND METHOD

The investigations were based on the administrative data of enrollees in the 2010 and 2011 enrollment cohorts of the MBA program, CoBAMS, Makerere University in Uganda. The 2010 and 2011 cohorts had 88 and 127 enrollees, respectively. The 2011 cohort took the GMAT as a requirement for admission to the MBA program, while the 2010 cohort did not. The GMAT, which comprises three sections (quantitative, comprehension and sentence correction, as well as current affairs and business management) has a maximum score of 100. Given that admission to the MBA program in the 2011 cohort was based on the applicants' GMAT scores (total score on all sections), all 127 students in the enrollment cohort passed the examination (i.e., obtained a total GMAT score of over 50).

The quality of education outcomes in the study is assessed according to the following two points: 1) the enrollees' academic achievement, as determined by their Cumulative Grade Point Average (CGPA) after their first year of studies in the MBA program and 2) their candidature status; that is, whether or not they registered retakes during the course of candidature. The status "normal progress" signifies no retakes registered by the end of the first year of studies, while "probation progress" refers to at least one retake in either the first or second semester or both semesters of the first year in the program.

The analysis was performed in two stages. First, data on enrollees in the two commencement cohorts were examined with regard to the characteristics of gender, nationality, other qualifications, year of completion and outcome of bachelor's studies, and whether the student obtained his/her bachelor's degree from Makerere University. The analysis was geared toward assessing differentials (if any) in the characteristics of graduate enrollees in the two enrollment cohorts under investigation. The results are presented using cross-tabulations and differentials investigated using the Pearson chi-square test (Pearson, 1900) and the probability value. Second, the quality of education outcomes was investigated at two stages:

1. First, variations in the academic achievement of the two entry cohorts were examined using the Kruskal-Wallis test - a non-parametric test (Kruskal & Wallis, 1952). This approach was adopted because CGPAs are ordinal scores representing academic achievement; therefore, the use of analysis of variance (ANOVA) - an equivalent parametric approach - may yield misleading conclusions about the data.
2. Next, variations in the candidature status of enrollees (i.e., whether candidates progress normally or not) in the two commencement cohorts were examined using the Pearson chi-square test and the probability value. Unless stated otherwise, associations investigated using the statistical tests presented in the first and second stages of the analysis were determined at five percent ($p < 0.05$) and one percent ($p < 0.01$) levels, unless stated otherwise.

RESULTS

As mentioned, the analysis included two main stages: 1) an investigation of the characteristics of enrollees by enrollment cohort and 2) quality of education outcomes assessed by enrollees' academic achievement and their candidature status at the end of the first year of their master's studies (i.e., normal progression or not). This section presents a detailed assessment of the results, including a summary of the findings of each stage of analysis.

Characteristics of the Enrollees

Differentials (if any) in the characteristics of enrollees in the 2010 and 2011 commencement cohorts were investigated using the Pearson chi-square test and the probability value. Associations between the two variables in question were established at the five percent level ($p < 0.05$) unless stated otherwise. Table 1 presents the results of this investigation.

Table 1: Distribution of Student Characteristics by Enrollment Cohort

Student Characteristics	Enrollment Cohort (%)	
	2010 (N = 88)	2011 (N = 127)
Gender		
Female	44.3	39.4
Male	55.7	60.6
$\chi^2 = 0.52, p = 0.469$		
First Degree Award [Bachelor's]		
First Class	6.2	3.2
Second Upper	71.6	48.4
Second Lower	22.2	48.4
$\chi^2 = 14.49, p = 0.001$		
Prior Studies		
Makerere University	69.3	73.2
Other Ugandan University	26.1	25.2
International University	4.6	1.6
Fishers Exact p - value = 0.423		
Completion Year of First Degree		
Before 2004	18.3	20.5
2005–2007	43.9	32.3
After 2008	37.8	47.2

$\chi^2 = 2.96, p = 0.227$		
Nationality		
Non-Ugandan	0.0	0.8
Ugandan	100.0	99.2
Fishers Exact p - value = 1.00		

Note: Fisher's Exact Test is adopted in case of a violation in the chi-square test assumption—cell count less than five.

With the exception of the type of bachelor's degree held, students' characteristics did not vary significantly by cohort ($p > 0.05$). In the results according to Table 1, there was a higher proportion of enrollees in the 2010 cohort with first- (6.2%) and second- (71.6%) class bachelor's degrees. For enrollees in the 2011 cohort, the proportion with first- and second-class degrees was 3.2% and 48.4%, respectively. These findings suggest that, compared to their counterparts in the 2011 cohort, members of the 2010 cohort had a better grounding in their first degree award, which is evidenced by better academic achievement in their prior studies.

Academic Achievement of Enrollees

As stated earlier, the academic achievement of program enrollees was assessed using their CGPA at the end of the first year of study. The assessment after the first year of study is a good measure of academic achievement because the candidates have not yet dealt with any retakes registered in their MBA program. Nevertheless, the final CGPA score after the two-year stipulated period of candidature is not expected to change significantly. Thus, the first year of study is a good measure of the academic competence of the MBA enrollees. At this stage, the enrollees are expected to have almost completed all coursework related to the program—the remaining work toward their master's involves a research project that does not much change a student's CGPA. Table 2 presents the results of an assessment of students' academic achievements by enrollment cohort.

Table 2: Assessment of Academic Achievement by Enrollment Cohort

Enrollment Cohort	N ^a	Rank Sum ^b	Average Rank
2010	88	11423.5	129.8
2011	127	11796.5	92.8
$\chi^2 = 18.32, p = 0.0001$			

Note: CGPA is adopted as a measure of academic achievement after the first year of study in the MBA program.

^aN represents the total number of registered students by enrollment cohort.

^aSum of ranks generated in each of the enrollment cohorts following a Kruskal-Wallis test.

^bAverage rank is estimated by the sum of ranks divided by the number of students (N) in each enrollment cohort.

The findings shown in Table 2 reveal a significant variation in students' performance before and after the introduction of the GMAT ($p < 0.01$) as an admissions criterion. Surprisingly, students who were not admitted to the MBA based on their GMAT score (2010 cohort) performed better than their counterparts in the 2011 cohort, who were admitted on the basis of their performance on the GMAT. This is evidenced by a higher average rank among the 2010 cohort (average rank = 129.8) compared to the 2011 cohort (average rank = 92.8). This finding points to a weakness of the GMAT in not only determining the academic competence of candidates qualified for admission to the program, but also in enhancing the quality of education outcomes.

Candidature Status of Enrollees

The status of candidature after the first year of studies was evaluated as one of two possibilities - normal or probation progress. The former implies that the candidate did not register any retakes, while the latter represents that the candidate recorded retakes in either the first or second semester, or both. Tables 3 and 4 present the distribution and details of the status of candidature by enrollment cohort.

Table 3: Candidature Status of Students by Enrollment Cohort

Enrollment Cohort	N ^a	Candidature Status (%)	
		Normal Progress ^b	Probation Progress ^c
2010	88	59.1	40.9
2011	127	44.1	55.9

$\chi^2 = 4.67, p = 0.031$

Note: Assessment after one year of study in the MBA program.

^a N represents the total number of registered students by enrollment cohort.

^b Normal progress implies that the student registered no retakes.

^c Probation progress implies that the student registered retake(s) during the first year of candidature - in either the first or second semester, or both.

Table 4: Distribution of the Timing of Retakes Registered by Enrollment Cohort

Enrollment Cohort	N ^a	Timing of Retakes (%)		
		RT ^b	PRT ^c	RT & PRT
2010	36	8.3	83.3	8.4
2011	71	13.0	52.2	34.8

Fisher's Exact p - value = 0.003

Note: Retake details of students after the first year of study in the MBA program.

^a N represents the total number of students who registered retakes by enrollment cohort.

^b RT represents retakes registered in the first semester.

^c PRT represents retakes registered in the second semester.

The results summarized in Table 3 show that a significantly higher proportion of students in the 2010 cohort had normal progress (59.1%) on their candidature compared to the figure for the 2011 cohort (44.1%) ($p < 0.05$). In other words, a higher proportion of the 2011 cohort (55.9%) registered retakes as compared to the 2010 cohort (40.9%).

With regard to the timing of when the retakes were registered, the proportion of students who had retakes in both the first and second semesters was about four times higher for the 2011 cohort (34.8%) than for the 2010 cohort (8.4%). Something common to all students, regardless of cohort, is that the highest proportion of retakes was registered in the second semester of their first year of study - estimates for the 2010 and 2011 cohorts were 83.3% and 52.2%, respectively.

Further analysis of the modules for which the retakes were registered revealed that the highest proportions were in entirely quantitative modules. Among enrollees who registered retakes in 2010 and 2011, the proportions of retakes that involved quantitative modules were 85% and 73.5%, respectively.

SUMMARY OF THE FINDINGS

The 2010 enrollment cohort of the MBA program at Makerere University had better education outcomes after the first year of study as compared to the 2011 cohort. They showed higher academic achievement as well as a higher proportion of students with normal progress (no retakes registered). With the exception of the first degree award ($p < 0.05$), no significant variations were found in students' characteristics of the two cohorts. In light of these findings, the education outcomes of the two enrollment cohorts were not expected to vary significantly.

DISCUSSION

The study clearly reveals that students who enrolled in 2010, before the introduction of the GMAT as an admissions criterion, had better education outcomes compared to those who enrolled in 2011, when the GMAT became a criterion. Particularly the 2010 cohort was found to have significantly higher academic achievement than the 2011 cohort ($p < 0.05$) and a higher proportion of students progressing normally. The results regarding the academic achievement of MBA students at Makerere University are contrary to the study of MBA graduates at the University of Hartford for the period 2003 to 2009 where no significant variation in GPA was observed, regardless

of whether or not the GMAT admission requirement was waived (Fairfield-Sonn et al., 2010). These findings suggest that education outcomes vary across students and/or countries by whether or not the GMAT requirement is waived. Nevertheless, the results in this study suggest that enrollees admitted to the MBA program on the basis of their GMAT scores had lower academic competence than those admitted based on their first degree award, among other qualifications. The findings suggest the following:

1. The GMAT is not an exhaustive measure of the academic competence of candidates for the MBA program.
2. The composition of the GMAT is not comprehensive enough in determining the academic competence of candidates for the MBA program.
3. Focusing on the total score of the GMAT as the sole measure of admission to the MBA program is not an appropriate method of selecting candidates.

Irrespective of the true state of affairs with regard to the aspects of contention presented in prior text, the findings of this study reveal the weakness of relying solely on the outcomes of the GMAT as a basis for determining admission to the MBA program at CoBAMS, Makerere University. However, to overcome the limitation of adopting the total score on the admission examination, this study suggests: 1) adopting a balanced score on all sections of the GMAT and 2) using a weighted score incorporating the GMAT scores and the enrollee's prior academic qualifications, particularly the bachelor's degree award.

The results of analysis of students' candidature status at the end of the first year of master's studies reveal similar results with regard to the education outcomes of enrollees in both cohorts. A higher proportion of retakes registered among enrollees in the 2011 cohort suggest a lower academic competence in comparison with enrollees in the 2010 cohort. In other words, the results suggest a lower academic competence among enrollees admitted to the MBA program on the basis of their GMAT scores when compared to those admitted based on their first degree award. Further, the fact that the highest proportion of retakes obtained by enrollees in both cohorts was registered in entirely quantitative modules affirms the suggestions of a recent study of MBA students at CoBAMS (Wamala, Omala, & Kakumba, 2012) with regard to their competence in the subject area: 1) Candidates admitted to the program do not have the academic background or competence to excel in quantitative-related modules and 2) the course content and/or its mode of delivery may not be appropriate for the learners. Nevertheless, both measures of education outcome (i.e., academic achievement and candidature status) point to the lower academic competence of enrollees admitted to the MBA program on the basis of the GMAT in comparison with those admitted based on other criteria.

With regard to student characteristics, the findings reveal that enrollees in the 2010 cohort had significantly higher academic achievements in both their first degree award and during their master's studies compared to those in the 2011 cohort. The 2010 cohort was more academically competent compared to the 2011 cohort, which was admitted to the MBA program on the basis of the GMAT. These findings support educational studies (Bariez, 2002; Navarro et al., 2011) suggesting that a person who has excelled academically in the past has a greater chance of successful performance in subsequent academic endeavors. Thus, suggestions that the first degree award is a predictor of academic achievement in graduate programs are highly supported (e.g., Fairfield-Sonn et al., 2010; Wamala, Omala, & Kakumba, 2012).

CONCLUSION

In summary, although graduate admission tests are consensually regarded as predictors of academic achievement in graduate studies (e.g., Gregory, 2004; Navarro et al., 2011; Wamala, Omala, & Kakumba, 2012), depending solely on the outcomes of such examinations as the basis for determining admission to the MBA program may not automatically translate into better education outcomes. A key aspect to consider in the MBA admissions process is that an applicant's first degree award has been consensually observed to positively correlate with their academic achievement in graduate programs (Fairfield-Sonn et al., 2010; Wamala, Omala, & Kakumba, 2012). Thus, the findings of this study point to the need to incorporate other aspects of a student's academic competences as a measure of determining the competence of candidates suitable for admission to the MBA program.

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