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Reviewed by *Adigun Agbaje*

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The Determinants of Undergraduate CGPA among Students of the Faculty of the Social Sciences, University of Ibadan

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This paper examines the determinants of students' performance in the University. We used the grade point average (GPA) of students in Faculty of the Social Sciences of University of Ibadan as a model of characteristics of the students at the time of their entry into the university. This helps in identifying the factors that are likely to predict the successful outcome of the students in the university. Specifically, the research tests whether SSCE and JAMB scores are reliable predictors of GPA. In doing this, we analysed a sample of 866 students who graduated in three different sessions from five departments in the faculty. The results of our analysis suggest that while the performance in the General Certificate of Education, ordinary level examinations appears to better predict undergraduate performance as measured by CGPA, JAMB scores are not good predictors of students' grades in the faculty.

GPA's are not always a student's first priority ... higher learning institutions, as well as the professors that teach at those institutions also do not feel it is their job to simply give out high grade point averages.

— Nelson (2003)

I think most of my students, who are undergraduate business majors, have a target grade in mind. If I come up with an innovative technique that saves them an hour of studying a week, they just spend one more hour in the bar.

— (Remark overheard at the 1998 Stanford University conference on innovative techniques in teaching economics.) quoted in King (1999)

Key words: GPA, JAMB score, students performance, University of Ibadan

Introduction and Problem Statement

A student's performance in the university is an important determinant of future success. This performance in all universities in Nigeria is often measured by cumulative grade point average (CGPA).¹ The importance of GPA cannot be

overemphasized as it determines the class of degree that a student graduates with. Further, many postgraduate schools depend on the GPA status to admit students into their graduate programmes while it is also becoming increasingly important in screening candidates seeking employment in many private companies in the country.

GPA is regarded as an accurate reflection of student's overall college career and proficiency in the

¹ CGPA is hereafter referred to as GPA

courses and material taught at college (Nelson, 2003). Naturally, a college GPA can be of utmost importance to an undergraduate's future earnings and some studies have found a positive correlation between GPA and post-graduate income. The determinants of a student's GPA are therefore key to young people's future employment, earnings and lifestyle.

Many administrators and policymakers have lamented the declining quality of university graduates and the main argument is that the universities are producing low quality and unemployable graduates (Olaniyan, 2001). Universities have taken up this challenge and the submission by many of them is that most of the students that enter the universities are not the right candidates, although they are selected for passing the selection tests conducted by Joint Admissions and Matriculations Board (JAMB). They argue that since they have no control over the inputs (admitted students), there is very little that universities can do to produce outputs that are better than the quality of inputs that JAMB admits for them. There are thus insinuations that the problems lie with the quality of students that are admitted into the universities. JAMB is the only selection test in the country and it is assumed that the performance in the selection test should be able to predict the performance of students when they eventually get admitted into the university.

There are arguments concerning the efficiency of JAMB's examinations, especially about the predictive ability of JAMB's University Matriculation Examination (UME) scores, as many studies have cast doubts on the credibility of students' UME scores. In addition, the policy of government to implement autonomy for universities has called for some restructuring in the operation of JAMB. Some studies such as the Education Sector Analysis (ESA); (2003), further recognised that JAMB had been bedevilled by the problems of examinations malpractices that have tended to give it bad image; large number of students seeking admissions into very limited places, which can induce corruption. Thus, JAMB has been making serious efforts to curtail the problem. Over the years, less than 20% of applicants gain admission into the universities through JAMB (Olaniyan, 2001).

The most recent argument against JAMB is that scores in UME examinations are increasingly having no relationship with the performance of students in

the universities and this has been questioned at both the government and the university levels.

In addition to passing JAMB selection examinations, students are also expected to have obtained credit passes in five subjects (including English language for all courses and mathematics for science subjects) in the ordinary level examinations. This serves as prerequisite for being able to comprehend what is being taught in the university. Both JAMB and O level performances therefore combine to prepare the students for university study and it is expected that they will be able to predict the performance of students in the university.

The motivation for this study is the increasing incidence of students with high scores in JAMB and O level examinations failing to perform creditably in the university. Many of them have low GPAs, late graduation, low grades and some eventually drop out of the University. The study tests whether Senior School Certificate Examination (SSCE) and JAMB scores provide a reliable predictor of GPA. The objective of this paper is therefore to model the university GPA of students in the Faculty of the Social Sciences in the University of Ibadan as a function of characteristics of the students at the time of their entry. This helps in identifying the factors that are likely to predict the likelihood of success of a student if admitted.

We analysed data from 866 students from five departments of the Faculty; of which 44.7 per cent are female,² and ordinary least square method was used in analysing the problem. The results of our analysis provide policy options to university administrators on the role of SSCE and JAMB in determining the level of students GPA. The study of the determinants of GPA is important because it measures the extent of human capital acquisition at a time that the young adults are close to permanent entry into the labour market.

The next section provides a background information on JAMB and SSCE examinations and is followed by a brief literature review in section 3. Section 4 presents the methodology of the study,

² There are six departments in the Faculty of the Social Sciences of University of Ibadan, but only five departments offer undergraduate programmes. The sixth one, Department of Urban and Regional Planning offers only postgraduate programmes.

followed by the results of our estimations. The final section concludes with some policy recommendations.

Background to the Study

The criteria for gaining admission into universities in Nigeria rest on two basic requirements. First is that the candidates must pass 5 subjects at credit level including English language at one sitting or 6 credits at two sittings equivalent to the General Certificate of Education (GCE), ordinary level. Second is that the candidate must sit for, and pass the UME, conducted by JAMB. Four subjects are expected to be taken in the UME with a maximum of 400 marks,³ and each candidate is expected to score a minimum of 200 marks. In cases where a particular department in any university cannot admit all the students who have chosen that course and have scored above 200 marks, a cut-off mark is fixed to admit only the required number.

In the case of the ordinary level examinations, there are two key examination bodies. The first is the West African Examinations Council (WAEC) and the second is the National Examinations Council (NECO). WAEC was established in 1951 with four countries as members. These are Ghana, Nigeria, Sierra Leone and the Gambia. The objective of the examinations body is to determine the examination required in the public interest of west Africa, conducting such examinations and awarding certificates provided such certificates do not represent a lower standard of attainment than the equivalent certificates of examining authorities in the United Kingdom. Over the years, WAEC examinations have proved to be of high quality and reliable (ESA, 2003). In the last few years, WAEC has been faced with the problem of an increasing number of candidates sitting for its examinations. This is one of the reasons, why examination malpractices coupled with delay and cancellation of results is now a major issue for the examination body. It was as a way of shedding the load of WAEC that NECO was established in Nigeria. Although, NECO conducted its first examination in May/June 2000, the law giving effect to the body was not in place until 2002 when the National Assembly passed the bill authorizing the council. Although, there were some credibility problems initially, tertiary institutions in

Nigeria are beginning to have some measure of confidence in the body.

In the case of JAMB, the suggestion to establish the examining body was muted by the Committee of Vice chancellors between 1974 and 1977 as a response to the problem of admission into universities in Nigeria (ESA, 2003). Before then, each university conducted its own admission tests and had its own admission criteria. An arrangement that led to a situation where brilliant students had multiple admission offers, while the less brilliant ones were denied admission. In order to centralize admission into the Universities in the country, JAMB was set up through decree No. 2 of 1978. One of the main reasons that necessitated the setting up of JAMB was to bridge the admission gap between the North and South. It was in view of this that the JAMB decree was preceded by decree No 40 of 1978, which transferred the provision of higher education from the concurrent legislative list to the federal exclusive list.

The functions of JAMB according to the decree that set it up are as follows:

1. Notwithstanding the provisions of any other enactments, the Board shall be responsible for the following matters that is to say:
 - i. The general conduct of matriculation examinations for admissions into all Universities in Nigeria;
 - ii. The appointment of examiners, moderators, invigilators, members of subject panels and committees and other persons with respect to matriculation examinations and any other matter incidental thereto or connected therewith;
 - iii. The placements of suitably qualified candidates in the Universities after having taken to account the vacancies available in each and every University, the preference expressed or otherwise indicated by candidates for certain Universities and courses and such other matters as the Board may consider appropriate in the circumstances;
 - iv. The collection and dissemination of information on all matters relating to admissions into Universities or to any other matter relevant to the discharge of the functions of the Board under this Decree; and

³Each of the subjects has a maximum score of 100 marks

- v. The carrying out of such other activities as are necessary or expedient for the full discharge of all or any of the functions conferred on it under or pursuant to this Decree.
2. For the avoidance of doubt, the Board should be responsible for determining matriculation requirements and conducting examinations leading to undergraduate admission and admissions to non-degree courses but shall not be responsible for examinations or any other selective process for post graduate courses.
3. Subject to the provision of this Decree, the Commissioner may give the Board directions of a general character or relating generally to particular matters with regard to the exercise by the Board of its functions under this Decree and it shall be the duty of the Board to comply with such directions.

Decree No. 4 of 1993 amended the original JAMB decree to make it possible for JAMB to conduct examinations for admissions into all tertiary institutions as against just the universities alone. In the early days of the JAMB, the universities provided the necessary input into admission policies therefore creating a smooth relationship. The JAMB therefore did not appear as a body to impose things on the universities. In fact, JAMB respected the universities as pivotal to the admission process since they teach the students.

At the level of implementation, both the universities administrations and the faculties/departments were involved in the admission of candidates into the universities. At each admission exercise, the admission officers, deans of faculties and heads of departments in each faculty were present. First, the universities decided the total number to be admitted by the faculties and departments. This number determines what the cut-off mark for each course would be. There used to be four categories of admission, but three cut-off marks. The admission categories were; the academic merit, catchments area or locality, educationally less-developed areas and the discretion categories. However there were three cut-off marks: the merit cut-off mark, the locality cut off mark, and the educationally less-developed states cut-off marks.

Academic merit admission is based entirely on the scores in the JAMB examination. The best students in the examinations are counted under merit and this represents 40 per cent of total admission into a particular university. In the case of locality, this takes care of the states in the immediate vicinity of the particular university. In the case of University of Ibadan, it occupies a peculiar situation of being the first university in the country; hence all the states in the country are regarded as its catchments area.⁴ The definition of the catchments area is beyond the universities as they are determined by the government's directive.

The educationally less-developed states are so categorized to encourage citizens of states that are regarded as not educationally developed, to get more of tertiary education. This is also determined by the federal government. The discretion admission criteria is the one that is left purely for the universities to determine. However, this has also been cancelled by the Fourth Republic. The implication is that none of all the above criteria for admission into the university is directly controlled by the universities. Cut-off mark for educationally less developed states (ELDS) is usually lower than the cut-off mark for merit. In the past, the mark for discretionary admission was also lower than that of merit, usually ranging between merit and ELDS.

The biggest problem in the past few years has been in the interpretation and application of discretion. Discretion must not be so fluid as to become ridiculous. At the University of Ibadan, the lower limit of JAMB score for those seeking admission under the discretion criteria was fixed at the ELDS cut off mark. This is regarded as being logical and consistent and is used to accommodate various classes of candidates including biological children of university staff.

While that represent the biggest problem to the universities in the selection of candidates for admission, the biggest problem to the society is the proportion of good students that are denied admission into the universities every year. In Nigeria, there are presently three types of students at the pre-university

⁴ The only other university in the country that has all the states of the federation as its catchments area is the University of Abuja.

stage, which can be classified as 'applicants', 'frustrated aspirants' and 'entrants'.

Applicants are those who have successfully completed the secondary education and have expressed their effective demand by completing application forms while *frustrated aspirants* are those who have academic talent and desire to pursue further studies but are driven out of the race for financial reasons. The third set are the *entrants*, who are those who eventually survive the selection process and are eventually admitted. Since the structure of university admission in Nigeria is such that utilized non-price allocative mechanism only, it favours students from well to do families who can afford the substantial direct cost of preparation for the university entrance examinations and the indirect costs of forgone earnings while the child is in school as well as extra legal costs of having a high grade in JAMB examinations (at all costs). The absence of tuition charges in the federal universities increases the ratio of applicants to entrants thereby widening the gap between the demand and supply and also leading to corrupt activities in gaining admissions into the universities.

Review of Literature

The importance of GPA cannot be overemphasized. This is because it reflects human capital acquisition at a time when young adults are close to permanent entry into the labour market (Betts and Morell 1999). In fact, studies like Jones and Jackson (1990) have found a positive and significant relationship between GPA and earnings in the labour market. There have been many studies investigating the factors affecting the GPA scores of university students. The dominant variables suggested as the main determinants include the high schools results, admission test scores, attitudes, peer effects reading habits as well as pedagogical inputs (King, 1999; Nelson, 2003; Sacerdote 1999; and Al Tamimi and Al Shayeb 2002).

Betts and Morell (1999) argue that variation in GPA in a typical university often shows substantial variations which reflects, in part, the degree of difficulty among different programmes of study as well as the level of preparedness of freshmen undergraduates. The main indicators of the performance are reflected in the performance at

secondary schools and the score in the entrance examination into the university. Early studies of the determinants of GPA focused on identifying gender differences in performance in economic courses (see Lage and Treglia 1996) while some studies such as Didia and Hasmat (1998) found no evidence of gender difference, Tay (1994) concluded that males perform better than their female colleagues.

Other studies of GPA determinants examined the impact of class attendance and most studies including Chan et al (1997) and Durden and Ellis (1995) found that adequate class attendance is a significant determinant of academic performance in the university. Romer (1993) also investigates the effect of class attendance on students' performance and found a positive significant relationship. It is however suggested that class attendance only becomes a problem if the rate of absenteeism becomes very high.

Nelson (2003) considered the effects of social pressure of college life and found that they can be a strain on the students' time and grades. In addition, the prioritization of options directly affect the time spent by students in school and on schoolwork. It is in this line that Wolaver (2002) found that there is negative significant relationship between alcohol drinking and students' GPA.

In a study of students in United Arab Emirates, Al Tamimi and Al Shayeb (2002) found that the GPA of students are significantly related to class attendance, gender and semester workload of students. King (1999) however, found that students' performance in the university are positive functions of the high school GPA and attitude towards the course they undertake in the university. He further found that a percentage change in high school GPA explains about 10 percent change in students' performance. He also found that more efforts, attendance, quantity and quality of homework significantly determine the performance of students.

Most universities see it as their goal to teach and facilitate new ways of thinking. Grades are often not their first priority. This was one of the conclusions of Jones (1990) when he wrote "Professors say that too many of their students are too focused on grades rather than on learning". Young (2002) had similar findings where he found that "students... are concerned with college as a means to an end—getting

into a good graduate school or getting a good job". Furthermore the same study indicated that teachers testified that students calculate their decisions on how much effort to put in, in order to maximize their GPA. King (1999) suggested that initial knowledge is very important for explaining university GPAs. However, he argues that most studies fall short because they do not include many psychological variables that affects GPA such as tastes, commitment of the students, peer group effects, attitudes and efforts. Betts and Morell (1999) reveal that the family background of students, their high school resources and peer groups are all statistically significant in determining the GPA of students.

The most important factor in this study is the selection test for admission into the university. Examining the predictive validity of tests is not new in Nigeria. Yoloye (1993) in a study of achievement in Nigerian grammar schools found that large Thorndike intelligence tests have substantial predictive validity for achievement. In another study, Majasan and Bakare (1974) found that GCE O level and Higher School Certificate (HSC) and GCE A level do not adequately predict the degree performance of university of Ibadan students. Using correlation analysis for students in three faculties (Arts, Sciences and Social Sciences) of the University of Ibadan, Ehigie (2001) found that there exists a significant positive relationship between students' performance and JAMB score by Faculties of Arts and Sciences students while the relationship for Social Sciences students was not significant. It should be noted that the correlation coefficients even when significant were still low with a coefficient of 0.41 and 0.32 for Arts and Sciences Students respectively. In addition, Olaniyan (2003) in a study of Economics students of the University of Ibadan found that JAMB is not a significant determinant of students' performance although the study reveals that the dummy reflecting that a student took JAMB examinations more than once is significant at 10 percent level.

Methodology

Model specification

Ordinary least square was used to regress students' GPA on their academic characteristics on entry into the University. The objective is to examine the

amount of variance explained in the GPA by the students' characteristics on entrance

$GPA = f(\text{JAMB, O Level score, Age, gender, late graduation, computation method})$

where:

GPA = final GPA of the candidate on graduation from the university

JAMB score of the student used in gaining admission into the university

O/L score = Average score of the candidate in the ordinary level examinations

Gender = Gender of the candidate (1 = female)

Age = Age of the student on admission into the university

Late graduation = student spent more than the required number of years for the programme before graduating

Computation method⁵ = Computation method used for calculating the (C)GPA of the student (1 = CGPA)

Theoretical expectations

We define our expectation concerning the independent variables. We expect a positive relationship between JAMB scores and GPA. This is important if in reality JAMB examination can adequately predict the performance of students while in the university. Hence we expect a student with high score in JAMB to perform very well in the university as reflected by the GPA. Furthermore, we expect that the coefficient of the performance in O level examinations would be negative. This is so because, by our definition of performance in O level examinations, the lower the index, the better the performance of students. Hence, when students perform creditably in ordinary level examinations with indices that are closer to 1, it should be associated with higher GPA of the corresponding candidates. In the case of the gender variables, the sign of the coefficient can be positive or negative. A negative coefficient indicates that females have poorer

5 We have introduced this variable because two types of methods were used in calculating final GPA of students under consideration. While the first method was calculated for selective courses including all compulsory, required and elective courses, the second method includes all registered courses of the student for computation (i.e. CGPA).

performances than boys and vice-versa. The coefficient of late graduation is expected to be negative, while a significant coefficient for computation method will signify that the mode of computation, whether GPA or CGPA have important implications on the final GPA computed for the students.

Data requirement and sources

The study was conducted using the Faculty of the Social Sciences of the University of Ibadan as a case study. The data was gathered from the students' record of graduated students of the Faculty in three sessions; 2000/2001, 2001/2002 and 2002/2003 sessions. However, only data for students who have all the needed information in their record cards were used. These are, specifically, information on the JAMB score, O level results, GPA and gender of the students.

It should be noted that the scale of measurement of GPA varies from university to university. In some universities the scale is on the scale of five while for others it is on the scale of 7. In the university of Ibadan, the GPA is measured on the scale of 7. While it is technically possible to have a GPA of less than unity, such incidences were not considered, as such candidate would have been asked to withdraw from the university without a degree.⁶

In the case of the performance at the ordinary level examinations, we reduce this to an average score. We first allocate indices to specific grades in the examination. SSCE scores are scaled 1-9 and the classification is as follows:

- A1 = 1
- A2 OR B2 = 2
- A3 OR B3 = 3
- C4 = 4
- C5 = 5
- C6 = 6
- P7 or D7 = 7
- P8 OR E8 = 8
- F9 = 9

⁶ We recognise that this introduces selectivity problems since we are only dealing with candidates that successfully completed the degree programme and excluding those that did not for any reason whatsoever.

A candidate normally sits for between 6 and 9 subjects in the ordinary level examinations, so we have found an average of the scores given the number of subjects that any particular student takes.⁷ Table 1 presents the descriptive statistics of the variables used in our analysis.

Table 1. Summary statistics of the variables

Variable	Mean	Std. Dev.
GPA	3.20	0.91
JAMB score	222.69	14.64
Average O level score	5.00	0.83
Age	21.27	3.04
Gender (female = 1)	0.45	0.50
Mode of computation	0.65	0.48
Graduated late (dummy = 1 if student spends more than minimum years before graduating)	0.19	0.39

Source: Survey data, 2004

Analysis of Results

Correlation analysis

The starting point of our analysis is to investigate the relationship between the GPA, SSCE results and JAMB scores through correlation analysis. This provides an intuition regarding the relationship between the variables and the direct relationship, which is not apparent from the causality regressions. The result indicates, generally, that JAMB scores are not correlated with GPA of the students in the Faculty (see table 2). However, when we decompose by departments, we found that JAMB is significantly negatively correlated with GPA in Departments of Economics [®] = -0.251; *p* < 0.05) and Geography [®] = -0.170; *p* < 0.05). However, for the other three departments in the Faculty, the result indicates non-significant correlation between JAMB and GPA.

⁷ In Nigeria, there is the possibility of combining two O' level results to make a minimum of 6 credit passes (including English language) at no more than two sittings. In such cases where candidates combined two results, we chose the best 8 results including English language. In the course of our estimation, we tried including a dummy to represent such case. While the dummy variable is positively significant it does not significantly alter the size and sign of the JAMB and O level coefficients. We do not have the problem of combining results from WAEC and NECO because by the time those in our sample were admitted into the University, NECO was not in place.

Conversely, there exists a significant correlation between GPA and the performance at the ordinary level examinations in all the departments with the exception of students in the Department of Geography. In all cases however, the direction of correlation, as expected, is that students' performance in O level examinations is a better indicator of students' GPA.

Table 2. Cross correlation between SSCE, JAMB and GPA.

	GPA and JAMB	GPA and O Level average score	GPA and O Level English language
All students	-0.024 (0.479)	-0.286 (0.000)	-0.130 (0.000)
Economics	-0.251 (0.000)	-0.429 (0.000)	-0.141 (0.036)
Geography	-0.179 (0.049)	-0.047 (0.604)	-0.091 (0.319)
Political	-0.031 (0.782)	-0.307 (0.001)	-0.167 (0.082)
Science	0.041 (0.453)	-0.154 (0.005)	-0.012 (0.823)
Sociology	0.026 (0.788)	-0.202 (0.016)	-0.211 (0.012)
Psychology			

Note: Figures in parenthesis represent the significance level of the correlation coefficient.

We then examined the causal relationship between JAMB scores and GPAs of students. Econometric analysis has shown that when there are many explanatory variables, there is the possibility of multicollinearity problem in the model. A rule of thumb criteria was therefore used in examining this problem. The rule of thumb criteria was suggested by Anderson et al. (1990), that any correlation among variables that is less than 0.7 is not likely to indicate a problem. Our analysis shows that correlations among the key variables are not high enough to indicate that serious multicollinearity problem exists.

Regression analysis

In this section, we report the results of the estimation of the reduced form model of GPA. The dependent variable is the GPA. We start by estimating the model without personal and school variables (table 3). We then introduce personal variables before then introducing the computational peculiarities in the university. The results reveal that there is negative

relationship between JAMB scores and the university GPA. This relationship is weak as a one-point increase in JAMB scores translates to a decrease of 0.001 point reduction in a student's GPA. However, this relationship is not statistically significant which means that the coefficient is not statistically different from zero. When other variables are included, the coefficient of JAMB scores maintains a consistent negative but insignificant causal relationship between JAMB scores and GPA. The interesting part of the result is that when the mode of computation i.e., whether CGPA or GPA is used, the coefficient of JAMB turns up with the right sign and is significant at a 10 per cent significance level. It should be noted that a simple regression of GPA on JAMB score shows that more than 99 percent of the variations in the University GPA remains to be explained as revealed by the R². This results is in contrast to the findings of King (1999) who found that high school performance significantly determines GPA of university students.

Table 3. Determinants of GPA performance of students (All students)

	1	2	3	4
Constant	3.512 (7.40)***	4.9320 (10.20)***	6.6101 (12.40)***	5.5913 (10.52)***
JAMB	-0.00150 (-0.71)	-0.0009 (-0.42)	-0.0003 (-0.15)	0.0039 (1.91)*
O level average Score		-0.3129 (-8.71)***	-0.2787 (-7.81)***	-0.2549 (-7.36)***
Age			-0.0740 (7.26)***	-0.0598 (-5.83)***
Gender			-0.1486 (-2.42)**	-0.1191 (-2.01)**
Mode of computation				-0.3496 (-5.53)***
Graduated late				-0.3218 (-5.08)***
No of observations	866	866	866	866
F statistic	0.50	38.24	32.81	35.7800
Prob > F	0.4792	0.0000	0.0000	0.0000
R-squared	0.001	0.0815	0.1382	0.2083
Adjusted R-squared	-0.0006	0.0794	0.1340	0.2025

Note: -All regressions are controlled for students who combine two O level results

- Dependent variable is GPA

T-Statistics appear in parenthesis

*** Indicates that using a two tailed tests, it is significant at 0.01 and

** Indicates that using a two tailed tests, it is significant at 0.05

* Indicates that using a two tailed tests, it is significant at 0.10

In contrast, the performance in O level examinations satisfies all the a priori expectation. We expect that the best set of students in O level results should perform well in the university. Hence, a better performance of the students as revealed by the index of O level performance leads to an increase in GPA of the students. For example, as revealed by model 2, a reduction in the index of O level result translates into an increase in the University GPA of about 0.31 point.⁸

We then added the students' characteristics in terms of the age and gender of the students. The result reveals that students' age and gender are significant determinants of GPA. The negative sign of the gender dummy shows that male students significantly perform better than their female counterparts. This tends to support the findings of Tay (1999). In addition, those whose results were computed using the GPA computational method have lower GPA than those whose results are computed using the GPA computational approach.

Using the R^2 , the models for all the students indicate that up to 20 percent of the variations in the students GPA can be explained by the explanatory variables. Starting from the JAMB scores, our results reveal that the coefficient for JAMB is consistently not a significant determinant of the students GPA. In terms of the a priori expectation, we had expected that the relationship between GPA and JAMB score would be positive but the results indicate that a high score in JAMB causes a decline in the GPA performance of the student. This result is not statistically significant however, when the process is controlled for the procedure for graduation, which includes the type of computation of the GPA, as well as whether the student graduated late; we found that this changes the effect of JAMB scores on GPA positively and is statistically significant at 10 per cent level.

In order to examine the departmental differences, we re-estimated the models for the different departments in order to know the impact of JAMB scores and O level results in the different departments. The full results for different

departments are presented in the appendix. Starting with results for the Department of Economics, we found that there is a negative significant relationship between JAMB scores and GPA of students. This indicates that a one-percentage increase in JAMB scores reduces the GPA score by about 0.02 points. Many reasons are given for this. First is the insinuation everywhere that the results of JAMB examinations are products of cases of examination malpractice and impersonation. Another explanation is that it is possible that students, on entering the university reduce their efforts on academic work and this leads to a decline in their overall performance in the university.

However, the SSCE results are in line with the a priori expectation of the model. The better the performance of the students in the SSCE examinations, the higher the GPA the students are likely to come out with. One interesting result from the Department of Economics is that there is no significant difference between male and female students in terms of performance in the department.

In the Department of Geography, JAMB scores exert a significant negative causal effect on the GPA of the student and this is statistically significant no matter the specification that is considered. Although the coefficient for the O level results comes with the right sign, it is not significantly different from zero as they are not statistically significant even at 10 per cent.

For the Department of Political Science, while the JAMB score was not a significant determinant of GPA over the period of analysis, the result reveals that the O level results can adequately predict the performance of students in the University, as all the coefficients for O level results were significant at 1 per cent level. In addition, individual factors are not significant determinants of the GPA. As revealed by our results, there appears to be no gender differences in the GPA of students, but students who graduated late have lower GPA.

JAMB is not a significant determinant of university GPA in the Department of Sociology. The coefficient for JAMB becomes significant only after the computational modalities are controlled. However, the O level results in the other departments can significantly predict the performance of the students in the university.

⁸ It should be noted that given the description of the index earlier in the paper under data requirements, the lower the value of the SSCE index, the better the performance of the student and also the higher the GPA of the student, the better the performance of the student.

The result further reveals that the JAMB score of these students who study psychology cannot predict the performance of the students in the university. While it is significant that JAMB is controlled for, it turned out to be insignificant when individual factors of the students are controlled for. Furthermore, there is no significant difference in the performance of students by gender in the department.

Conclusion

There has been very little evidence to document the effect of university selection examinations and high school performance on the performance of students in the university in Nigeria, a point that should be of interest to policy makers.

First, the result of this study suggests that JAMB scores are not good predictors of university GPA among students of the Faculty of the Social Sciences. However, the result suggests that individual and university factors can significantly improve the predictions of students GPA.

Secondly, we found that performance in the SSCE and Ordinary level examinations can predict GPA more accurately. Except for the Department of Sociology, where it is found that male students outperform their female counterparts, there appears to be no gender differences in the performance of students in the faculty.

The study clearly shows the need for further research into this issue in other faculties and universities. It would also be interesting to include the effect of family background, class attendance and reading behaviours of the students in explaining these performances.

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Appendix

Table 1. Determinants of GPA performance of students (economics students)

	1	2	3	4
Constant	8.4489 (6.40)***	9.65 (7.86)***	10.9901 (8.86)	7.7248 (6.20)***
JAMB	-0.02182 (-3.76)***	-0.1728 (-3.21)***	-0.0148 (-2.82)***	-0.0042 (-0.83)
O level average		-0.4817 (6.35)***	-0.4233 (-5.64)***	-0.3604 (-5.19)***
Age			-0.0847 (-3.92)***	-0.0425 (-2.05)**
Gender			-0.0563 (-0.43)	-0.0234 (-0.20)
Mode of computation				-0.3090 (-2.05)**
Graduated late				-0.7385 (-5.17)***
No of observations	212	212	212	212
F statistic	14.14	28.65	19.12	22.4600
Prob > F	0.0002***	0.000	0.0000	0.0000
R-squared	0.0631	0.2160	0.2707	0.3978
Adjusted R-squared	0.0586	0.2084	0.2565	0.3801

Note: All regressions are controlled for students who combine two O level results

T-Statistics appear in parenthesis

*** Indicates that using a two tailed tests, it is significant at 0.01 and

** Indicates that using a two tailed tests, it is significant at 0.05

* Indicates that using a two tailed tests, it is significant at 0.10

Table 2. Determinants of GPA performance of students (geography students)

	1	2	3	4
Constant	6.1125 (3.96)***	6.3721 (3.90)***	7.1115 (3.59)***	7.5043 (3.86)***
JAMB	-0.1428 (-1.99)**	-0.01423 (-1.98)**	-0.0146 (-1.99)**	-0.0141 (-1.95)**
O level average		-0.0512	-0.0400	-0.0894
Age			-0.0304	-0.0277
Gender			0.0817	0.0505
Mode of computation				-0.4344
Graduated late				0.0059
No of observations	122	122	122	122
F statistic	3.97	2.10	1.4200	2.2500
Prob > F	0.0486**	0.1274	0.2331	0.0437
R-squared	0.0320	0.0340	0.0462	0.1049
Adjusted R-squared	0.024	0.0178	0.0135	0.0582

Note: All regressions are controlled for students who combine two O level results

T-Statistics appear in parenthesis

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Table 3. Determinants of GPA performance of students (political science students)

	1	2	3	4
Constant	3.6632 (2.54)**	5.5368 (3.72)***	5.2523 (3.34)***	6.4976 (4.02)***
JAMB	-0.00179 (-0.28)	-0.0028 (-0.46)	-0.0033 (-0.55)	0.0022 (0.32)
O level average		-0.3401 (-3.16)***	-0.3910 (-3.45)***	-0.3602 (-3.22)***
Age			0.0281 (0.89)	0.0051 (0.14)
Gender			-0.2982 (-1.62)	-0.2532 (-1.40)
Mode of computation				-2.0517 (-2.46)**
Graduated late				-1.9371 (-2.47)**
No of observations	81	81	81	81
F statistic	0.08	5.05	3.7400	3.6600
Prob > F	0.7825	0.0087	0.0078	0.0031
R-squared	0.0010	0.1146	0.1665	0.2314
Adjusted R-squared	-0.0117	0.0919	0.1220	0.1682

Note: All regressions are controlled for students who combine two O level results

T-Statistics appear in parenthesis

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Table 4. Determinants of GPA performance of students (sociology students)

	1	2	3	4
Constant	2.5237 (4.04)***	3.1075 (4.80)***	5.4612 (7.37)***	5.0516 (6.91)***
JAMB	0.00209 (0.75)	0.00314 (1.13)	0.0028 (1.05)	0.0057 (2.13)**
O level average		-0.1594 (-2.98)***	-0.1403 (-2.73)***	-0.1132 (-2.24)**
Age			-0.0844 (-5.71)***	-0.0840 (-5.75)***
Gender			-0.2404 (-2.65)***	-0.2327 (-2.63)
Mode of computation				-0.2131 (-1.90)*
Graduated late				-0.3086 (-2.14)**
No of observations	338	338	338	338
F statistic	0.56	4.73	10.9200	11.0600
Prob > F	0.4532	0.0095	0.0000	0.0000
R-squared	0.0017	0.0274	0.1163	0.1674
Adjusted R-squared	-0.0013	0.0216	0.1057	0.1523

Note: All regressions are controlled for students who combine two O level results

T-Statistics appear in parenthesis

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** Indicates that using a two tailed tests, it is significant at 0.05

* Indicates that using a two tailed tests, it is significant at 0.10

Table 5. Determinants of GPA performance of students (psychology Students)

	1	2	3	4
Constant	2.8788 (2.23)**	4.0566 (2.97)***	3.8994 (1.56)	3.8506 (1.56)
JAMB	0.00158 (0.27)	0.0033 (0.57)	0.0151 (1.33)	0.0137 (1.22)
O level average		-0.3061 (-2.32)**	-0.2347 (-1.46)	-0.2843 (-1.80)*
Age			-0.1105 (-2.77)***	-0.0758 (-1.87)*
Gender			0.1262 (0.58)	0.0921 (0.44)
Mode of computation				-0.5124 (-1.69)*
Graduated late				-0.1216 (-0.42)
No of observations	113	113	113	113
F statistic	0.07	2.73	2.8100	3.3
Prob > F	0.7877	0.0695	0.0323	0.0067
R-squared	0.0007	0.0473	0.1417	0.2306
Adjusted R-squared	-0.0083	0.0300	0.0912	0.1607

Note: All regressions are controlled for students who combine two O level results

T-Statistics appear in parenthesis

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** Indicates that using a two tailed tests, it is significant at 0.05

* Indicates that using a two tailed tests, it is significant at 0.10

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