

THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Predictive Validity of First Year GPA and Final Degree Classification among Management and Social Sciences Students

Dr. Nuruddeen Lawal

Principal Assistant Registrar, University of Abuja, Nigeria

J. B. Badu

Professor, University of Abuja, Nigeria

Emeka Joshua Chukwuemeka

M.Sc. Graduate, Department of Information and Communication Technology in Education,
Eastern Mediterranean University, Turkey

Abstract:

Predictive validity of different examinations on a future academic achievement have been carried out in various studies. These include studies that investigated the predictive validity of primary school examinations on future academic performance in post primary schools, predictive value of junior secondary school examination on performance in senior secondary school while still others investigated the predictive ability of senior secondary school examinations on performance at university level. In this study predictive validity of first year GPA and final degree classification amongst management and social science students in Nigerian universities were examined through an ex-post facto research design (a quasi-experimental method). Records of the graduates first year GPA and final Degree classification were obtained from the students' records and analyzed using Pearson correlation analysis which was conducted to examine the strength of relationships. Hypothesis 1 was rejected while Hypothesis 2 was accepted which implies that there was a significant but negative correlation between 1st year GPA and final degree classification among management science graduates, there is no significant difference in the 1st year GPA scores among students in management sciences courses respectively. The result also suggests that students in different courses of study score slightly differently in 1st year GPA with those in BSc Accounting scoring highest and those in BSc Business Administration scoring lowest. Conclusively, the study recommends that further studies leading to the investigation of relationships between 1st year GPA and later years in University should be done to explore further the nature of the relationships.

Keywords: Predictive validity, academic achievement

1. Introduction

A number of studies aimed at investigating the predictive validity of one examination on a future academic achievement have been carried out. These include studies that investigated the predictive validity of primary school examinations on future academic performance in post primary schools. Others investigated the predictive value of junior secondary school examination on performance in senior secondary school while still others investigated the predictive ability of senior secondary school examinations on performance at university level. Some studies also investigated the predictive ability of University Matriculation Examination (U.M.E) on performance at University. Other studies combine the Senior Secondary School Examination (SSCE), University Matriculation examination as well as Post U.M.E.(a test conducted by individual universities on the students, who made stipulated qualification scores in U.M.E) to determine their combined predictive value on students' performance in the Universities. Studies related to the above are reviewed in this section.

2. Review of Previous Studies

Mutane Kelwa (1993) carried out a study to determine the predictive validity of Zambian primary school examination used for certification and selection of candidates into Junior Secondary Schools. The sample of the study constituted of 294 boys and 257 girls of 1988 Junior Secondary School students. The sample was divided into 3 groups of top scoring boys and girls, middle scoring and low scoring boys and girls using the cut-off marks as a guide. The subjects' scores from Primary School Examination were correlated with their 1989 JSS examination results and a positive correlation of 0.35 was produced. Following these candidates up to their Senior Secondary School Examinations in 1992, a correlation coefficient between the primary seven scores and five (5) best subjects of the students were computed and a low but positive correlation of 0.20 was found.

Ridell and Nyagura (1989) undertook a multilevel research study on school type effectiveness in which the Zimbabwe's primary seven students' grades for 33 secondary schools were statistically controlled. Their findings demonstrate among other things that 66% of the

variance in achievement on the Zimbabwe's Junior Secondary School Examination (ZJSSE) in English between schools was due to the students' primary seven grades in English. They further established that the effects of controlling the primary scores in English and Mathematics of each individual JSS 2 pupil revealed as follows; in Mathematics, one-third ($1/3$) of the overall variance is accounted for by the primary seven achievement and half ($1/2$) in the case of English. This means that for every point increase in the primary seven students' scores there is 3rd of point increase at the JSS examination for Mathematics and $1/2$ a point for English. For example, if pupil A scored 90% in primary seven Mathematics and Pupil B scored 60%, there would be at least 10% difference in their JSS Mathematics scores as a result of their different scores in the primary seven examination.

Faleye and Afolabi (2005) studied the predictive validity of Osun State Junior Secondary Certificate Examination (JSCE) on the academic performance of the students in the Senior School Certificate (SSCE) conducted by West African Examination Council (WAEC). The sample for this study constituted of 500 students selected from six secondary schools in Osun State. The candidates' JSCE results in 6 subjects were correlated with their SS1, SS2, and WAEC's SS3 examination results with the exception of Biology and Chemistry which were paired and matched with Integrated Science in the JSCE and Geography in the SSCE was matched with Social Studies in JSCE.

The result of their study showed that:

- three out of six schools investigated had relatively low but significant correlations between JSCE and SSCE results;
- two schools had significant correlation between JSCE and SS2 results;
- performance in JSCE English and Mathematics could be used to predict performance in English and Mathematics in SS2, SS2 and SSCE;
- overall performance in JSCE tend to have low capacity to predict performance in SSCE.

Similarly, Adebola (2004) carried out a study on the predictive validity of Junior Secondary School Mathematics, Senior Secondary School Mathematics, Physics and Further Mathematics. Using a sample of 288 senior secondary school students comprising 164 boys and 124 girls selected from four (4) public secondary schools in Eti-Osa Local Government Area of Lagos State. The result showed a positive relationship between performance in JSS Mathematics and performance SSS Mathematics, Physics and Further Mathematics. In relation to gender differences, the study revealed that while there is no significant gender difference in students' performance in JSS Mathematics, their performance in SSS Mathematics is significant in favour of the boys.

Ojerinde (1995) investigated the degree to which pupils' scores at the selection test into Suleja Academy predict their performance in the Junior School Certificate Examination (JSCE) in four core subjects (Mathematics, English, Integrated Science and Social Studies). The study followed the pupils from JSS1 to JSS3. In this study, the subjects scores in the selection examination in English, Mathematics (1993 & 1994) and aptitude test (1994) were correlated with their respective continuous assessment scores in English, Mathematics, Integrated Science and Social Studies for years 1, 2 and 3 for the 1993 – 1996 cohort as well as with the JSCE 3 final year scores. The result showed that all correlations were significant at $p \leq 0.05$ level except for English year 2, Integrated Science year 2 and Social Studies final year. He further discovered for the 1993 – 1996 cohort that English selection scores related very lowly with both the internal and external examination scores. On the other hand for the same cohort, Mathematics selection scores had high relationship with the internal and external scores. Also the selection scores for English, Mathematics and aptitude tests for the 1994 – 1997 cohort related very well with both internal and external examination scores with the exception of Social Studies final.

However, the inclusion of aptitude test scores in the 1994 – 1997 cohorts, the correlation coefficient showed that only English had an increased correlation coefficient values for all the years with the selection scores. Moreover, it was observed that the average correlation coefficients across the years for the two cohorts did not conform to any definite order or pattern. According the study, the reason might be due to the effect of sorting according to ability levels, variation in subject matter content, instructional factors, personal factors resident in the students and others related factors to test scores.

On how significantly can the selection scores predict performance in final examination, the data was subjected the data to multi-linear regression analysis in some core subjects and found that Mathematics selection test was a better predictor of English than the English selection test in the 1993 – 1996 group. For the 1994–97 group however, English selection test predicted better than Mathematics selection test. The inclusion of aptitude test scores to this group tends to increase the variance tremendously.

Omirin and Ale (2008) also investigated the predictive validity of English and Mathematics Mock results of students on West African School Certificate Examination (WASCE) in Ekiti State, Nigeria. Using 360 students randomly selected from 12 public secondary schools in six (6) local government areas of Ekiti State, the findings revealed that Mock English and Mathematics scores helped significantly in predicting the success in academic performance of students in WASCE. The results further revealed that English Mock results were a better predictor of success in WASCE than Mathematics mock results.

Ademola (2004) studied students' performance in Mathematics as correlates of their performance in other basic science subjects. The study examined the effect of four predictor variables (Biology, Chemistry, Physics and Agricultural Science) and their relative influences on students' performance in Mathematics. The results of the study show a low positive correlation between the dependent variable (Mathematics) and set of independent variables. Chemistry appeared to be the best predictor of performance in Mathematics.

Mwanza (1993) carried out an investigation on the predictive validity of Malawi School Certificate Examinations (MSCE) for selection of candidates into the University of Malawi. He concluded that in so far as the validity coefficients were statistically significant, the MSCE grades are reasonable predictors of academic success in the first year at Chancellor College. However, he alerted that the MSCE grades on their own do not provide an effective selection instrument for university education because only a small proportion of variance in college achievement can be explained in terms of them.

Abdullahi (1983) conducted a study on the predictive validity of University Matriculation Examination on First year University Examination (FUE) at University of Ilorin in the following subjects, Biology, Chemistry, Physics, Economics and Geography. He

found a significant correlation between UME scores and FUE scores in Chemistry, Physics and Economics, but low correlation in Biology and Geography.

Esezobor (1993) also investigated performance at First University Examination (FUE) relative to that at the ordinary level English and Mathematics examination. Using a sample of 2,065 students from University of Legon, Ghana from the Faculties of Social Sciences, Arts, Medicine, Science, Administration and Agriculture reported the following correlation between the O/Level grade in English and Mathematics and FUE scores.

S/N	Faculty	No. of Cand. (N)	Maths	English
1.	Social Sciences	464	.014	.064
2.	Arts	682	.028	.148
3.	Science	187	.216*	.101
4.	Medicine	159	.303**	.091
5.	Administration	612	.145	.023
6.	Agriculture	175	-.037	-.194

Table 1: Significant Level *.01 **.05

From the table above, it is clear that in relation to Mathematics, only two coefficients for science and medicine are statistically significant while in relation to English Language none of the coefficient is statistically significant. Although there is positive relationship between performance at ordinary level mathematics and FUE it is only in pure sciences that Mathematics is related to performance. There is no evidence of a significant relationship in the non-science courses nor is there any relationship between performance in ordinary level English and FUE in any of the six faculties.

Omotosho (1989) also conducted a study on WAEC/GCE ordinary level examination and UME as predictors of performance in four Nigerian Universities (Jos, University of Nigeria, Nsuka, Lagos and Ife) on First Year University (FUE) examinations. The investigated students who offered the same subjects at the WAEC/GCE, UME and the First Year University examination in science related courses. The findings revealed that the prediction varied with courses and institutions as well as with year of examination.

In 1980/81 for example WAEC/GCE predicted better than UME for universities of Jos and Nsuka, while UME predicted better than WAEC/GCE in 1980/81 sessions for Universities of Lagos and Ife. She also highlighted that the combination of UME and the WAEC/GCE ordinary level subjects consistently produced a better variance than when the subjects in either examination are used separately as independent variables.

JAMB (1994) investigated the predictive validity of its UME examination in combination with SSCE/GCE ordinary level on first year University examination (FUE). The result revealed that both UME and SSCE/GCE were good predictors of performance in FUE. The study also found that UME was a better and more stable predictor than SSCE/GCE grades, and in many cases a combination of the two variables did not predict performance at FUE better than UME taken alone.

Egbo (1999) conducted a similar study using the JAMB's MPC EME scores and SSCE/GCE ordinary Level results to predict performance of candidates in Alvanikoku College of Education Owerri. Using the 1995 – 1997 candidates, relationship between SSCE/GCE and MPCEME scores and FGPA in Mathematics, Physics, Chemistry and Biology as investigated. The findings revealed that the MPCEME grade was a better predictor on FGPA than SSCE/GCE ordinary level grades. It was also found that the combination of MPCEME and SSCE/GCE scores predict performance better than either of the two taken alone.

Nwana (1981) also investigated the extent to which UME scores predict performance of first year students across faculties in the Universities of Jos, Port Harcourt and Calabar. He found that the relationship in performance in UME and first year grade point average (FGPA) varies across the faculties. Indeed the degree of prediction of UME scores on FGPA was very low.

Akinawo (1983) also correlated UME scores with candidates' performance in the faculties of social science and technology of the University of Ife and found that the predictive validity of UME scores was low and not significant.

However, Agbonifo and Dimowo (1985) examined the predictive value of UME on candidates' performance in the First Year University Examination (FUE) in the University of Benin. Unlike some studies cited above, this study established a positive relationship between UME scores and performance in the first year University examination and between the UME scores and FGPA, taking the social science faculty as a whole. The conclusion highlighted that the UME score is a reliable predictor of students' future academic achievement in the University in the case of Social Science faculty taken as a whole.

According to Akujobi's (1999) study on the predictive validity of the requisite qualification on FUE in humanities also discovered a positive, but moderate correlation between the students SSCE/GCE O'Level, UME and FUE with UME scores being a better predictor than O'Level results.

Osugwu (2001) using the SSCE/GCE O'Level and UME result investigated the relationship between the above predictors on FUE in natural sciences and concluded that O'Level examination result was a better predictor on candidates first year GPA. This is in contrast to Akujobi's findings above.

Majasan and Bakare (1974) found correlation coefficients that ranged from 0.3 to 0.5 and concluded that the use of SSCE/GCE O'Level and UME scores as criteria for selecting candidates into the University is futile as they cannot predict the students' performances in degree examinations.

In a more comprehensive study, Obioma and Salau (2007) using the scores of examinations conducted by WAEC, NECO, NABTEB and JAMB (i.e., WASSCE, SSCE, NTCE/NBCE and UME) respectively to predict future academic achievement of students in University degree examinations from 22 Nigerian Universities revealed a low but positive relationships ($0.118 \leq r \leq 0.298$) between each of the predictor variables investigated. They also indicated that generally public examinations poorly predicted students'

university academic achievement when compared individually with other predictors. Taken alone WASSCE result was the best predictor of the students Cumulative Grade Point Average (CGPA).

3. Purpose of the Study

The purpose of this study is to examine the predictive validity of First Year GPA and Final Year Degree Classification among Management and Social Science Students in Nigerian Universities.

4. Population of the Study

The population of study consisted of three hundred and seventy two (372) students who studied and graduated in the year 2012 in B.Sc. Accounting, B.Sc. Business Administration and B.Sc. Economics in University of Abuja. Information about these students was obtained from the official data files managed by the University.

5. Methodology

In this study an ex-post factor research design was employed to investigate the predictive validity First year GPA (Predictor Variable) and Final year Degree classification (Criterion Variable). This design was employed because all the variables examined had already occurred and were not manipulated.

6. Research Questions/Hypotheses

- Is there a relationship between 1st year GPA and final degree classification among management and social sciences graduates? / There is no significant relationship between 1st year GPA and final degree classification among management and social sciences graduates.
- Is there any difference in the 1st year GPA scores among students in management sciences courses? / There is no significant difference in the 1st year GPA scores among students in management and social sciences courses.

7. Data Analysis

Pearson correlation analysis was employed to examine the predictive validity of First year GPA on Final Degree Classification.

8. Findings

8.1. Research Question One

Is there a relationship between 1st year GPA and final degree classification among management and social science graduates? / Hypothesis One: There is no significant relationship between 1st year GPA and final degree classification among management and social science graduates.

A Pearson correlation analysis was conducted to examine whether there is a relationship between 1st year GPA and final degree classification among management science graduates. The results revealed a significant but negative relationships among management and social science graduates in the different courses, B.Sc. Accounting ($r = -.578, N = 132, p = .000$), B.Sc. Business Administration ($r = -.675, N = 54, P = .000$), B.Sc. Economics ($r = -.561, N = 186, P = .000$). The correlations were strong in strength. These negative correlations indicate that students who had high values on the 1st year GPA had low class of degree classification. (See Table 2).

Course			First year GPA	Class of degree:
B.Sc. Accounting	First year GPA	Pearson Correlation	1	-.578**
		Sig. (2-tailed)		.000
		N	132	132
	Class of degree:	Pearson Correlation	-.578**	1
		Sig. (2-tailed)	.000	
		N	132	132
B.Sc. Business Administration	First year GPA	Pearson Correlation	1	-.675**
		Sig. (2-tailed)		.000
		N	54	54
	Class of degree:	Pearson Correlation	-.675**	1
		Sig. (2-tailed)	.000	
		N	54	54
B.Sc. Economics	First year GPA	Pearson Correlation	1	-.561**
		Sig. (2-tailed)		.000
		N	186	186
	Class of degree:	Pearson Correlation	-.561**	1
		Sig. (2-tailed)	.000	
		N	186	186

** Correlation is significant at the 0.01 level (2-tailed).

Table 2: Bivariate Correlation between First Year GPA and Final Degree Classification

The study was also interested in whether academic performance (1st year GPA and final year degree classification) varied with course of study. Research question two addressed this issue and Tables 2 showed the relationship between course of study and academic performance as determined using one-way ANOVA.

8.2. Research Question Two

Is there any difference in the 1st year GPA scores among students in management science? / Hypothesis Two: There is no significant difference in the 1st year GPA scores among students in management and social sciences courses.

Means in Figure 1, suggest that students in different courses of study scored slightly differently on 1st year GPA with those in B.Sc. Accounting scoring highest and those in B.Sc. Business Administration scoring the lowest.

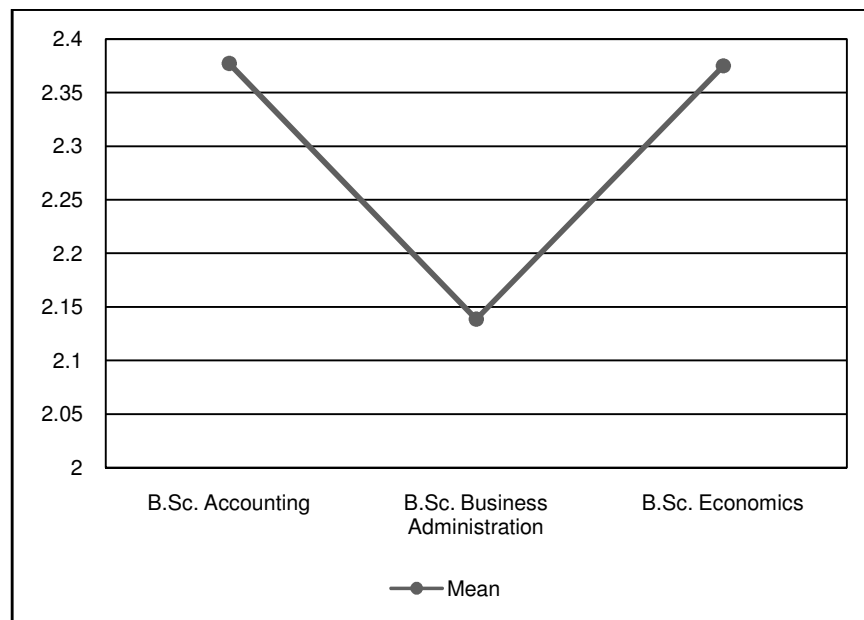


Figure 1: Graphical representation of mean differences

To confirm whether the differences were significant, one-way ANOVA was carried out. The analysis revealed, ($F = 2.319$, whose significance value of 0.100 is greater than $alpha = 0.05$). The conclusion, therefore is that there is no significant difference in the 1st year GPA scores among students in management and social science courses. (See Table 3)

Course of Study	Frequency	Mean	Std. Deviation	F	Sig
B.Sc. Accounting	132	2.3773	.80912	2.319	.100
B.Sc. Business Administration	54	2.1387	.82685		
B.Sc. Economics	186	2.3750	.67688		

Table 3: Summary of the descriptive statistics and ANOVA results for the difference in the 1st year GPA scores among students in management science

9. Discussion and Conclusion

Conclusively, this study revealed a significant, but negative relationships among management and social science graduates in the different courses. These negative correlations may according to what Rogers (1925) explained as “industry and interest” that interest is the potent factor in decreasing the amount of correspondence between first year GPA and final year CGPA. Rogers also reported that adjacent year correlations for years 1-2, 2-3 and 3-4 is higher than an average of all inter year correlations.

Also, Anderson and Spencer (1926) in explaining the declining validity gradient between first year GPA and final CGPA indicated that the University grade is a variable function in some degree independent of unstable trait measured either by the classification test or by the marking system of first year and concluded that measuring system of first year and decreasing GPA variability across successive years was a factor having the potential for lowering correlations of predictors with grades in later University years.

10. Recommendation

Further studies leading to the investigation of relationships between 1st year GPA and later years in University is therefore suggest to explore further the nature of the relationships.

11. References

- i. Abdullahi, A. (1983); A study of Predictive Value of Joint Matriculation Examination (JME) in Selected School Subjects: Journal of Nigerian Educational Research Association, Vol. 3 No. 1.
- ii. Adebola, S.I. (2004): The Relationship Between Students' Performance in Junior Secondary Mathematics, Further Mathematics and Physics. Proceedings of the 45th Annual conference, Science Teachers Association of Nigeria, (STAN),2004.
- iii. Ademola, K.B. (2004): Students Performance in Mathematics as Correlates of their Performance in other basic science subjects. Proceedings of the 45th Annual Conference, Science Teachers' Association of Nigeria (STAN).
- iv. Agbonifo, B and Dimowo, F (1985).admissions into social sciences: A case study of the prediction value of the University of Benin. Journal of Educational Research Association JNERA Vol. 5. No 2
- v. Akinawo, E. (1983). Relationship between Joint Matriculation Board scores and students' performance at the University of Ife. An Unpublished B.Sc. Thesis University of Ife, Ile-Ife
- vi. Akujobi, F. C (1999). The predictive validity of prerequisite qualification on first year university students' performance in humanities. Unpublished M.Ed. Thesis Imo State University. Owerri, Nigeria
- vii. Anderson J.E and Spencer, L.T (1926). The Predictive value of the Yale classification Tests. School and Society 24, 305 – 312
- viii. Faleye, B.A. and Afolabi, E.R.I. (2005). The predictive Validity of Osun State Junior Secondary Certificate Examination. Electronic Journal of Research in Educational Psychology (5 – 3) (1), 131 – 144.
- ix. Joint Admission Matriculation Board (JAMB) (1994). The Predictive Validity of the Universities Matriculation Examination Lagos: JAMB
- x. Majasan, J. A and Bakare, C. G. M. (1974). The Predictive Validity of Ibadan. University Entry Qualification. African Journal of Educational Research1(1) pp 61 – 71.
- xi. Mwanza, E. J. (1993). The predictive validity of the Malawi School Certificate Examination for Selection to the University of Malawi. A paper presented at the Conference of the Association for Educational Assessment in Africa.
- xii. Nwana, O. C (1981). Predictive validity of the Joint Matriculation Examination (JME). A Commissioned Paper
- xiii. Obioma, G. and Salau, M (2007). The predictive Validity of Public Examinations: A Case Study of Nigeria. A paper presented at the 33rd Annual Conference of International Association for Educational Assessment (IAEA) held in Baku, Azerbaijan, 16 – 21 September, 2007.
- xiv. Ojerinde, D. (1995). Striving for Quality in Educational Assessment under Gifted Education Programme in Nigeria: National Board for Educational Measurement (NBEM) Experience.
- xv. Omirin, M. S. and Ale, V. M. (2008). Predictive Validity of English and Mathematics Mock Examination Results of Senior Secondary School Students' Performance in WASCE in Ekiti State, Nigeria. Pakistan Journal of Social Sciences 5(2); 139-141, 2008.
- xvi. Rogers A.L. (1925). Mental test for the selection of University students. British Journal of Psychology 15, 405 – 415