# Validity of Post-Unified Tertiary Matriculation Examination (POST-UTME) as Screening Instrument for Selecting Candidates into Degree Programmes in Nigerian Universities

**James Ayodele OLUWATAYO Ph.D.**
Faculty of Education,
Ekiti State University,
Ado-Ekiti, Nigeria


**Olufunke Olutoyin FAJOBI (M.Ed.)**
Faculty of Education,
Ekiti State University,
Ado-Ekiti, Nigeria

**Abstract.** The study investigated the validity of Post-UTME as screening instrument for selecting candidates into degree programmes in Nigerian universities. Participants were 400 final-year undergraduates majoring in Mathematics or Computer Science selected from four public universities (Federal=2, State=2) in southwest Nigeria using stratified and purposive random sampling techniques. Data were collected directly from the respondents during second semester, 2013/2014 academic session using a proforma which sought information on the type of university (Federal/State), course of study (Mathematics/Computer Science), class level (400 level only), Post-UTME composite score and Cumulative Grade Point Average (CGPA) at 100Level, 200Level, 300Level and 400Level (first semester only). Data were analysed using correlation (r) and regression statistics, tested at 0.05 level of significance. Results showed that correlation between Post-UTME scores and CGPA in Mathematics/Computer Science at 100L, 200L, 300L and 400L were 0.67, 0.38, 0.31 and 0.22 respectively, while the coefficient of determination ($r^2$) were 0.4489 (44.9%), 0.1444 (14.4%), 0.0961 (9.61%) and 0.0484 (4.84%) respectively. Deductively, Post-UTME had evidence of predictive validity at 100Level as about 44.9% of the undergraduates' performance in Mathematics/Computer Science could be attributed to performance in Post-UTME while the remaining 55.1% of the variability could be attributed to other factors. It was concluded that Post-UTME was valid for admission into 100Level Mathematics/Computer Science and hence recommended that Post-

UTME be sustained, while concerted efforts be made to monitor undergraduates' performance from 200Level to 400Level for quality degree programme in Nigerian universities.

**Keywords**: Validity; Post-UTME; Screening; Degree programme.

## Introduction

The quality of examinations used in any academic programme is very important. The import is that the conclusions drawn from the use of such examinations are based on the results obtained. A well constructed examination questions (items) with the appropriate psychometric properties (validity, reliability, objectivity, usability, difficulty and discriminating indices) and flawless administration and scoring, has the potential of generating defensible data that can be used for decision making (Stiggins, 2006; Cohen, Swerdlik & Sturman, 2013). Indeed, valid and reliable examination results have practical utility in education such as certification after completing a prescribed course of study (Owolabi, 2004), job selection and guidance and counselling (Alonge, 2015), diagnosing learning difficulties in the classroom (Black & William, 1998), selection of candidates for higher educational programmes (Kolawole, 2014; Bandele, 2015). Conversely, invalid and unreliable examination results have the tendency of misleading decision making and destroying the purpose of the examination.

In recent years, validity is viewed in terms of the appropriateness, correctness, meaningfulness and usefulness of the specific inferences that researchers make based on the data collected or the degree to which evidence supports any inferences that a researcher makes based on the data collected using a particular instrument (Fraenkel, Wallen & Hyun, 2015). In other words, validity is not based entirely on the instrument itself but largely on the appropriateness, correctness, meaningfulness and usefulness of the data collected. Inferentially, the purpose of any examination is not merely to collect results but to use the results so collected to draw warranted conclusions about the examinees as to whether their performances justify the decision making such as selection of candidates into degree programmes.

For about three decades, specifically, from 1978 to 2005, the Joint Admissions and Matriculation Board (JAMB) had the sole responsibility of conducting the Universities Matriculation Examination (UME) and later, the Unified Tertiary Matriculation Examination (UTME) and placing the candidates that met the cut-off marks into various academic programmes in Nigerian tertiary institutions. Sadly, the JAMB-conducted examinations were found to be characterised by examination malpractices (Ijaiya, 2004; Obasa, 2004; Sonnie, 2004) which made the results of some candidates doubtful. For example, Obasa (2004) reported a study involving 30 undergraduates whose personal record cards showed that they all satisfied the UME requirement of at least 200 marks to be admitted into the University of Ilorin as their scores ranged from 210 to 273. Intriguingly, at the end of second semester, 100 Level, none of the 30 students had good standing of Cumulative Grade Point Average (CGPA) of 1.00. This is a clear evidence that scoring high marks in UME might not necessarily

provide the correct and useful information about the examinees, a distortion of decision making.

However, in 2005, the Committee of Vice-Chancellor of Nigerian Universities met at the University of Uyo, Akwa-Ibom State and resolved to introduce the Post-UTME to screen candidates who scored the minimum cut-off marks in the UTME to ascertain their eligibility for admission into degree programmes (Obaji, 2005). The justification for the Post-UTME has documentation in literature. For example, Afemikhe (2005) noted that since the inception of Post-UTME screening examination, many university administrators see it as a panacea to most problems associated with students such as cultism, radicalism, dropouts, change of courses, spending of extra years before graduation, poor grade or class of degree and poor attitude towards academic work. Also, Bamiro (2008) gave a graphic illustration of the embarrassing experience at the University of Ibadan before the introduction of Post-UTME where 23 out of 30 students admitted into the Faculty of Technology were asked to withdraw at the end of their first-year for poor performance. These were students who scored well above 250 in the JAMB examination, noting that the use of UTME scores as basis for admission had done more damages than good to the education sector in Nigeria.

Further, Ifedili and Ifedili (2010) made an illusion to the results of 2005/2006 Post-UTME at the University of Benin in which only 11.7% of those who passed UTME at the acceptable points were able to pass the Post-UTME screening test at 50% and above while the remaining 88.3% failed the Post-UTME. Consequently, the authors compared the academic performance of first-year students of 2004/2005 who were admitted by the last JAMB exercise with the performance of 2005/2006 students who were admitted by the first Post-UTME. The results showed that 14.23% of those students that were admitted with UTME in 2004/2005 were successful in their first-year degree examination, 66.94% had carryover and 18.80% were on probation whereas 39.65% of those students admitted through Post-UTME in 2005/2006 were successful in their first-year degree examination, 53.80% had carryover and 6.55% were on probation. Ifedili and Ifedili (2010) concluded that both the lecturers and administrators of the University of Benin agreed that Post-UTME had brought a high positive change to students' academic performance and discipline in the university because focused and disciplined students were admitted.

Incidentally, the operation of Post-UTME as screening instrument for selecting candidates into degree programmes in Nigerian universities clocks a decade (10 years), in 2015. The crucial question then is, 'how well do the scores obtained from the Post-UTME predict performance in degree examinations?' Meanwhile, studies by Kolawole (2014) and Bandele (2015) indicated that most lecturers in Nigerian universities set questions without regard to standard procedures for setting questions and that questions given to students lack psychometric properties of validity, reliability and usability as test construction principles are not known, talkless of employing them to set questions. This is a serious issue, a real threat to qualify degree examination questions and

examination results. It is not an overstatement that the results obtained from haphazardly prepared examination questions would lead to wrong inferences made and consequently misguide the decision making on the students' performance. Nevertheless, the focus in the present study is to ascertain how well the undergraduates' scores in Post-UTME predict their performance in degree examination.

## Purpose of the Study

The purpose of the study was to ascertain evidence of predictive validity of Post-UTME as screening instrument for selecting candidates into degree programmes with particular reference to degree in Mathematics or Computer Science because they are related.

## Research Questions

The following questions were answered in this study:
1. Do the Post-UTME scores of undergraduates relate to their CGPA in Mathematics/Computer Science at 100, 200, 300 and 400 Levels?
2. How well do the Post-UTME scores predict performance of undergraduates in Mathematics/Computer Science at 100, 200, 300 and 400 Levels?

## Research Design

The study used correlational design in order to describe how scores in Post-UTME are related to undergraduates' performance in Mathematics/Computer Science at 100, 200, 300 and 400 Levels?

## Sample and Sampling Techniques

Participants for the study were 400 final-year undergraduates majoring in Mathematics or Computer Science during 2013/2014 academic session selected from four public universities (Federal=2, State=2) in southwest Nigeria using stratified and purposive random sampling techniques. The selection of universities involved stratified random sampling technique while the selection of the respondents involved purposive sampling technique because only final-year students majoring in either Mathematics or Computer Science and who successfully completed the proforma presented were considered.

## Data Collection

Data were collected directly from the respondents during second semester of 2013/2014 academic session with the permission and assistance of Head of Department of Mathematics in each of the universities sampled. Copies of the proforma designed for the study were distributed to the respondents and asked to fill and return to the office of the Head of Department. The proforma sought information on the type of university (Federal/State), course of study (Mathematics/Computer Science), class level (400 level only), Post-UTME composite score and Cumulative Grade Point Average (CGPA) at 100Level, 200Level, 300Level and 400Level (First semester only). Duly completed copies of the proforma were used for data analysis.

**Data Analysis**

Data were analysed using correlation ($r$) and simple regression/ coefficient of determination ($r^2$) statistics, tested at 0.05 level of significance.

**Results**

*Question 1:* Do the undergraduates' Post-UTME scores relate to their degree CGPA in Mathematics/Computer Science at 100Level, 200Level, 300Level and 400Level?

Data were analysed using Pearson Product Moment Correlation ($r$) as presented in table 1.

*Table 1:* **Correlation between Post-UTME scores and CGPA in Mathematics/Computer Science (100L — 400L)**

| Variables | N | $r_{100L}$ | $r_{200L}$ | $r_{300L}$ | $r_{400L}$ | $r_{table}$ |
|---|---|---|---|---|---|---|
| Post-UTME scores | 400 | | | | | |
| CGPA | 400 | 0.67* | 0.38* | 0.31* | 0.22* | 0.196 |

$\rho < 0.05 (significant\ result)$

Table 1 shows that the correlation coefficient ($r$) between Post-UTME scores and CGPA Mathematics/Computer Science at 100Level, 200Level, 300Level and 400Level were 0.67, 0.38, 0.31 and 0.22 respectively, while the corresponding table value was 0.196 at 0.05 level of significance. Since $r_{calculated} > r_{table}$, it implies that all the correlation coefficients from 100Level to 400Level were significant. Hence, there existed significant relationship between undergraduates' Post-UTME scores and their degree CGPA in Mathematics/Computer Science from 100Level to 400Level.

*Question 2:* How well do the undergraduates' Post-UTME scores predict their performance in Mathematics/Computer Science from 100Level to 400Level?

Data were analysed using simple regression statistics (coefficient of determination, $r^2$) as presented in table 2.

*Table 2:* **Regression analysis between Post-UTME scores and CGPA in Mathematics/Computer Science (100L — 400L)**

| Variables | N | $r^2_{100L}$ | $r^2_{200L}$ | $r^2_{300L}$ | $r^2_{400L}$ |
|---|---|---|---|---|---|
| Post-UTME scores | 400 | | | | |
| CGPA Maths/Comp. Sc. | 400 | 0.4489 | 0.1494 | 0.0961 | 0.0484 |

Table 2 shows that the coefficient of determination ($r^2$) between Post-UTME scores (predictor variable) and CGPA Mathematics/Computer Science (criterion variable) at 100Level, 200Level, 300Level and 400Level were 0.4489, 0.1494, 0.0961 and 0.0484 respectively. These results showed that at 100Level, 200Level, 300Level and 400Level, Post-UTME contributed about 44.9%, 14.9%, 9.61% and 4.84% respectively to the overall performance of undergraduates Mathematics/Computer Science.

## Discussion

The focus in this study was to establish the evidence of predictive validity of Post-UTME as screening instrument for selecting candidates for degree programmes in Nigerian universities with particular reference to degree Mathematics/Computer Science. The results in table 1 showed that the correlation coefficients between Post-UTME scores (predictor variable) and CGPA Mathematics/Computer Science (criterion variable) at 100Level, 200Level, 300Level and 400Level were positive. Tested at 0.05 level of significance, all the correlation coefficients were significant, though the r-values obtained at 200Level, 300Level and 400Level were low. However, Bandele (1985) and Howell (2002) agreed that the size of correlation coefficient is not a major criterion in deciding the reliability of relationships as spurious and extreme scores can lead to high correlation. Moreover, a large sample size may lead to low correlation coefficient but with significant relationship. In the present study, the sample size was 400 which seemed to be large enough. Interestingly, the correlation coefficient obtained at 100Level was +0.67 which provided information on the magnitude and direction of relationship. By rule of thumb, the higher the Post-UTME score, the likelihood of obtaining higher grade in degree examination in Mathematics/Computer Science.

The results in table 2 showed the coefficient of determination ($r^2$) between the predictor and criterion variables. Judd and McClelland (1989), Howell (2002) and Kolawole (2002) strongly endorse $r^2$ as a measure of contribution of one variable to the prediction of another. In this case, Post-UTME contributed about 44.9% to the overall performance of undergraduates in Mathematics/Computer Science at 100Level while the remaining 55.1% could not be accounted for. Further, at 200Level, Post-UTME contributed about 14.9% to the overall performance in Mathematics/Computer Science while the remaining 85.1% could not be accounted for. Also, at 300Level, Post-UTME contributed 9.61% to the overall performance of undergraduates in Mathematics/Computer Science, while the remaining 90.39% could not be accounted for. Lastly at 400Level, Post-UTME contributed 4.84% to the overall performance of undergraduate in Mathematics/Computer Science, while the remaining 95.16% could not be accounted for. Really, the variabilities that could not be accounted for could be attributed to other factors such as lack of study habit and motivation on the part of the undergraduates (Gbore, 2006), increasing difficulty level of examination questions and variation in examination questions across the universities (Kolawole, 2014), invalid and unreliable examination questions leading to invalid and unreliable examination results (Bandele, 2015). Perhaps it may be added that the improper monitoring of undergraduates'

academic activities at each level of degree programme by the Course Advisers might lead to frustrations and academic failure. Notwithstanding, the results provided evidence of predictive validity of Post-UTME on undergraduates' performance in Mathematics/ Computer Science at 100Level as 44.9% could be accounted for.

## Conclusion

It was concluded in this study that Post-UTME scores predicted undergraduates' performance in Mathematics/Computer Science at 100Level and thus valid as screening instrument for selecting candidates into degree Mathematics/Computer Science in Nigerian universities.

## Recommendations

Based on the findings, the following recommendations were made:
1. Post-UTME should be sustained as screening instrument for selecting candidates into 100Level of degree programmes in Nigerian universities as it contributed significantly to the overall performance of undergraduates in Mathematics/Computer Science.
2. The academic activities of undergraduates should be monitored at every level of the degree programme to ensure high correlation between Post-UTME scores and degree examination results especially in Mathematics/Computer Science.
3. Lecturers in Nigerian universities should be acquainted with the principles underlying the construction and administration of valid and reliable examination questions for quality examination results and degree in Nigerian universities.

## References

Afemikhe, O. A. (2005). Reflections on the quality of assessment in large classes in Nigeria: A paper presented at the 31st annual conference of the International Association of Educational Assessment with the theme '*Assessment and the Future of Schooling and Learning*'; held at the Nicon Hilton Hotel, Abuja, Nigeria. 4th—9th September.

Alonge, M. F. (2015). Continuous assessment records and documentation of university examination. A publication of the Faculty of Education, Ekiti State University, Ado-Ekiti. 7—12.

Bamiro, O. (2008). Examination fraud: Fast slide to doom. Sunday Vanguard; November 9; 12.

Bandele, S. O. (1985). Predicting success in Mathematics in the JSS of the 6-3-3-4 system in Ijero Local Government Area of Ondo State. An unpublished M.Ed. thesis, ICCE, University of Ibadan.

Bandele, S. O. (2015). Quality assurance in examination capacity building workshop manual on enhancing institutional and human capacity for effective job delivery among academic staff of Faculty of Education, Ekiti State University, Ado-Ekiti. February 21—26.

Black, T. & William, D. (1998). Inside the black box: Raising standards through classroom assessment. Phi Delta: Kappa. 80(2): 154—157.

Cohen, R. J.; Swerdlik, M. E. & Sturman, E. D. (2013). Psychological testing and assessment; An introduction to Tests and Measurement (8th edition). New York: McGraw-Hill. 240−284.

Fraenkel, J. R.; Wallen, N. E. & Hyun, H. H. (2015). How to design and evaluate research in education (9th edition). New York: McGraw-Hill. 146−165.

Gbore, L. O. (2006). Cognitive entry characteristics, study habit and self-concept as predictors of academic performance of university undergraduates in southwest Nigeria. An unpublished Doctoral Dissertation, University of Ado-Ekiti, Nigeria.

Howell, D. C. (2002). Statistical methods for psychology (5th edition). Thomson Wasdsworth: Thomson Higher Education.

Ifedile, A C. J. & Ifedile, C. J. (2010). An assessment of Post-UTME: A case study of University of Benin. *Journal of Social Science*. 20: 101−106.

Ijaiya, N. Y. S. (2004). Agents of malpractice in Nigerian public examinations: The strongest links. *Nigerian Journal of Educational Research and Evaluation*. 5(1): 55−62.

Judd, C. M. & McClelland, G. H. (1989). Data analysis: A model comparison approach. San Diego, CA: Harcourt Brace Jovanovich.

Kolawole, E. B. (2002). Statistical methods (revised Edition). Lagos: Bolabay Publications Academic Publishing Consultants. 17−29.

Kolawole, E. B. (2014). Tests and Measurement: The panacea to educational research development in Nigeria. *47th Inaugural Lecture*. Ekiti State University, Ado-Ekiti. Tuesday 26th August.

Obaji, L. (2005). 'Post-UTME tests, Federal Government __ Minister.' The Punch newspaper; 17th November.

Obasa, E. Y. (2004). Malpractice in university matriculation: The way out. *Nigerian Journal of Educational Research and Evaluation*. 5(1): 63−69.

Owolabi, H. O. (2004). Public examining in Nigeria: Let the stakes extend. *Nigerian Journal of Educational Research and Evaluation*. 5(1): 97−101.

Sonnie, E. (2004). JAMB and examination malpractices. Comet newspaper: Editorial. Wednesday, May 5.

Stiggin, R. (2006). Assessment for learning: A key to motivation and achievement. Phi Delta: Kappa Edge. 2(2): 1−19.