

A Correlational Analysis of UTME and Post-UTME Performances

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Abstract

This study aimed to empirically shed light on the debate concerning the scrapping of post-UTME as an entrance examination in tertiary institutions in Nigeria. The study, therefore, examined whether there is a significant difference between UTME and post-UTME performances. Six tertiary institutions in Kwara State were selected for the study. A sample of 600 undergraduates was selected through simple random sampling across different departments in the institutions comprising 224 male and 349 female undergraduates, while 27 questionnaires were not returned. Data collected for the study were analysed using STATA 12.0 using correlation analysis and t-test. The results showed that there is a positive relationship between post-UTME and UTME. There is a low correlation coefficient (0.078) between UTME and post-UTME performance of the students. Based on the study of the findings of this study, the post-UTME examination should be retained as part of the admission process as it is significantly different from the UTME examination based on the t-test conducted.

Keywords: Post-UTME, JAMB, UTME, Tertiary Institution, Education

1.0 INTRODUCTION

Education at the university level is a valuable good. Secondary school graduates hope to gain admission to a university to pursue a degree. One of the primary challenges confronting Nigeria's university system is the screening and allocating candidates into faculties at the nation's few institutions. However, the public examination bodies responsible for issuing degrees and placing students in universities have been under much scrutiny because of our schools' undergraduates' low performance or poor quality. Over the years, the examination board has attempted to sift out these individuals with promise for them to benefit from the education supplied by universities. Unfortunately, the number of applications outnumbers the number of available slots due to an increasing population of candidates who are not anticipated.

Several education experts and academicians have suggested that the glory days of great academic performance and outstanding accomplishment among Nigerian undergraduates are passed. It is equally worrisome to observe that graduates from Nigerian colleges who complete their studies overseas are sometimes subjected to further testing before getting admitted. The above paints a bleak and concerning image, given that Nigerian universities have been assessed to generate world-class graduates who have distinguished themselves in their fields of specialisation.

Post-UTME tests are approved examinations administered by universities in Nigeria to candidates who have applied for admission to higher education in Nigeria. Each University arranges and administers its post-UTME examination. To be eligible to take this test, a candidate must have registered to the institution and passed the UTME with a grade equal to or higher than the overall UTME and university cut-off points.

The price of enrolling for the post-UTME examination differs by University. Because the examination is not standardised, it is up to each school in Nigeria to choose how much each candidate would pay for her post-UTME exam. In the past, participants have complained that most colleges are draining them empty simply by enrolling for the post-UTME test. For the 2015 post-UTME test, for example, most universities charged candidates between N1,000 and N5,000 for exam registration, with a few schools charging more. However, the selection procedure is becoming prohibitively expensive, so the UTME in the 2007/2008 admissions round insisted on no screening costs. This also argues for the current development—the countrywide abolition of the post-UTME examination in 2016/2017.

Since the introduction of the UTME, achievement in that test has been the primary criterion for admission into Nigerian institutions. An applicant with an outstanding exam score is more likely to get admitted to a university. However, some scholars have questioned the usefulness of utilising UTME scores as the primary entrance criteria (Bamgboye, Ogunnowo, Badru, and Adewoye, 2001; Kale, 2004; Salahdeen and Murtala, 2005; Adeniyi, Araoye, Amali, EruOjabo and Alao, 2010; Ajala, 2010).

In several of these studies, Kale (2004) revealed that students with lower UTME marks performed better in the first year university test. Similarly, Bamgboye et al. (2001) and Salahdeen and Murtala (2005) discovered that UTME scores showed no link with medical school success. Surprisingly, Adeniyi et al. (2010) discovered no link between UTME score and 100 level outcomes in the first two years of medical school, but rather with 200 level results.

Given the continuously rising administrative costs of undertaking the exam and the power play politics in the admission procedure in most schools via post-UTME, there is a public belief that the post-UTME screening examination is a platform for raising funds for most academic institutions.

As a result of these factors, this study seeks to answer the following research questions: (i) are there any differences in UTME and post-UTME performances? (ii) if correlated, what is the direction of correlation? (iii) what factors influence UTME performance? (iv) what factors influence post-UTME performance?

2.0 LITERATURE REVIEW

2.1 Theoretical Review

It is common to utilise the Cobb–Douglas production function to show the relationship between the amounts of two or more inputs, particularly physical capital and labour, and the amount of output that these inputs can produce. During 1927–1947, Charles Cobb and Paul Douglas devised and evaluated the Cobb-Douglas form against statistical data. For a single product with two components, this is the most common form:

$$Y = AL^{\beta}K^{\alpha}$$

where Y is total production, L is labour input, K is capital input, A is total factor productivity, α and β are capital and labour output elasticities, respectively.

Output elasticity is the sensitivity of output to changes in the amounts of labour or capital utilised in production, respectively. For example, if $\alpha = 0.45$, a 1% increase in capital consumption would result in a 0.45% rise in production. Furthermore, if $\alpha + \beta = 1$, the production function has constant returns to scale, which means that doubling the use of

capital K and labour L will result in a doubling of output Y. Returns to scale are lowering if $\alpha + \beta < 1$ and rising if $\alpha + \beta > 1$. Assuming perfect competition and $\alpha + \beta = 1$, α and β may be used to calculate the capital and labour shares of production.

The Leontief production function presupposes that the production factors are employed in fixed ratios. The function of a good generated with two inputs is of the type

$$q = \min \left(\frac{z_1}{a}, \frac{z_2}{b} \right)$$

where q is the output generated, z_1 and z_2 are the utilised quantities of inputs 1 and 2, a and b are constants.

The human capital model is the foundation for neoclassical evaluations of labour markets, education, and economic growth. Extension of the basic premise that schools' primary function is to educate students by providing them with knowledge and skills they would need in the workforce later in life is the human capital concept (Mincer 1958; Schultz 1961). A trade-off is made to reap the benefits of future monetary and non-monetary gains in the present (the goods and services that teachers and students could otherwise supply).

The classical approach to growth has so far concentrated primarily on the position of accumulation of capital as a result of capitalist saving (see Foley and Michl, 1999, for articulation) and technological change as a result of capitalist firms' responses to labour market conditions (see, for example, Duménil and Lévy, 2003; Flaschel, 2009). According to this theory, it is unclear what influence education would have on growth and distribution. Given jobless employees, more education does not have to enhance production and its growth via boosting labour productivity. Moreover, in the context of unemployment, they do not always raise salaries and improve income distribution.

Neoclassical growth models see educational attainment improving income distribution by increasing labour productivity. Despite some claims, education is sometimes said to aggravate income inequality by increasing skill levels at varying rates among different groups of people.

The Solow-Swan model (1956) relies on neoclassical economics for long-term economic growth. Long-term economic growth is examined by looking at capital formation, increased labour or demographics, and technological advancement.

Oddly, education has received little or no treatment in classical-Marxian theories of growth and distribution, despite its obvious importance for capitalist economy dynamics and the considerable attention in broader political economy discussions.

2.2 Empirical Review

According to Graetz (1995), educational attainment is heavily influenced by the socioeconomic level of the parents. According to Considine and Zappala (2002), families where the parents are socially, educationally, and monetarily advantaged nurture a high degree of accomplishment in their children. The researcher agrees with Considine and Zappala (2002) because pupils from high socioeconomic classes are well acquainted with scholastic resources that improve their intellect.

Sentamu (2003), Kwesiga (2002), and Portes and Macleod (1996), as referenced in Considine and Zappala (2002), all contend that the sort of school a kid attends has an impact on

academic success. According to Minnesota Measures (2007), a study on higher education achievement released by the University of Minnesota, academic preparedness in high school is the most dependable predictor of student success in college.

In his findings, Kolawole et al. (2011) used a sample of 312 chemistry students who joined the institution with O'level, UTME, and post-UTME scores and finished their first-degree course at the same University. The researchers used an ex-post facto approach since the data acquired was already on the ground and had not been manipulated to evaluate four hypotheses. According to the findings, there are weak correlations between O'level, UTME, post-UTME, and students' academic performance in chemistry at all university levels.

In recent years, the implementation of the UME has been viewed as untrustworthy, according to Ezeudu et al. (2007). In addition to the high rate of malpractice, the test facilities were categorised as either "special" or "regular."

With the implementation of this post-UTME screening, the issue of enrolling ineligible applicants to our institutions has been resolved. However, the people and material resources necessary to carry out this screening effort are immense and daunting. As a result, it became required to compare the two sets of results to determine if it is appropriate to continue with the screening or to utilise the already structured UTME to complete the placement exercise, as was previously the case.

3.0 METHODOLOGY

3.1 Theoretical Framework

The production function demonstrates how factor inputs are converted to output. The economy contains two major types of factor input: labour (L) and capital (K). As a result, the relationship between this input and output (Y) will be expressed as

$$Y = f(K,L)$$

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The aggregate production function f informs us how much output is created for a given amount of capital and labour. In this case, K represents the school inputs, L represents the factors influencing performance, and Y is the measure of performance.

In the context of education, the term "educational production function" is used to describe a relationship between school inputs and school output. For the qualitative approach of human capital development and normative studies on the allocation of educational resources, this depiction of the educational production process may be beneficial.

3.2 Model Specification

The explanatory factors in this study were the UTME result, O'level result, CGPA, and kind of school attended, whereas the dependent variable was the Post-UTME. To acquire valid parameter estimates in the regression, we describe our model to assess the influence on the student's overall academic performance.

This may be written explicitly in econometric terms as:

$$\text{PUME} = f(\text{U}, \text{OL}, \text{CGPA}, \text{DTS}) \quad \text{_____} (1)$$

Where PUME = Post-UTME Score, U = UTME Score, OL = O'level Result, CGPA = Cumulative Grade Point Average, DTS = Dummy Variable Type of School Attended

DTS is further divided into two: public school represented with 0 and private school represented with 1. Therefore, the regression equation is given as;

$$PUME = \beta_0 + \beta_1 U + \beta_2 OL + \beta_3 DTS + \beta_4 CGPA + \mu_t \quad \text{_____} (2)$$

where $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ = Parametr estimate the coefficients of the exogenous variables

Apriori Expectation:The predicted signs of the coefficients of the exogenous variables are: $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 = 0$

3.3 Model Estimation Techniques

The Ordinary Least Squares Method (OLS) of analysis will be used to evaluate the quantitative data used for this study thoroughly. This is because the parameter estimate obtained by the OLS approach has certain optimum qualities. In addition, the OLS will be utilised since its computational technique is quite easy and the data requirements are not too stringent.

3.4 Study Area and Research Population

The research study areas include the University of Ilorin, Kwara State University, Kwara State Polytechnic, Federal Polytechnic Offa, Kwara State College of Education, and College of Education Oro.

The target population consists of undergraduates of six tertiary institutions in Kwara State; University of Ilorin, Kwara State University, Kwara State Polytechnic, Federal Polytechnic Offa, Kwara State College of Education, and College of Education Oro.

3.5 Sample Size and Sampling Techniques

The sample includes 600 undergraduate students from six Kwara State tertiary institutions: the University of Ilorin, Kwara State University, Kwara State Polytechnic, Federal Polytechnic Offa, Kwara State College of Education, and College of Education Oro. The 600 respondents were drawn from the universities' various academic departments. They were chosen using the sampling table guidance for sample size decisions by Krejcie and Morgan (1970) to determine the sample size. Simple random sampling was utilised to eliminate prejudice and ensure that each undergraduate student had an equal chance of being chosen. According to Amin (2005), randomisation is successful in producing equivalent representative groups that are substantially the same on all important factors considered by the researcher.

4.0 DATA PRESENTATION AND ANALYSIS

This section analyses the data collected. Each of the operational hypotheses is considered, and variables are correlated to justify the acceptance or rejection of the hypothesis. The results are presented and discussed side by side. The results are analysed using t-tests, Pearson's coefficient of correlation and regression analysis.

Starting with the results of the socio-demographic characteristics prescribed in Table 1. Of the 600 questionnaires administered, 27 were unreturned and out of the returned 573 questionnaires, 224 were males (39.09%), and 349 were females (60.90%).

Table 1: Gender of the Respondents

Gender	Frequency	Percentage %
Male	224	39.09

Female	349	60.91
Total	573	100

Source: Author's computations, 2017

Of the 600 questionnaires administered, 27 were unreturned and out of the returned 573 questionnaires, 508 were 100 level mode of entry (84.67%), and 65 were direct entry mode of entry (10.83%).

Table 2: Mode of Entry of the Respondents

Mode of Entry	Frequency	Percentage %
100 level	508	88.66
Direct Entry	65	11.34
Total	573	100

Source: Author's computations, 2017

Of the 600 questionnaires administered, 27 were unreturned, and out of the returned 573 questionnaires, 1 respondent scored between 1 – 100 (0.17%), 163 respondents scored between 101 – 200 (28.45%), 405 respondents scored between 201 – 300 (70.68%), 4 respondents scored between 301 – 400 (0.70%).

Table 3: UTME scores of the Respondents

UTME Score	Frequency	Percentage %
1 -100	1	0.17
101 – 200	163	28.45
201 – 300	405	70.68
301 – 400	4	0.70
Total	573	100

Source: Author's computations, 2017

Of the 600 questionnaires administered, 27 were unreturned and out of the returned 573 questionnaires, 232 respondents attended public school (38.35%), 341 respondents attended private school (61.65%).

Table 4: Type School Attended by the Respondents

Type of School Attended	Frequency	Percentage %
Public School	232	38.35
Private School	341	61.65
Total	573	100

Source: Author's computations, 2017

Of the 600 questionnaires administered, 27 were unreturned and out of the returned 573 questionnaires, 1 respondent scored between 1 – 20 (0.17%), 11 respondents scored between 21 – 40 (1.92%), 223 respondents scored between 41 – 60 (38.92%), 331 respondents scored between 61 – 80 (57.77%), 7 respondents scored between 81 – 100 (1.22%).

Table 5: Post-UTME Score of the Respondents

Post-UTME Score	Frequency	Percentage %
1 – 20	1	0.17
21 – 40	11	1.92
41 – 60	223	38.92

61 – 80	331	57.77
81 – 100	7	1.22
Total	573	100

Source: Author's computations, 2017

4.1.2 The Difference in UTME and Post-UTME Performances.

A paired t-test was run on 573 undergraduates to determine whether there was a statistically significant mean difference between UTME and post-UTME performances. Undergraduates perform better in UTME (53.33 ± 5.97) as opposed to post-UTME (61.46 ± 9.26); a statistically significant difference of 8.14% (95% CI, 7.35 to 8.91), $t(20.52)$, $p < .005$, $df = 572$

Since the t-test is greater than 2, and the p-value is less than 0.005, it can be concluded that there is a significant difference between UTME and post-UTME; hence post-UTME should not be scrapped as the two examinations are different.

```
. ttest pume== umepercent
```

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
pume	573	61.46771	.387256	9.269909	60.7071	62.22833
umeper~t	573	53.33159	.2495473	5.973517	52.84145	53.82173
diff	573	8.136126	.3964009	9.488814	7.357547	8.914705

```
mean(diff) = mean(pume - umepercent)          t = 20.5250
Ho: mean(diff) = 0                             degrees of freedom = 572

Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
Pr(T < t) = 1.0000          Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

4.1.3 Correlation Analysis between UTME and post-UTME Performances

A correlation analysis was carried out to determine the correlation between UTME and post-UTME performances using 573 sample data. There was a positive relationship (0.2851) between UTME and post-UTME performances; higher performances in post-UTME are associated with high UTME performances. $r(571) = 0.2851$, $p < 0.0005$ with UTME performance explaining 0.81% of post-UTME performances. The level of statistical significance (p-value) of the correlation coefficient is 0.0000, which means a statistically significant relationship between UTME and post-UTME performances.

```
. pwcorr pume u, sig star(.05) obs
```

	pume	u
pume	1.0000 573	
u	0.2851* 0.0000 573	1.0000 573

4.1.4 Correlation Analysis between post-UTME and CGPA

A correlation analysis was conducted to determine the correlation between post-UTME and CGPA using 573 sample data. There was a negative relationship (-0.0160) between post-UTME performances and CGPA; a high post-UTME score does not affect CGPA. $r(571) = -0.0160$, $p < 0.0005$ with CGPA performance explaining 0.03% of post-UTME performances.

The level of statistical significance (p-value) of the correlation coefficient is 0.7031, meaning there is a statistically significant relationship between post-UTME performances and CGPA.

```
. pwcorr pume cgpa, sig star(.05) obs
```

	pume	cgpa
pume	1.0000	
	573	
cgpa	-.0160	1.0000
	0.7031	
	573	573

4.1.5 Correlation Analysis between UTME and CGPA

A correlation analysis was conducted to determine the correlation between UTME and CGPA using 573 sample data. There was a negative relationship (-0.0032) between UTME performances and CGPA; a high UTME score does not affect CGPA. $r(571) = -0.0032$, $p < 0.0005$ with UTME performance explaining 0.81% of post-UTME performances. The level of statistical significance (p-value) of the correlation coefficient is 0.9400, which means a statistically significant relationship between UTME performances and CGPA.

```
. pwcorr u cgpa, sig star(.05) obs
```

	u	cgpa
u	1.0000	
	573	
cgpa	-.0032	1.0000
	0.9400	
	573	573

4.1.6 Multiple Regression Analysis

Multiple regression was run to predict post-UTME form UTME, O'level, type of school attended and CGPA. These variables statistically predicted post-UTME, $F(4, 568) = 13.46$, $p < 0.0005$, $R^2 = 0.0866$, showing overall good fit of the data.

```
. regress pume u ol ts cgpa
```

Source	SS	df	MS			
Model	4256.54697	4	1064.13674	Number of obs =	573	
Residual	44896.1057	568	79.0424397	F(4, 568) =	13.46	
Total	49152.6527	572	85.931211	Prob > F =	0.0000	
				R-squared =	0.0866	
				Adj R-squared =	0.0802	
				Root MSE =	8.8906	

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
pume						
u	.1114121	.0155931	7.14	0.000	.080785	.1420392
ol	.5398113	.3039833	1.78	0.076	-.0572572	1.13688
ts	.0919987	.5347388	0.17	0.863	-.9583081	1.142305
cgpa	-.0156923	.0440158	-0.36	0.722	-.1021459	.0707613
_cons	33.56113	4.151433	8.08	0.000	25.4071	41.71517

4.2 The Interpretation of the Results

These results reveal that:

- (1) From the t-test analysis, the test revealed a significant difference of 8.14% between UTME and post-UTME. Indicating that UTME and post-UTME examinations are not the same, post-UTME should be retained as part of the admission requirement.
- (2) From the correlation analysis carried out, UTME have a positive but weak relationship with post-UTME (0.2851), indicating that student with high UTME scores are more likely to pass the post-UTME examination; there is a negative relationship between post-UTME and CGPA (-0.0160), indicating that high score in post-UTME does guarantee high performance when admitted; the number of credits obtained in the O' level result has a negative relationship with performance (CGPA) that is, the amount of credit obtained by a student in the O'level cannot be used to judge the student performance; UTME score has a negative relationship with CGPA (-0.0032), showing that high score in UTME does not guarantee high performance when admitted into the institution, and as such there are other factors contributing to academic performances;
- (3) The multiple regression analysis shows that UTME, O'level, and type of school attended are significant at a 5% level of significance. However, CGPA is shown not to be significant at a 5% significance level. The F-statistic, reported at 13.46, shows the overall significance of the explanatory variables in explaining and determining the dependent variable PUME, which is used to proxy the post-UTME score. The R-squared shows that the model is a good fit, as the explanatory variables explain the behaviour of the dependent variable by 0.8%.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

The aim of the study was related to the findings and the implications of the findings or the relationship between UTME and post-UTME about student performance in the University since the establishment of the use of post-UTME as part of the requirement for admitting students into the University.

Data were gathered from students that wrote both UTME and post-UTME examinations in selected Universities, Polytechnics and Colleges of education in Kwara State. Analysis of this data shows that there is a

- i. significant mean difference between UTME and post-UTME results,
- ii. the positive but weak relationship between UTME and post-UTME performances,
- iii. the negative relationship between post-UTME performances and CGPA,
- iv. the negative relationship between UTME and CGPA,
- v. the positive relationship between post-UTME and O'level results,
- vi. the positive but weak relationship between post-UTME and type of school attended.

From the study, the post-UTME is significantly different from the UTME examination and, therefore, should not be scrapped but retained as part of the admission requirement in a tertiary institution.

The institutions should put a more conducive form of writing the Post-UTME test into place. It should be easily accessible at any state without having to travel down to the University itself before taking the examination. Other recommendations based on the findings of this study are as follows:

1. The federal government should scrap, not post-UTME. Any observed weaknesses in JAMB should be strengthened and made efficient to get credible candidates.
2. JAMB should continue to set minimum standards for matriculation examinations in Nigeria.
3. During the admission process, the play of politics and favouritisms should be stopped, and students that passed on merits should be given admission to reduce the level of half-baked graduates in the labour market.
4. JAMB should have a more efficient and effective malpractice board to reduce the influx of malpractice, thereby eradicating the use of 'machinery' by students.

Limitations of the Study

For this research, only 6 tertiary institutions were visited in Kwara State, Nigeria, as the target population, of which 600 were sampled, and 573 questionnaires returned. A small sample (600) was selected due to time constraints, and financial constraints are part of the difficulty encountered during the research work. Most of the students felt reluctant to show their interest in answering some of the questionnaire's questions, such as CGPA.

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