CORRELATION OF ACADEMIC PERFORMANCE OF HND II 2015/2016 OTM STUDENTS OF AKANU IBIAM FEDERAL POLYTECHNIC, UNWANA, IN UTME, POST-UTME AND FIRST-YEAR CGPA: AN ANALYSIS FOR CHANGE

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Abstract
This study focuses on correlation of academic performance of HND II 2015/2016 OTM students of Akanu Ibiam Federal Polytechnic, Unawna, in UTME, Post-UTME and First-Year CGPA. There have been controversies over the use of Post-UTME as instrument for admitting students into tertiary institutions. One may ask whether there is significant relationship between performance in UTME and those of Post-UTME and CGPA. In view of this, three specific purposes and three corresponding research questions guided the study. Three hypotheses were tested at 0.05 level of significance. The review of related literature took cognizance of the major concepts in the topic; theoretical framework and empirical studies. Causal-comparative (Ex-Post Factor) research design was adopted. The study was carried out in Akanu Ibiam Federal Polytechnic, Unawna using 29 (75.5%) out of 40 of HND II 2015/2016 students. The data for this study were collected from admission and result files in OTM Department. The Pearson's Product Moment Correlation Coefficient was used to analyze the data; while t-test statistics was used to test the three hypotheses. It was found that there is no significant relationship between performance in UTME and Post-UTME and First-Year CGPA. The study concluded that UTME, Post-UTME and First-Year CGPA are no parallel examinations, hence, recommended some collaborations between JAMB and academic institutions.

INTRODUCTION

Correlation is the extent of relationship or relatedness that exists between two variables or scores. This aims at reducing to a single number or index the relationship between two sets of scores known as coefficient of correlation (Uzoagulu, 1998). Campbell (2007) noted that motivational constructs do in fact impact the academic performance of students. HND II 2015/2016 OTM are Final year Higher National Diploma students in Office Technology and Management Programme of Akanu Ibiam Federal Polytechnic, Unwana, for the 2015/2016 academic session. UTME stands for Unified Tertiary Matriculation Examination which is planned, organized and controlled by Joint Admissions and Matriculation Board (JAMB). Post-UTME is planned, organized and controlled by various tertiary institutions as the basis for admission of candidates after writing UTME. The CGPA stands for "Cumulative Grade Point Average" which is the overall performance of the student in the school at the end of the year. Change is something that is permanent either for better or worse.

Upon this background, this study is poised to find out the relationships that exist in students' performance in UTME, Post-UTME and CGPA.

Statement of the Problem

It is believed that there is a relationship between candidates' performance in UTME, Post-UTME and actual academic performance in the school. In view of the controversies to jettison Post-UTME as a measure for admission, this study seeks to establish the validity of the unsubstantiated belief.

Purpose of the Study

The major purpose of this study is to correlate the students performance in UTME, Post-UTME and First-Year CGPA in the institution. Specifically, the study sought to:
1. Find out the relationship between performance in UTME and Post-UTME.
2. Find out the relationship between performance in UTME and First-Year CGPA.
3. Find out the relationship between performance in UTME and First-Year CGPA.

Research Questions

Three research questions were formulated to guide the study:
1. What is the relationship between performance in UTME and Post-UTME?
2. What is the relationship between performance in Post-UTME and First Year CGPA?
3. What is the relationship between performance in UTME and First-Year CGPA?

Research Hypotheses

The following hypotheses were tested at 0.05 level of significance:

Ho_1: There is no significant relationship between performance in UTME and Post-UTME.

Ho_2: There is no significant relationship between performance in Post-UTME and First-Year CGPA.

Ho_3: There is no significant relationship between performance in UTME and First-Year CGPA.

Significance of the Study

The stakeholders in tertiary education programmes:

Joint Admission and Matriculation Board (JAMB); government and students are beneficiaries in this study. The result of this study will help to settle the debate on the stoppage of Post-UTME screening exercise proposed by government. Students will consolidate on Post-UTME if it has relationship with First-Year CGPA.

Scope of the Study

The study covered the relationship between performance in UTME and Post-UTME; Post-UTME and First-Year CGPA; UTME and First-Year CGPA.

Review of Related Literature

Literature review offers a lot of conceptual and theoretical framework to academic writing such as research thesis and dissertations. It enlightens the researcher about some of the aspects of the topic of study, methodology and results arrived at. This makes the researcher to know what has been and what remains undone and the gap to abridge in the study.

Conceptual Framework

According to Uzoagulu (1998), correlation is the extent of relationship or relatedness that exists between two scores in order to reduce to a single number the relationship existing between two sets of variables called coefficient of correlation. Osuala (2001) described correlation as a study that determines the coefficient or index of the strength of relationship between two variables irrespective of whether the experimental or correlational method is used.

Necati (2006) stated that academic performance is the measure of the final course grade of the students in the specific course over the duration of a semester or year.

Theoretical Framework

Theory is said to be a consideration, evidence, contemplation, speculation, an idea or mental plan of a particular phenomenon, process or career in support of a certain vocation or occupation. For the purpose of this study, the theory of change and models of social change are adopted.

What is a Theory of Change?

A theory of change is the product of a series of critical-thinking exercises that provide a comprehensive picture of the early and intermediate-term changes in a given community or system needed to reach a long-term goal articulated by the community or system. It is a tool for developing solutions to complex social problems. A theory of change explains how a group of early and intermediate accomplishments set the stage for producing long-term results. A comprehensive theory of change articulates the assumptions about the process through which change will occur and specifies the ways in which all of the required early and intermediate outcomes related to achieving the desired long-term change will happen and documented as they occur (Anderson, 2005).

Theory of change is imperative because, sometimes, initiatives are planned without an explicit understanding of the early and intermediate steps required for long-term changes to occur. Many assumptions about the change process need to be examined for programme planning or evaluation planning to be most effective. A theory of change creates an honest picture of the steps required to reach a goal. There is an opportunity for stakeholders to assess what they can influence; what impact they can have; whether it is realistic to expect to reach their goal with the time and resources they have available (Harvard Family Research Project, 2005).

Houghton (2016) in his Models of Social Change, identified three basic theories of social change as: **Evolutionary Theory** which maintains that society moves in specific directions and progresses to higher and higher levels. As a result, they compared society to a living organism with interrelated parts moving towards a common end or goal. **Unilinear Evolutionary Theory** maintains that all societies pass through the same sequence of stages of evolution to reach the same destiny; while **Multilinear Evolutionary Theory** states that

change can occur in several ways and does not inevitably lead in the same direction. Multilinear theorists believe that human societies have evolved along differing lines.

The functionalist theory emphasizes "what maintains" society, not "what changes" it. It sees society in its natural state as being stable and balanced, that is, society naturally moves towards a state of homeostasis. The equilibrium theory holds that changes in one aspect of society required adjustments in other aspects. If these adjustments fail to occur, equilibrium disappears, thereby threatening social order (Houghton, 2016).

The conflict theorists maintain that change plays a vital role in remedying social, economic and academic inequalities and injustices. Karl Marx accepted that societies develop along a specific direction, but disagreed that each successive stage or change presents an improvement over the previous stage. Marx noted that history proceeds in stages in which the rich always exploit the poor and the weak as a class of people.

Villanova University (2016) described change as something that presses out of our comfort zone. It is destiny-filtered, heart-grown, faith built. Change is inequitable. It is constant. Change is not a respecter of persons; it is for the better or for the worse, depending on where you view it. Change has an adjustment period which varies on the individual. It is uncomfortable for changing from one state to the next upsets our control over outcomes. Change has a ripping effect on those who will not let it go. However, flex is the answer. It is needed when all the props and practices of the past no longer work.

Change does not grow in retreat but through endurance. It is not fixed by crying, worrying, or mental treadmilling. Change is won by victors not victims. This is our choice. It is awkward at first. Change is a muscle that develops to abundantly enjoy the dynamics of the life set before us. Change causes one to do ones personal best and draws out those poised for a new way. It does have casualties of those defeated; causes people to churn or learn; changes the speed of time; slow for the reluctant, yet it is a whirlwind for those who embrace it (Villanova University, 2016).

Change is more fun to do than to be done to; and seeks a better place at the end and it is complete when you realize you are different, change is measured by its impact on all who are connected to it. It is charged when you are dissatisfied with where you are. It does not look for a resting-place, rather the next launching point. Change is constant. It is only a waste to those who do not want to learn from it. Change happens in the heart before it is proclaimed by our works. It chaps those moving slower than the change itself. If we can change before we have to change, there will be less pain. Change can flow or jerk depending on our resistance to it. Change uses the power invested in the unseen to reinvent what is seen. It is like driving in a fog or early morning thick dews which does not allow you to see very far, but you can make the whole trip that way (Villanova University, 2016).

Methods
Research Design
Causal-comparative (Ex-Post-Facto) research design was adopted for this study. This is because the study investigated the extent and possible cause-and-effect relationships in students performances using data from records over a period of one year (Eze, 2010).
Area of the Study
The study was carried out in the Department of Office Technology and Management, Akanu Ibiam Federal Polytechnic, Unwana.
Population
The population is 40. This is the total population of HND II 2015/2016 OTM students.

Sample Size
A total of 29 students, representing 72.5% of the population who had complete results were used; while 11 students representing 27.5% with incomplete results were dropped.

Instrument for Data Collection
The data used for this study were collected from Admission and Results Files in the Department of Office Technology and Management.

Method of Data Collection
The researcher personally read through the admission and results files and extracted the UTME, Post-UTME and First-Year CGPA of HND II 2015/2016 OTM students.

Method of Data Analysis
The data collected were analyzed using Pearson's Product Moment Correlation Coefficient. This is to ascertain the relationship between UTME and Post-UTME; Post-UTME and First-Year CGPA; and UTME and First-Year CGPA. The t-test statistics was used to test the correlation coefficient (r).

Decision Rule
It was decided that if the t-calculated exceeds the t-critical null hypothesis is rejected; otherwise, the alternative hypothesis is accepted (Uzoagulu, 1998).

Table 1:   Relationship between UTME and Post-UTME of HND II 2015/2016 OTM Students

S/N	UTME (X)	POST-UTME (Y)	X^2	Y^2	XY
1.	189	16	35,721	256	3,024
2.	184	8	33,856	64	1,472
3.	180	12	32,400	144	2,160
4.	173	12	29,929	144	2076
5.	205	15	42,025	225	3075
6.	228	15	51,984	225	3420
7.	234	11	54,756	121	2574
8.	215	15	46,225	225	3225
9.	187	12	34,969	144	2244
10.	199	19	39,601	361	3781
11.	240	14	57,600	196	3360
12.	191	11	36,481	121	2101
13.	180	16	32,400	256	2880
14.	186	19	34,596	361	3534
15.	190	6	36,100	36	1140
16.	163	14	26,569	196	2282
17.	191	13	36,481	169	2483
18.	185	18	34,225	324	3330
19.	209	17	43,681	289	3553
20.	192	9	36,864	81	1728
21.	208	16	43,264	256	3328
22.	227	13	51,529	169	2951
23.	214	18	45,796	324	3852
24.	201	20	40,401	400	4020
25.	170	13	28,900	169	2210

26.	222	18	49,284	324	3996
27.	231	16	53,361	256	3696
28.	200	17	40,000	289	3400
29.	208	15	43,264	225	3120
Total	**5,802**	**418**	**1,172,262**	**6,350**	**84,015**

Product Moment Correlation Coefficient:

$$r = \frac{N\sum xy - \sum x \sum y}{\sqrt{\left\{N\sum x^2 - (\sum x)^2\right\}\left\{N\sum y^2 - (\sum y)^2\right\}}}$$

$$r = \frac{29 \times 84015 - 5802 \times 418}{\sqrt{\left\{29 \times 1172262 - (5802)^2\right\}\left\{29 \times 6350 - (418)^2\right\}}}$$

$$r = \frac{2436435 - 2425236}{\sqrt{(33995598 - 33663204)(184150 - 174724)}}$$

$$r = \frac{11199}{\sqrt{(332394)(9426)}}$$

$$r = \frac{11199}{\sqrt{3133145844}}$$

$$r = \frac{11199}{55974.51}$$

$$r = \underline{\textbf{- 0.2001}}$$

Ho₁: There is no significant relationship between performance in UTME and Post-UTME of HND II 2015/2016 OTM Students.

Ha$_1$: There is significant relationship between performance in UTME and Post-UTME of HND II 2015/2016 OTM Students.

$$ t = r\sqrt{\frac{N-2}{1-r^2}} $$

$$ t = \frac{-0.2001\sqrt{29-2}}{\sqrt{1-(-0.2001)^2}} $$

$$ t = \frac{-0.2001 \times 5.196}{\sqrt{1-0.0400}} $$

$$ t = \frac{1.0397}{0.96} $$

$$ t = \underline{\mathbf{1.0830}} $$

t-calc = 1.0830; t-tab = 1.70

Finding 1: t-tab > t-calc., therefore, null hypothesis (Ho$_1$) is accepted. This proved that there is no significant relationship between performance in UTME and Post-UTME.

Table 2: Relationship between performance in Post-UTME and First-Year CGPA of HND II 2015/2016 OTM Students.

S/N	POST-UTME (X)	FIRST-YEAR CGPA (Y)	X^2	Y^2	XY
1.	16	2.73	256	7.45	43.68
2.	8	2.60	64	6.76	20.80
3.	12	3.34	144	11.16	40.08
4.	12	3.15	144	9.92	37.80
5.	15	3.20	225	10.24	48.00
6.	15	3.11	225	9.67	46.65
7.	11	2.52	121	6.35	27.72
8.	15	3.25	225	10.56	48.75
9.	12	3.45	144	11.90	41.40
10.	19	3.12	361	9.73	59.28

11.	14	2.28	196	5.20	31.92
12.	11	2.84	121	8.07	31.24
13.	16	3.13	256	9.80	50.08
14.	19	3.38	361	11.42	64.22
15.	6	2.34	36	5.48	14.04
16.	14	2.98	196	8.88	41.72
17.	13	2.88	169	8.29	37.44
18.	18	3.02	324	9.12	54.36
19.	17	3.35	289	11.22	56.95
20.	9	2.70	81	7.29	24.30
21.	16	2.48	256	6.15	39.68
22.	13	3.72	169	13.84	48.36
23.	18	3.62	324	13.10	65.16
24.	20	3.69	400	13.62	73.80
25.	13	2.66	169	7.08	34.58
26.	18	3.84	324	14.75	69.12
27.	16	2.48	256	6.15	39.68
28.	17	2.74	289	7.51	46.58
29.	15	2.99	225	8.94	44.85
Total	**418**	**87.59**	**6,350**	**269.65**	**1,282.24**

$$r = \frac{N\sum xy - \sum x \sum y}{\sqrt{\left\{ N\sum x^2 - (\sum x)^2 \right\} \left\{ N\sum y^2 - (\sum y)^2 \right\}}}$$

$$r = \frac{(29 \times 1282.24) - (418 \times 87.59)}{\sqrt{\left\{ 29 \times 6350 - (418)^2 \right\} \left\{ 29 \times 269.65 - (87.59)^2 \right\}}}$$

$$r = \frac{37184.96 - 36612.62}{\sqrt{(184150 - 174724)(7819.85 - 7672.01)}}$$

$$r = \frac{572.34}{\sqrt{(9426 \times 147.84}}$$

$$r = \frac{572.34}{\sqrt{}}$$

$$1393539.84$$

$$r \quad = \quad \frac{572.34}{1180.48}$$

$$r \quad = \quad \textbf{- 0.4848}$$

Ho₂: There is no significant relationship between performance in Post-UTME and First-Year CGPA of HND II 2015/2016 OTM students.

Ho₂: There is significant relationship between performance in Post-UTME and First-Year CGPA of HND II 2015/2016 OTM students.

$$t \quad = \quad r \frac{\sqrt{N - 2}}{\sqrt{1 - r^2}}$$

$$t \quad = \quad \frac{0.4848 \sqrt{29 - 2}}{\sqrt{1 - 0.4848^2}}$$

$$t \quad = \quad \frac{0.4848 \times 5.196}{\sqrt{1 - 0.2350}}$$

$$t \quad = \quad \frac{2.5190}{0.765}$$

$$t \quad = \quad \textbf{3.2928}$$

t-calc = 3.2928;   t-tab = 1.70

Finding 2:   t-calc> t-tab., therefore, null hypothesis (Ho₂)is rejected while Ha₂ is accepted. This is to say that there is significant relationship between performance in Post-UTME and First-Year CGPA of HND II 2015/2016 OTM students

Table 3:   Relationship between performance in UTME and First-Year CGPA of HND II 2015/2016 OTM Students

S/N	UTME (X)	FIRST-YEAR CGPA (Y)	X^2	Y^2	XY
1.	189	2.73	35,721	7.45	515.97
2.	184	2.60	33856	6.76	478.40
3.	180	3.34	32400	11.16	601.20
4.	173	3.15	29929	9.92	544.95
5.	205	3.20	42025	10.24	656.00
6.	228	3.11	51984	9.67	709.08
7.	234	2.52	54756	6.35	589.68
8.	215	3.25	46.225	10.56	698.75
9.	187	3.45	34969	11.90	645.15
10.	199	3.12	39601	9.73	620.88
11.	240	2.28	57600	5.20	547.20
12.	191	2.84	36481	8.07	542.44
13.	180	3.13	32400	9.80	563.40
14.	186	3.38	34596	11.42	628.68
15.	190	2.34	36100	5.48	444.60
16.	163	2.98	26569	8.88	485.74
17.	191	2.88	36481	8.29	550.08
18.	185	3.02	34225	9.12	558.70
19.	209	3.35	43681	11.22	700.15
20.	192	2.70	36864	7.29	518.40
21.	208	2.48	43264	6.15	515.84
22.	227	3.72	51529	13.84	844.44
23.	214	3.62	45796	13.10	774.68
24.	201	3.69	40401	13.62	741.69
25.	170	2.66	28900	7.08	452.20
26.	222	3.84	49284	14.75	852.48
27.	231	2.48	53361	6.15	572.88
28.	200	2.74	40000	7.51	548.00
29.	208	2.99	43264	8.94	621.92
Total	**5,802**	**87.59**	**1172262**	**269.65**	**17523.58**

$$r = \sqrt{\frac{N\sum xy - \sum x \ \sum y}{\sqrt{\left\{ N\sum x^2 - (\sum x)^2 \right\} \left\{ N\sum y^2 - (\sum y)^2 \right\}}}}$$

$$r = \frac{29 \times 17523.58 \ - \ (5802 \times 87.59)}{\sqrt{\left\{29 \times 1172262 - (5802)^2\right\} \left\{29 \ \times \ 269.65 - (87.59)^2\right\}}}$$

$$r = \frac{508,183.82 - 508\ 197.18}{\sqrt{(33995598 - 33663204)\ (7819.85 - 7672.01)}}$$

$$r = \frac{-13.36}{\sqrt{(332.394)\ (147.84)}}$$

$$r = \frac{13.36}{\sqrt{49141.13}}$$

$$r = \frac{-13.36}{221.68}$$

$$r = \underline{\mathbf{-0.0603}}$$

Test of Hypothesis

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$t = \frac{-0.0603\sqrt{29-2}}{\sqrt{1(-0.0603)^2}}$$

$$t = \frac{-0.0603 \times 5.1962}{\sqrt{1 - 0.0036}}$$

$$t = \frac{-0.3133}{\sqrt{0.9964}}$$

$$t = \frac{-0.3133}{0.9982}$$

$$t = \underline{\mathbf{-0.3139}}$$

Ho$_3$:   There is no significant relationship between performance in UTME and First-Year CGPA of HND II 2015/2016 OTM students.

Ho₃: There is significant relationship between performance in UTME and First-Year CGPA of HND II 2015/2016 OTM students.

Finding 3:   t-calc = -0.3139; t-tab. = 1.70. Therefore, when t-tab > t-calc; null (Ho) hypothesis is accepted. This means that there is no significant relationship between performance in UTME and First-Year CGPA of HND II 2015/2016 OTM students.

Discussion of Findings

1. It was found that there is no significant relationship between performance in UTME and Post-UTME of HND II 2015/2016 OTM students. This means that good or bad performance in UTME does not mean good or bad performance in the institution. This result is in agreement with Houghton (2016) who stated that change can occur in several ways and does not inevitably lead in the same direction; also changes in one aspect of activity require adjustments in other aspects; if adjustments fail to occur, equilibrium disappears.
2. It was revealed that there is significant relationship between performance in Post-UTME and First-Year CGPA of HND II 2015/2016 OTM students. This means that the two examinations administered by the institution have relationship. This is in consonance with Necati (2006) who maintained that academic performance is the measure of the final course grade of the students in the specific course over the duration of a semester or year.
3. It was found that there is no significant relationship between performance in UTME and First-Year CGPA of HND II 2015/2016 OTM students. This means that high scores in UTME may be low scores in the institution and vice versa. This tallies with Villanova University (2016) that described change as something that presses out of our comfort zone. It is for the better or worse depending on where you view it.

Conclusion

Based on the findings drawn from the data analyzed, the study concluded that UTME did not relate Post-UTME and First-Year CGPA because they are planned, organized and administered by two different entities with different ideologies.

Recommendations

The following recommendations are made based on the findings of the study:

1. JAMB and Institutions should collaborate in planning and organizing the examinations.
2. Post-UTME should be sustained because it has relationship with CGPA in the institution.
3. UTME is an achievement test. CGPA is also an achievement test. Good performance in one should be good performance in another.

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