

# GENDER AS A DETERMINANT OF ACADEMIC PERFORMANCE: A KEY PLAYER IN THE 21<sup>st</sup> CENTURY GLOBALIZATION

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## **Abstract**

This paper attempted to determine in this 21 century whether there are significant gender differences in academic performance among graduate students In Nigeria two factors are considered, the university entrance scores, and CGPA at the point of graduation. Michael Okpara University of Agriculture Umudike(MOUAU) is used as the case study. The paper found that although equal opportunities are given to students on entering point, more number of male students enter the University and that contrary to what is seen in the literature, male students separate the female students and academic performance is sensitive and need balancing.

**Keyword; Gender, CGPA, MOUAU.**

## **Introduction**

The paper attempted to determine whether there are gender differences in academic performance among graduates in a tertiary institution. Academic performance is affected by a host of factors. These include individual and household, characteristics such as student ability, modulation, the quality of secondary education obtained and the like. The gender of the student may also be a factor in determining student performance. Childhood training and experience, gender differences in attitudes, parental and teacher expectations and behaviours, differential course taking and biological differences between the sexes may all be instrumental (Feingold, 2002). The rather high gender disparity in various spheres of public life and the patriarchal social structure in Nigerian may also lead to poorer academic performance among graduate student. Gender disparity in schooling is also observed among the younger population, where female school enrollment in basic and secondary education falls behind male children (Tansel, 2002; and Erturk and Dayloglu 2004). Despite the numerous studies that analyze the disadvantaged position of women as adults and children, there is not much work on the educational experiences of women as young adults. This seek to bridge that in literature.

The other motivation to this work has been our observation that in the undergraduate classes female students taught often to outperform their male counterparts. This casual observation contradicts the general experiences with the female populations as children and adults hence this study grew out of our curiosity to find out how far our personal observations hold for the graduated students population in some department of the Nigerian university.

## **Review of literature**

Of a truth there have not been much work in literature about Nigeria institutions, yet numerous studies on sex differences in cognitive performance can be found in the literature. In one of the recent studies Chalk (2005) referring to the psychic and social differences between sexes and age,

claims that the education outcomes of men and women will at least in part, be different at the collegiate and graduate level. The debate on gender differences in cognitive abilities has actually evolved out of the debate on biological Vs social determinism. The biological perspective on sex differences and cognitive performance considers social factors to be trivial or subordinate to biological factors like brain structure. Lynn in several of his studies (Lynn (1998a), (1998b), (1999): ALLIK, and Lynn (1999) colon and Lynn, (2004) asserted that males have large average brain sizes than females and therefore, would be expected to have higher average IGS' Mackintosh (1998) on the other hand, claims that there is no sex difference in general intelligence. Mackintosh proposes that general intelligence should be defined as reasoning ability and that the best measure of this is the progressive matrices. Examining two tests

administered by the Brach Defence forces which qualify as IQ test one of them is an adaptation of progressive matrices.

However, they noted that males generally come from households where the parents socio-economic status as measured by examine reported education levels and income is higher. In contrast female test takers are more diverse and include more low-income students than the boys group others have argued that the content of the test or of its administration favours males (Bridgman and Wendler 1991) yet other researchers have explained the gap by adhering to such factors as difference incused taking behaviors classroom experiences and cognitive pressing (Young and Fisler, 2000).

The studies conducted outside of the US present differing outcomes, Younger Warrington and Williams (2009), Orabi, (2004) focus on the gender gap in English language in secondary schools and science causes in tertiary schools.. Their analysis is based on the performance of boys and girls in GLSE/and first year students in tertiary institution Examinations in the UK and girls were found to get better grades than boys. Thus phenomenon is explained by boys disregard for authority, academic work and formal achievement, differences in student's attitude to work and their goals and aspirations and girls increased maturity and more effective learning strategies. OECD (2001) analyzed gender differences in mathematics and science achievement in the eighth grade for fourteen OECD countries. The study found that gender differences in mathematics achievement are statistically insignificant in all countries but in science gender differences favour males and are often statistically significant except for few countries.

In higher education women are often found to outperform men. Hyde and Kling (2000) stated this to be the case irrespective of the measure of success used. Similarly, investigating about 60,000 students from 22 public research universities, Kim, Khoades and Woodanrs (2003) found that SAT scores have a significant import on student graduation although at the individual level gender is a more powerful correlate of graduation than the SAT scores.

The literature survey on gender differences in scholastic performance at different levels shows mixed results. However, common finding is that females outperform their male counterparts in higher education. In what follows next, we shall try to see whether this is also true for Eastern Nigeria.

### **Methodology and data collection**

A number of indicators can be used to determine the academic achievement of an undergraduate student. In the literature the most frequently employed measure is student's cumulative grade point average (CGPA).

As mentioned earlier, a whole host of factors affect student achievement. The variable of prime interest for this study is the sex of student. To see whether gender is dependent on academic performance we use chi-square test of independence and thereby, control all other possible predictors of CGPA. Among individual level effects we considered students age and his/her year of entry to university. The population was the community of Michael Okpara University of Agriculture, Umudike, Abia state. Systematic sampling technique is employed to select 3 colleges from 9 colleges in the school.

The academic session of 007/2008 was selected for these studies where the summary result of Grandaunts were obtained and recorded, from the department of marketing 77 were recorded. Accounting recorded 52, Micro-biology recorded 39 Grandaunts, Chemistry recorded 28 Grandaunts, Agricultural Economics, Rural, Sociology and Extension recorded 92 Grandaunts. So all the samples selected from these departments constituted the sample for the study, with a sample size of 288.

### **Method of data collection**

The data for this paper came from the student records compiled by the registrar's office of Michael Okpara university of Agriculture Table 1 presents the descriptive statistics on the grade point average achieved in grading of result. A candidate row score in examination which is usually expressed as percentage and converted into grades. Weighted by assigning point values.

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**Table 1.**

Row score	Grade equivalent	Performance rating	Point weight	Classification
100%-70%	A	Distinction	5	4.50-5.00
69%-60%	B	Very good	4	3.50-4.49
59%-50%	C	Good	3	2.40-3.49
49%-45%	D	Fairly good	2	1.50-2.39
40%-44%	E	Pass	1	1.00-1.49
39%-0%	F	Fail	0	0.00-0.99

From the table above A, B, C, D and E are pass grades where F is a failure grade.

**Method of data analysis and data presentation**

The preliminary method of data analysis adopted in this paper is chi-square test of independence by two criteria, the first criteria (gender, divided into two categories) and the second (Academic performance) into five categories using contingency table.

This is to determine whether or not one criteria of classification is contingent or depend on the other.

**Test of hypothesis**

The hypothesis:

H<sub>0</sub>: Academic performance depend on gender .

H<sub>1</sub> : H<sub>0</sub> is not true .

Test statistic

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij}-E_{ij})^2}{E_{ij}}$$

With the degree of freedom V= (r-1) (c-1) = (2-1) (5-1) = 4

Where:

O<sub>ij</sub> =Observed frequency in the (ij)<sup>th</sup> cell

And

E<sub>ij</sub>=expected frequency in the same level of significance

α=0.05, from statistical table χ<sup>2</sup>(0.05, 4) = 9.488

Our null hypothesis: says academic performance depend on gender

**DECISION RULE**

Reject Ho if χ<sup>2</sup> cal>χ<sup>2</sup> tab otherwise do not reject Ho. The academic performance frequencies and gender are used, in consisting 2x5 contingency tables. The expected frequencies used were calculated using the formular.

$$E_{ij} = \frac{(r_i)(G_j)}{(G)} = \frac{r_i c_j}{G}$$

Where

r<sub>i</sub> = total for row i

C<sub>i</sub>= total for column j

G= ground total

**Results**

The result are also presented in the tables below

**Frequency table of male and female graduands in the department of chemistry**

	Class interval	Mid-point x	Frequency male F <sub>1</sub>	Frequency female F <sub>2</sub>	F <sub>1</sub> x	F <sub>2</sub> x
First class	4.50-5.00	4.750	0	0	0	0
Second						
Class upper	3.50-4.49	3.995	7	3	27.965	11.99
Second class lower	2.40-3.49	2.945	4	3	11.78	8.84
Third class	1.50-2.39	1.945	5	6	9.725	11.67
Pass	1.00-1.49	1.245	0	0	0	0

**Contingent table of chemistry department**

	First class	Second class upper	Second class lower	Third class	Pass	Total
Male	0	7	4	5	0	16
Expected	0.00	5.7143	4	6.2857	0.00	
Frequency						
Female	0	3	3	6	0	12
Expected	0.00	4.286	3	4.713	0.00	
Frequency						
Total	0	10	7	11	0	28

$$\chi^2=1.2895$$

**Frequency table of male and female graduated in the department of microbiology**

Grades	Class interval	Midpoint x	Frequency male F <sub>1</sub>	Frequency female F <sub>2</sub>	F <sub>1</sub> x	F <sub>2</sub> x
First class	4.50-5.00	4.750	1	0	4.750	0
Second	3.50-4.49	3.995	3	19	11.985	75.905
Class upper						
Second class lower	2.40-3.49	2.945	9	3	26.505	8.835
Third class	1.50-2.39	1.945	1	3	1.945	5.835
Pass	1.00-1.245	1.245	0	0	0	0
Total			14	25		

**Contingent table for microbiology department**

Gender	First class	Second class upper	Second class lower	Third class	Pass	Total
Male	2	12	8	1	0	23
Expect	1.243	12.432	6.838	2.487	0.00	
Frequency						
Female	0	8	3	3	0	14
Expect	0.756	7.568	4.1622	1.514	0.00	

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Frequency						
Total	2	20	11	4	0	37

$\chi^2 = 4.7014$

	Class interval	Midpoint x	Frequency male F <sub>1</sub>	Frequency female F <sub>2</sub>	F <sub>1</sub> x	F <sub>2</sub> x
First class	4.50-5.00	4.750	4	6	19	28.5
Second	3.50-4.49	3.995	28	18	111.86	71.91
Class upper	4.49					
Second class lower	2.40-3.49	2.945	3	6	8.835	17.67
Third class	1.50-1.49	1.945	0	0	15.56	7.78
Pass	1.00-1.49	1.245	0	0	0	0
Total			43	34	155.255	125.86

**Frequency table of male and female graduated into department of marketing**

**Contingent table of marketing department**

	First class	Second class upper	Second class lower	Third class	Pass	Total
Male	4	28	3	8	0	43
Expected	5.5844	25.6883	5.0259	6.7013	0.00	
Frequency						
Female	6	18	6	4	0	34
Expected	4.4156	20.3117	3.9740	3.9740	0.00	
Frequency						
Total	10	46	9	12	0	77

$\chi^2 = 3.9086$

**Frequency table of male and female graduands into department of accounting**

	Class interval	Midpoint x	Frequency male F <sub>1</sub>	Frequency female F <sub>2</sub>	F <sub>1</sub> x	F <sub>2</sub> x
First class	4.50-5.00	4.750	4	2	19	9.5
Second	3.50-4.49	3.995	13	19	51.95	75.905
Class upper						
Second class lower	2.40-3.49	2.945	4	3	11.78	8.835
Third class	1.50-2.37	1.945	5	2	9.728	3.89
Pass	1.00-1.49	1.245	0	0	0	0
Total			26	26	9.44	88.63

	First class	Second class upper	Second class lower	Third class	Pass	Total
Male	4	13	4	5	0	26
Expected	3	16	35	3.5	0.00	
Frequency						
Female	2	19	3	2	0	26
Expected	3	16	36	3.5	0.0	
Frequency						
Total	6	32	7	7	0	52

**Contingent table of accountancy department**

$\chi^2 = 3.21965$

**Frequency table of male and female grandaunts into department of agriculture economic, rural sociology and extension**

Grades	Class interval	Midpoint x	Frequency male F <sub>1</sub>	Frequency female F <sub>2</sub>	F <sub>1</sub> x	F <sub>2</sub> x
First class	4.50-5.00	4.750	0	0	0	0
Second	3.50-4.49	3.995	7	6	27.965	23.97
Class upper						
Second class lower	2.40-3.49	2.945	20	28	58.9	82.46
Third class	1.50-2.37	1.945	16	15	31.120	29.175
Pass	1.00-1.49	1.245	0	0	0	0
Total			43	49	117.985	135.805

**Contingent table of agriculture economic, rural sociology and extension**

	First class	Second class upper	Second class lower	Third class	Pass
Male	0	7	20	16	0 43
Expected	(0.00)	6.0761	22.4347	14.4891	0.00
Frequency					
Female	0	6	28	15	0 49
Expected	(0.00)	6.9239	25.5652	16.5109	(0.00)
Frequency					
Total		13	48	31	0 92

$\chi^2 = 1.08654$

$\chi$

**Summary**

This paper investigated whether gender is one of the factors affecting or influencing academic performance among undergraduate student in Nigeria, two factors were taken into consideration, the scores at the point of entrance and the C.G.P.A at graduation. Michael Okpara University of Agriculture Umudike, was used as the case study.

**Conclusion**

In all cases it is observed that  $\chi^2$ calculated was indeed smaller than the  $\chi^2$  Tabulated; since  $\chi^2_{tab} > \chi^2_{cal}$  we conclude that our hypothesis should be accepted based on sample evidence, therefore it is advice that government should look for ways of handling this imbalances in schools for better academic

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development in this 21<sup>th</sup> century, and again all hand should be on deck to develop new ways of teaching that will balance the gender disparity.

### **References**

- Allik, J., Must, O. And Lynn, R. (1999) Sex differences in Gender Intelligence Among High School Graduates:Someresults From Estnia Personality and Individual Differences, 26, pp. 1137-1141.
- Chalk B.I. (2005) Sex Difference in Academic performance in high schools. *Journal of Advance social sciences* 22-37.
- Dayloghi, M. and Tunali, I. (2003) Falling Behind While Catching Up: Changes in the Female-Male Wage Differential in Urban Turkey, 1988 to 1994, *paper presented at the 2003 Annual Meeting of the Population Association of America.*
- Feingold, J. R. (2002) Cognitive Gender Differences Are Disappearing, *American Psychologist*, 43, 95-103.
- Kimball, M. (1989) A new perspective on Women's Math Achievement, *Psychological Bulletin*, 105, pp.198-214.
- Lao, R. C. (1980) Differential Factors Affecting Male and Female Academic Performance in High School, *The Journal of Psychology*, 104, pp. 119-127.
- Lynn, R. (1998a) Sex Differences in Intelligence: A Rejoinder to Mackintosh, *Journal of Biosocial Sciences*, 30, pp. 529-532.
- Lynn, R. (1998b) Sex Differences in Intelligence: Some Comments on Mackintosh and Flynn, *Journal of Biosocial Sciences*, 30, pp. 555-559.
- Lynn, R. (1999) Sex differences in Intelligence and Brain Size: A DevelopmentalTheory, *Intelligence*, 27, pp, 1-12.
- Lynn, R. And Tse Chan, P. W. (2003) Sex Differences on the Progressive Matrices: Some Data From Hong Kong, *Journal of Biosocial Sciences*, 35, pp. 145-150.
- Mackintosh, N.J. (2006) Gender sensitive to Academic Performance: *Journal of Biostatistics.*
- Mackintosh, N. J. (1998) Reply to Lynn, *Journal of Biosocial Sciences*, 30, pp. 533-539.
- Ministry of National Education (MNE) (2004) Statistics on National Education 2002-2003, [htt://www.meb.gov.tr](http://www.meb.gov.tr)
- Morris, V.C. (1959) Male, Female, and the Higher, Learning: The Educational Significance of Differences between the Sexes, *Journal Higher Education*, 30, pp. 67-72.
- Orabi, I."A Comparison of Students Performance in an online with traditional Based Entry level Engineering Course"Proceedings of the 2004 Annual Conference, June 20-23, 2004, Salt Lake City. UT.
- Stage, F. K. and Kloosterman, P. (1995) Gender, Beliefs, and Achievement in Remedial College-Level Mathematics, *Journal of Higher Education*, 66, pp. 294-311.

Tansel, A. (2002) Determinant of School Attainment of Boys and Girls in Turkey: Individual, Household and Community Factors, *Economics of Education Review*, 21, pp. 455-470.

Wilberg, S. and Steinberg, L. S. (1992) Sex Differences in Historical Knowledge and School Grades: A 26 Nation Study, *Personality and Individual Differences*, 27, pp. 1221-1229.

Solnick, 1995, Jacobs, 1996; A Significant Portion of the Gender Earnings Gap.