



# Gender and Faculty of Study as Predictors of Undergraduate Students' Academic Achievement in Tertiary Institutions in Nigeria

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## Authors' contributions

This study was carried out in collaboration between both authors. Author LIA designed the study and wrote the protocol. Author TUCO managed the literature searches. Author LIA wrote the first and second draft of the manuscript, performed the statistical analysis and managed the analysis of the study. Both authors read and approved the final manuscript before submission

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## ABSTRACT

**Aims:** To determine gender and faculty of study as predictor of undergraduate students' academic achievement in tertiary institutions in Nigeria.

**Study Design:** Ex-post facto research design.

**Methodology:** The sample for the study was 632 100 level students selected using simple random sampling technique of balloting without replacement. These students were selected from tertiary institutions sampled for the study. The data collected were pre-existing results of 100 level students on General mathematics retrieved from the respective departments sampled earlier. Data collected was analyzed using simple regression analysis.

**Results:** The results of this study revealed that gender of undergraduate students had  $R^2$  change of 0.004. This indicates that gender had the predictive power of 0.40 percent for undergraduates'

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achievement in General Mathematics. Also, at 1df numerator, 631 df denominator and  $P=.05$ , the calculated F value 2.54 is less than the critical F value of 3.84. Therefore, gender of undergraduates in tertiary institutions is not a significant predictor of their achievements in General Mathematics. On the other hand, the results showed that undergraduate students had  $R^2$  change of 0.009. This indicates that faculty of study had the predictive power of 0.90 percent for undergraduates academic achievement in General Mathematics. Also, at 1df numerator, 631df denominator and  $P = .05$ , the calculated F value 6.78 is greater than the critical F value of 3.84. Therefore, students' faculty of study in tertiary institutions is a significant predictor of their achievements in General Mathematics.

**Conclusion:** Based on the analysis carried out, it was concluded that gender of undergraduates in tertiary institutions is not a significant predictor of their achievement in General Mathematics. On the contrary, students' faculty of study in tertiary institutions was found to be a significant predictor of their achievements in General Mathematics.

*Keywords: Academic achievement; faculty of study; gender; student's; tertiary institution; undergraduate.*

## 1. INTRODUCTION

Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, or university [1]. The academic achievement of students at all levels in educational institutions in Nigeria has become an issue of heated debate, attracting criticisms from all and sundry. In the light of this growing challenge, guidance programmes and counselling strategies have incessantly been initiated in schools, with a view to improving the students' academic achievement.

Academic achievement is a product of education or learning which is commonly measured by examinations or continuous assessment. It is an educational goal that is achieved by a student, teacher, or an institution over a certain period. It is an obvious fact that students who achieve high grades are more likely to be employed, have stable employment, earn higher salaries, be less dependent on social assistance, and less likely to engage in criminal and unwholesome activities. Undergraduate students are students who do not yet have first degree, but are studying to earn one (Dave, 2015). For this study, the academic achievement of students in general mathematics was considered a subject matter.

Generally, studies have shown that, gender and faculty of study are some demographic features that could come into focus in the context of predictors of academic achievement of undergraduate students. For instance, a research carried out by Habibollah, Rohani, Tengku, Jamaluddin and Mallan [2] revealed that

various variables such as family influences, gender and age are correlates of academic achievement in Europe.

Gender differences in cognitive, social, and personal characteristics have been investigated since the early 1900s in the western world [3]. In cognitive skills, the largest and most consistent gender differences are found in verbal, language, and certain spatial skills. Most studies in the western world show that on average, girls do better in school than boys. Standardized achievement tests also show that females are better at spelling and perform better on tests of literacy, writing, and general knowledge whereas male students tend to do better in sciences [4]. It is perceived that girls tend to produce words at an earlier age, have larger vocabulary, and show higher level of language complexity beginning in early childhood. In view of these disparities, It is therefore imperative to investigate how students gender correlates with their educational achievement.

Faculty of study refers to a division within a university or college comprising one subject area, or a number of related subject areas. It is used to describe a sub-sector of the university comprising of various related subject areas [5]. Actual observation clearly indicates that certain faculties in universities tend to be gender bias. For instance, faculty of engineering and sciences tend to be more dominated by male students than females and students from such faculties tend to achieve better academic success than students from faculties such as education, arts and social sciences which are often more dominated by female students. Another example is in Joint Admission and Matriculation Board (JAMB) cut-off point for different choices of

study, where JAMB cut-off point for engineering courses is higher than the cut off for Art courses. However, students who qualify for engineering studies are considered more intelligent than students who qualify for art studies in universities.

On the other hand there seem to be a falling standard in academic achievement of undergraduate students in tertiary institutions [6]. This falling standard of academic achievement has been hinged on diverse reason and has been a thing of concern to different scholars and researchers all over. Considering that the academic achievement of students seem to be more often than not dependent on demographic features such as gender and faculty of study, it is essential to examine gender and faculty of study as correlates of students academic achievement in General Mathematics in tertiary institutions in Nigeria.

### 1.1 Research Questions

1. How does gender predict undergraduate student's academic achievement in General Mathematics in tertiary Institutions in Nigeria?
2. How does faculty of study predict undergraduate student's academic achievement in Mathematics in tertiary institutions in Nigeria?

### 1.2 Hypothesis

1. Gender is not a significant predictor of undergraduate student's academic achievement in General Mathematics in tertiary institutions in Nigeria.
2. Faculty of study is not a significant predictor of undergraduate student's academic achievement in General Mathematics in tertiary institutions in Nigeria.

## 2. METHODOLOGY

The study adopted the ex-post facto research design. An ex-post facto design according to Nworgu [7] is the type of design in which data are collected after the event or phenomenon under investigation has taken place and for which the researcher does not have control over the variables of interest and cannot manipulate them. The population for the study consist of 7,077 100 level students across 14 faculties in selected

tertiary institutions in Nigeria. The sample for the study is 632 100 level students selected using simple random sampling technique of balloting without replacement. The sample was drawn from the tertiary institutions sampled for the study. The data collected were pre-existing results of 100 level students on General Mathematics retrieved from the respective departments. Data collected was analyzed using simple regression analysis.

## 3. RESULTS AND DISCUSSION

**Research Question 1:** How does gender predict undergraduate student's academic achievement in General Mathematics in tertiary Institutions in Nigeria?

**Hypothesis 1:** Gender is not a significant predictor of undergraduate student's academic achievement in General Mathematics in tertiary institutions in Nigeria.

Data presented in Table 1 reports the results on the data analysis for gender as a predicting factor of academic achievement of students in General Mathematics in tertiary institutions. The results revealed that gender of the undergraduate students had  $R^2$  change of 0.004. This indicates that gender had the predictive power of 0.40 percent for undergraduates' achievement in General Mathematics. Also, at 1df numerator, 631df denominator and  $P=.05$ , the calculated F value 2.54 is less than the critical F value of 3.84. Therefore, gender of undergraduates in tertiary institutions is not a significant predictor of their achievements in General Mathematics.

This finding conforms to the findings of Owolabi and Etuk-iren [8] which found out that the differences in achievement across gender and other variables (low, medium, high) were all non-significant. The finding is in line with the study carried out by Okoh [9] which revealed that gender among other variables is not significant predictors of academic achievement. The study is also in line with Malambo [10] who in analyzing some factors affecting students' academic performance found out that none of the investigated factors including gender significantly affect academic performance. With this, Malambo was of the view that learning preferences are independent of some variables not excluding gender.

**Table 1. Regression analysis on gender as a predictor of academic achievement of the university undergraduates in General Mathematics**

<b>Variable</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>R<sup>2</sup> change</b>	<b>B</b>	<b>BETA</b>	<b>%variable change added</b>	<b>Cal. F</b>	<b>df</b>	<b>Crit. F</b>	<b>Decision</b>
Gender	0.063	0.004	0.022	-0.14	0.063	0.20	2.48	631	3.84	Not Significant

**Table 2. Regression analysis on faculty of study as a predictor of academic achievement of undergraduate students in General Mathematics**

<b>Variable</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>R<sup>2</sup> change</b>	<b>B</b>	<b>BETA</b>	<b>%variable change added</b>	<b>Cal. F</b>	<b>df</b>	<b>Crit. F</b>	<b>Decision</b>
Faculty of study	0.10	0.011	0.009	1.465	-0.103	0.90	6.78	631	3.84	Significant

**Research Question 2:** How do faculty of study predict undergraduate student's academic achievement in Mathematics in tertiary institutions in Nigeria?

**Hypothesis 2:** Faculty of study is not a significant predictor of undergraduate student's academic achievement in General Mathematics in tertiary institutions in Nigeria.

Data reported in Table 2 shows the results on data analysis for faculty of study as a predictor of academic achievement of undergraduate students in General Mathematics. The results showed that undergraduate students had  $R^2$  change of 0.009. This indicates that faculty of study had the predictive power of 0.90 percent for undergraduates academic achievement in General Mathematics. Also, at 1df numerator, 631df denominator and  $P = .05$ , the calculated F value 6.78 is greater than the critical F value of 3.84. Therefore, students' faculty of study in tertiary institutions is a significant predictor of their achievements in General Mathematics.

This finding is in agreement with the study carried out by Bain and Knight [11] which revealed that age and faculty of study had no statistical significance influence on academic performance of students. It therefore means that students irrespective of their age and faculty of study could have high academic performance.

#### 4. CONCLUSION

Based on the analysis carried out, it was concluded that gender of undergraduates in tertiary institutions is not a significant predictor of their achievement in General Mathematics. On the contrary, students' faculty of study in tertiary institutions was found to be a significant predictor of their achievements in General Mathematics. This could be as a result of some faculties offering general mathematics as core subjects for 100 level students while others do not.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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