

Perceived Factors Responsible For Economics Students' Poor Performance in Mathematics for Economics in Two States Colleges of Education

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Abstract: This research was carried out in order to identify the perceived factors responsible for Economics students' poor performances in Mathematics for Economics in two states colleges of education. The study adopted descriptive survey research design. The population of the study was 1,075 NCEII & III students in all the 5 colleges of education in Oyo and Osun state, Nigeria. The sample size was 293 using Yaro Yamane formula and the sample technique used was multistage. The instrument for the study was a structured questionnaire of 11 items. Using cronbach alpha the reliability coefficient of 0.96 was obtained on the questionnaire instrument. The four research questions were answered using mean and standard deviation while the three hypotheses were tested at 0.05 level of significance using T-test for Ho₁ and Ho₂ while Analysis of variance (ANOVA) was used for Ho₃. From the results of the findings, it was discovered that, the perceived factors responsible for Economics students' poor performances in Mathematics for Economics were all the 11 items available on research question 1 table. The study also finds out no significant difference in the response rating of students based on their gender, age and level. Finally, some recommendations were made.

Keywords: Poor Performance, Mathematics for Economics, College of Education, Gender and Age

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I. Introduction

The success of a country depends upon the standard of the educational system of the country especially at the higher institution level where students are trained on how to face future challenges and work towards contributing positively to the economy of the country. No wonder Schommer-Aikins, Duell and Hutter [1] asserted that bright future of any nation in the world depends upon the educational system that builds morality and behaviors of its citizens which in depths requires attractive investment in education at global scale [1]. Education is the transmission of moral, culture and beliefs from one generation to another. In the view of Hanushek and Wobmann [2] education is considered as the optimal instrument used for the integration of the individual's with the society for the purpose of developing national goals and achieving meaningful progress, promotion of unity, self-actualization and strive for political constancy, social evolution, economic welfare, scientific standards, cultural consciousness and technological progress [2]. This study believes that to acquire these multi tasks by Hanushek and Wobmann, mathematics in which mathematics for economics is a branch of it must be study by students as an essential element of education at the college of education level.

Student cannot study Economics in Colleges of Education without a credit pass in Mathematics at the senior school certificate examination such as West Africa Examination Council (WAEC), National Examination Council (NECO) and National Business and Technical Examination Board (NABEB). Mathematics is also among the four mandatory subjects required in taking admission for Economics into higher institution through Unified Tertiary Matriculation Examination conducted by Joint Admission and Matriculation Board (JAMB). Therefore, mathematics plays a significant role in understanding the contents of other courses taught at the colleges of education such as microeconomics, macroeconomics, financial accounting, banking and financing, public finance and econometrics. Mathematics serves all most in all fields of social sciences, education, science and technology [3]. Mathematics and social science courses have inverse relationship and this makes it difficult for the discipline of social science to take even a step forward without the help of mathematics. Jameel and Ali [4] asserted that high mathematical performance drag the scientific patterns and schemes towards high societal standards that ultimately convert the dark way of progress into bright way of progress. Good performance in other Economics courses at the colleges of education depends on the broad range of mathematical discipline of the students. Also, there is an inverse relationship between mathematical performance and high achievers while low achievers need to be exposed to comprehensive counseling and remedial programmers based on their individual levels of capabilities, abstract abilities and special programs [4].

Mathematics for Economics is a course which is been offer in the department of Economics Education in National Certificate of Education 1 (NCE 1) by all the 5 government owned colleges of education in Oyo and Osun State, South-West, Nigeria. This course is also offer by both the undergraduate and postgraduate students in all the universities in Nigeria offering Economics as a degree and postgraduate course. The only different in what is offer at the NCE level and the degree level is the content and curriculum of the course. The study believes that good knowledge in mathematics for Economics will help students in their everyday life in making reasonable purchasing decision. The mathematics needed for the study of economics and business continues to grow with each passing year, placing ever more demands on students and faculty alike [5]. No wonder Puu [6] regards mathematical economics as the application of mathematical methods in economic theory. To regard a subject or course as mathematical economics, it most applied some mathematical methods in economic theory such as growth theory, rational choice theory, new trade theory, game theory, prospect theory, new growth theory, Bagehot theory of central bank lending, fisher theory of interest rate, principal-agent theory, theory of optimal taxation, chaos theory, social choice theory, and theory of storage. Going by the great significant roles Mathematics for Economics can play in students` life, then students` good performance in such a subject/course must not be neglected and for It not to be neglected, perceived factors responsible for students` poor performance in such course must be put into consideration because failure to identify such causes will results into continuous high failure rate in the nearest future.

In academic system students offering any course such as Mathematics for Economics are always tested as to know how much they have understood from the teaching of the course. Colleges of education students` poor performance rates in Mathematics for Economics have been the area of interest for lecturers and the management of colleges of education in Oyo and Osun State. Investigation of factors related to the poor performance of colleges of education students of Economics have become a topic of growing interest in colleges of education in Nigeria. Every semester Mathematics for Economics students in colleges of education are subjected to test and examinations, in addition to evaluation as to ascertain the extent to which educational or instructional objectives of the institution have been achieved [7]. The evaluation and the method used are utilized by the educator in decision making process [8]. Many studies were carried out to explore factors that are affecting college of education and university student`s poor performance. In the view of Hanson [9] Student performance is influenced by different factors such as gender, learning abilities and race. Simmons, et al. [10] findings shows that family income level, attending full time, receiving grant aid and completing advanced level classes in high school have statistically significant effects on college persistence among first generation college students. Mckenzie and Schweitzer [11] conducted a prospective study to explore the psychosocial, cognitive, and demographic predictors of academic performance of first year Australian university students. Results demonstrate that previous academic performance was identified most significant predictors of university performance. Integration into university, self-efficacy, and employment responsibilities were also predictors of university performance. In the study conducted by Garton, et al. [12] on freshmen college students in evaluating the efficiency of student learning style and other university admission variable in predicting student academic performance and retention. The study used act composite score, high school core GPA, high school class rank, and learning style as predictors. The results of the findings showed that core GPA and Act score were best predictors for predicting academic performance of first year of college.

Hijazi and Naqvi [13] conducted a study to find out the factors which were affecting college students` performance. In this study the researcher mainly focus on exploring the factors that associated with performance of students in intermediate examination. This study conclude that attitude towards attendance in classes, parents level of income time allocation for studies, mother`s age and mother`s education were main factors that affect performance of students of private colleges. The poor performance of students in Mathematics for Economics course shows that something is wrong with the course and other variables associated with them in the process of teaching, learning, which ought to be looked into [14]. Akaninwor [15] opined that the cause(s) of an event must be known before solution could be sought for, therefore, not until when the factor(s) responsible for students poor performances in Mathematics for Economics at the college of education level are known, that a meaningful solution could be realized. It is in respect to this phenomenon that the researcher is concerned about knowing or determining the factors giving rise to the poor performances in Mathematics for Economics in Oyo and Ogun State colleges of education. This study also put into consideration to opinion of male and female students of Economics, their level in colleges of education (National Certificate of Education 2 and 3) because they have done Mathematics for Economics when they were in National Certificate of Education 1 and finally the ages of students.

The study aims was to ascertain the perceived factors responsible for economics students` poor performance in mathematics for economics in two states colleges of education. In particular, the study sought to:

- Identify the perceived factors responsible for poor performance of Economics students in Mathematics for Economics.

- Identify the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender.
- Identify the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' level.
- Identify the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' age.

The following research questions guided the study.

- What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics?
- What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender?
- What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' level?
- What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' Age?

The following null hypotheses which were tested at 0.05 level of significant guided the study.

Ho₁: There is no significant difference in the mean rating of students' gender (male and female) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Ho₂: There is no significant difference in the mean rating of students' level (NCE 2 & 3) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Ho₃: There is no significant difference in the mean rating of students' age on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

II. Methodology

The design of the study was descriptive survey research design. Nworgu [16] defined descriptive survey research design as one which aims at collecting data and describing in a systematic manner, the characteristics, features or fact about a given population. It is designed to describe the characteristics or behaviour of a particular population in a systematic accurate fashion. The design was found most appropriate for the study because the study sought information from the respondents relative to their beliefs, feelings and observation. Descriptive survey design finds out current information about a phenomenon of a population concerning variables under study. The study was conducted in Oyo and Osun State, South-West, Nigeria. Both states have two government owned colleges of education each making a total of four colleges of education. The two states have a surface area of 37705km² with Oyo State having 28,454km² surface areas and Osun State with 9,251km² surface areas [17]. The two states are located in South-West, Nigeria which was predominantly Yoruba speaking tribe. Oyo State is bounded in the north by Kwara State, in the east by Osun State, in the south by Ogun State and in the west partly by Ogun State and partly by the Republic of Benin while Osun State is bounded in the north by Kwara State, in the east partly by Ekiti State and partly by Ondo State, in the south by Ogun State and in the west by Oyo State. The population for this study was 1075 which comprises of NCE 2 and NCE 3 Economics students in all the 5 government-owned Colleges of Education in Oyo and Osun State, Nigeria. Out of the 5 Colleges of Education offering Economics in both states, 3 were in Oyo State with 301 male students and 328 female students making a total of 629 students in NCE 2&3 Economics while 2 were in Osun State with 175 male students and 271 female students making a total of 446 students in NCE 2&3 Economics. The choice of NCE 2&3 students was because they have offered Mathematics for Economics when they were in NCE 1 and they were in best position to state perceived factors responsible for poor performance in the course. The sample size for the study was 293 respondents which was obtained through Yaro Yamane formula of $n = \frac{N}{(1+Ne^2)}$ where n= sample size, N = population size, and e = Margin of error (MoE), e = 0.05 based on the research condition. The sampling technique used was multistage sampling technique. The research instrument used was a questionnaire of 11 questions items designed by the researchers and tagged Perceived factors responsible for Economics students' poor performance questionnaire (PFRESPPQ). The instrument was validated by three experts of two in Economics Education and one in Measurement and Evaluation all in the faculty of education, University of Nigeria, Nsukka. Cronbush Alpha was used to establish the reliability coefficient of the entire instrument. A coefficient of 0.96 was obtained for the reliability through a pilot study conducted in Ekiti which is not in any related to the area of the study. The 0.96 obtained showed that the instrument was highly reliable. The instruments were administered to the students by the researchers and collected back on the spot in envelop to avoid misplacement or loss. The data collected were analysed using mean and standard deviation for all the four research questions while t-test was used to test the hypotheses at 0.05 level of significance for Ho₁ and Ho₂ while Analysis of Variance was used for Ho₃. Any mean below 2.5

was considered as disagree while those of 2.5 and above was regarded as agree. Also, any hypothesis less than 0.05 was accepted while any one greater than 0.05 was rejected.

III. Result

Research Question 1

What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics?

Table 1: Mean analysis of the students' perceptions on factors responsible for Economics students' poor performance in Mathematics for Economics.

n = 293

Item Statement	Mean	Std. Deviation	Remarks
1. Poor methods of teaching Mathematics for Economics by lecturers contributed to students' poor performance in the course.	2.59	.98	Agree
2. Inadequate time allocation for receiving Mathematics for Economics lesson is among the factors responsible for students' poor performance.	2.82	.92	Agree
3. Non-availability of adequate textbooks on Mathematics for Economics in college libraries contributed to students' poor performance.	2.74	.99	Agree
4. Over congested lecture room also contributed to students' poor performance in Mathematics for Economics.	2.75	.91	Agree
5. Lack of student – lecturer interaction during instruction is one of the factors that contributed to students' poor performance in Mathematics for Economics.	2.82	.91	Agree
6. The abstract nature of the subject matter of Economics also contributed to students' poor performance in Mathematics for Economics	2.72	.88	Agree
7. Students' poor background in mathematics or quantitative aspect of Economics also contributed to students' poor performance.	3.17	.90	Agree
8. One of the major factors that contributed to students' poor performance in Mathematics for Economics is non-availability of online resources that addresses the curriculum directly.	2.88	.94	Agree
9. Poor attitude of lecturers towards Mathematics of Economics due to poor knowledge of the courses also contributed to students' poor performance.	2.77	.91	Agree
10. Fear of Mathematics for Economics also contributed to students' poor performance in it.	3.29	.086	Agree
11. Lack of well-organized tutorial on Mathematics for Economics within the school environment is among the factors that necessitated students' poor performance in the subject.	3.11	.81	Agree
Cluster Mean	2.88	0.91	Agree

Table 1 shows the mean ratings of the students' perceptions on perceived factors responsible for Economics students' poor performance in Mathematics for Economics. It shows that the mean ratings of the students on items 1, 2, 3, 4, 5, 7, 8, 9, 10 and 11 are more than the 2.50 criterion mean, indicating their level of agreement with the statements of the items. Thus, the cluster mean of 2.87 with standard deviation of 0.91 indicates that the students perceived all those items as responsible factors influencing Economics students' poor performance in Mathematics for Economics. Therefore, if those factors are rectified, students' good performance in Mathematics for Economics will increase.

Two Research Question: What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender?

Table 2: Mean analysis of the overall students' perceptions on perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender.

Gender	n	Mean	Std. Deviation
Male	129	2.85	0.54
Female	164	2.90	0.36

Table 2 shows that male students had overall mean perception rating of 2.85 with a standard deviation of 0.54, while female students had overall mean perception rating of 2.90 with standard deviation of 0.36. This shows that female students had higher mean perception rating on the 11 perceived factors responsible for Economics students' poor performance in mathematics for economics than their male counterparts.

Ho₁: There is no significant difference in the mean rating of students' gender (male and female) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Table 3: T-test analysis of the difference in the mean ratings of students' gender (male and female) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Gender	N	Mean	Std. Deviation	df	T	Sig	Decision
Male	129	2.85	0.54	291		-.985.325	NS
Female	164	2.90	0.36				

NS = Significant

Table 3 reveals that there is no significant difference in the mean ratings of students' gender (male and female) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics, $t(291) = -.985, p = 0.325$. This implies that the null hypothesis was not rejected since the associated probability value of 0.325 is greater than the 0.05 level of significance set for taking decision.

Research Question Three: What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' age?

Table 4: Mean analysis of the overall students' perceptions on factors responsible for poor performance of Economics students in Mathematics for Economics based on students' age

Level	N	Mean	Std. Deviation
NCE2	138	2.87	0.49
NCE3	155	2.89	0.41

Table 4 shows that students in NCE2 had overall mean perception rating of 2.87 with a standard deviation of 0.49, while students in NCE3 had overall mean perception rating of 2.89 with standard deviation of 0.41. This shows that students in NCE3 had higher mean perception rating on perceived factors responsible for Economics students' performance in Mathematics for Economics than their counterparts in NCE2.

Ho₂: There is no significant difference in the mean rating of students' level (NCE 2 & 3) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Table 5: T-test analysis of the difference in the mean ratings of students' level (NCE 2 & 3) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Level	N	Mean	Std. Deviation	df	T	Sig	Decision
NCE2	138	2.87	0.49	291	-.404	.686	NS
NCE3	155	2.89	0.41				

Table 5 reveals that there is no significant difference in the mean ratings of students' level (NCE 2 & 3) on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics, $t(291) = -.404, p = 0.686$. This implies that the null hypothesis was not rejected, since the associated probability value of 0.686 is greater than the 0.05 level of significance.

Research Question Four: What are the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' Age?

Table 6: Mean analysis of the overall students' perceptions on factors responsible for poor performance of Economics students in Mathematics for Economics based on students' Age?

Age	N	Mean	Std. Deviation
16-20 Years	104	2.90	0.39
21-24 Years	122	2.84	0.45
25 Years and Above	67	2.92	0.51
Total	293	2.89	0.45

Table 6 shows that the students who were within 16-20 years had overall mean perception rating of 2.90 with standard deviation of 0.39, those who were within 21-24 years had overall mean perception rating of 2.84 with standard deviation of 0.45 while those who were 25 years and above had overall mean perception rating of 2.92 with standard deviation of 0.51. This indicates that the students who age were 25 years and above had the highest overall mean perception rating on factors responsible for Economics students' poor performance in Mathematics for Economics.

Ho₃: There is no significant difference in the mean rating of students' age on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics.

Table 7: Analysis of variance of the difference in the mean ratings of students' age on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.358	2	0.179	.894	.410
Within Groups	58.097	290	0.200		
Total	54.455	292			

Table 7 reveals that there is no significant difference in the mean ratings of students' age on the perceived factors responsible for Economics students' poor performance in Mathematics for Economics, $F(2, 290) = 0.894, p = 0.410$. This implies that the null hypothesis was not rejected, since the associated probability value of 0.295 is greater than the 0.05 level of significance set for taking decision.

IV. Findings and Discussion

Since the students perceived poor methods of teaching Mathematics for Economics by lecturers contributed to students' poor performance in the course, inadequate time allocation for receiving Mathematics for Economics lesson is among the factors responsible for students' poor performance, non-availability of adequate textbooks on Mathematics for Economics in college libraries contributed to students' poor performance, Over congested lecture room also contributed to students poor performance in Mathematics for Economics, lack of student – lecturer interaction during instruction is one of the factors that contributed to students' poor performance in Mathematics for Economics, the abstract nature of the subject matter of Economics also contributed to students' poor performance in Mathematics for Economics, students' poor background in mathematics or quantitative aspect of Economics also contributed to students' poor performance, non-availability of online resources that addresses mathematics for economics curriculum directly, poor attitude of lecturers towards Mathematics of Economics due to poor knowledge of the courses also contributed to students' poor performance, fear of Mathematics for Economics also contributed to students' poor performance in it and Lack of well-organized tutorial on Mathematics for Economics within the school environment are among the factors that necessitated students' poor performance in the subject. Proper control of this factor will help in reducing college of education Economics students' poor performance in mathematics for economics and other calculation oriented courses.

Female students had higher mean perception rating on perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender than their male counterparts. However, further analysis revealed that there is no significant difference in the mean ratings of students on the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender.

NCE3 students had higher mean perception rating on the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender than their NCE2 counterparts. It was further found that there was no significant difference in the mean ratings of students on the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' gender.

NCE 2&3 students who were 25 years and above had the highest overall mean perception rating on the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' age than their other two counterparts. However, it was further revealed that there is no significant difference in the mean ratings of students' perception on the perceived factors responsible for poor performance of Economics students in Mathematics for Economics based on students' age.

V. Conclusion

Since the result of the study shows that the students agree to the 11 items highlighted by the researchers as factors responsible for Economics education students' poor performance in Mathematics for Economics, then proper attention should be given to these 11 factors (inadequate time allocation for receiving Mathematics for Economics lesson is among the factors responsible for students' poor performance, non-availability of adequate textbooks on Mathematics for Economics in college libraries contributed to students' poor performance, Over congested lecture room also contributed to students poor performance in Mathematics for Economics, lack of student – lecturer interaction during instruction is one of the factors that contributed to students' poor performance in Mathematics for Economics, the abstract nature of the subject matter of Economics also contributed to students' poor performance in Mathematics for Economics, students' poor background in mathematics or quantitative aspect of Economics also contributed to students' poor performance, non-availability of online resources that addresses mathematics for economics curriculum directly, poor attitude of lecturers towards Mathematics of Economics due to poor knowledge of the courses also contributed to students' poor performance, fear of Mathematics for Economics also contributed to students' poor performance in it and Lack of well-organized tutorial on Mathematics for Economics within the school environment is among the

factors that necessitated students' poor performance in the subject) by parents, government, lecturers, curriculum planners, college of education management and other stakeholders in education.

VI. Recommendations

After examining the factors that were responsible for Economics students' poor performance in Mathematics for Economics in Oyo and Osun State colleges of education, this study thereby made the following recommendations:

- Lecturers of Mathematics for Economics should use varieties of methods in teaching the course. Educational technologies such as YouTube videos, Google classroom, virtual reality, Kahoot Game, Edmodo, digital readers and tablet, 3D Printing, and cloud technology.
- Since Mathematics for Economics is a 2 units course in all the five government owned colleges of education in both state, 2 hours should be allocated for lecturing the course instead of the present 1 hour used in lecturing the course at the time of this study.
- Government at both state and federal level should provide adequate textbook on Mathematics for Economics in all the government owned colleges of education in Nigeria.
- Colleges of education should admit the numbers of students their lecture room can contain so as to facilitate students' quick understanding of a lesson.
- Lecturers should stop using monolog teaching, therefore, teacher-student relationship during instruction should be promoted.
- Curriculum planners in Nigeria should also upload varieties of materials online that addresses Mathematics for Economics curriculum directly.

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