Path Analysis of the Influence of Students Variables and School Location on Students' Academic Achievement in Economics

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Abstract

The study sought to determine path analysis of the influence of student variables and school location on senior secondary students' academic achievement in Economics. Two research questions and two hypotheses guided the study. The study adopted a correlational survey design. Sample of the study consist of 377 SS2 Economics students drawn from 82 secondary schools in Ogoja Education Zone of Cross River State. Multi-staged sampling procedure was used to select fifteen schools from the urban and rural stratum. Two instruments were used for data collection namely; Students Variable Questionnaire (SVQ) and Proforma for collecting SS2 Economics Students' Scores for first term 2018/2019 academic session. Face and construct validity were employed in validating the instruments and were also tested for reliability. Using Cronbach Alpha reliability estimate the internal consistency, 0.94 for SVQ. Data collected were analyzed using IBM AMOS. Hypotheses were tested using Chi-square Goodness of Fit Index (CGFI), Root Mean Square Error of Approximation (RMSEA) and ANOVA. Result shows there are 7 significant causal paths out of the 9 originally designed. Also, the student variables and school location have combined influence on students' academic achievement in Economics. However, there is no significant model fit for explaining students' academic achievements in Economics

based on the exogenous variables. Based on the findings, it was concluded that student variables and school location have high positive influence on students' academic achievement in Economics. It was recommended that Students should be motivated and encouraged to learn through using teaching methods that increase the interest and curiosity of students to learn Economics.

Keywords*: Academic achievement, Economics, Path analysis, Student variables, School location*

INTRODUCTION

Education is a tool that is efficacious in transforming a man in all ramification, and indispensable for nation building. Education enhances the development of thinking, deepens knowledge, broadens personality, changes attitude, and trains special skills which are all important for success in the world of work, (Rindermann in Jonathan, 2018). The knowledge gained through education makes it possible for an individual to explore new ideas capable of developing the world. This is because without ideas, there is no creativity and without creativity, there is no development, (Bobur, 2018). Corroborating the above view on education, Ellie (2017) posited that, education is a force that makes a nation stand out and defend herself among other nations of the world. World Bank (2005) gave a report which says that, education is an essential factor in socio-economic and political development, as it instills abilities and knowledge in students, and prepares them to take up functions that have the potency for nation building. These students are being prepared for such functions under the auspices of the school and through different subjects. These subjects include; Mathematics, English, Economics among others. However, the subject of discourse in this study is Economics.

Economics is far more than a subject taught in schools for students to pass. Economics is more than just a subject – it's a way of thinking, (Otago, 2018). It provides logical ways of looking at variety of issues. Economist evaluates facts without allowing opinion or logical fallacies to come into the calculations (American University, 2018). Therefore, Economics obviously makes one approach the world in an unparalleled way and essentially, it equips students with potentials for optimal performance in the society. Economics as a subject contains learning experiences and activities provided by the teacher to the students for the purpose of achieving the objectives contained in its curriculum (Ekweoba, 2004).

These objectives where outlined by Nigeria Education Research and Development Council (NERDC, 2008) as; to equip students with basic principles of Economics necessary for useful living and for higher education; to prepare and encourage students to be prudent and effective in the management of scare resources; respect for the dignity of labour and their appreciation of the economic, cultural and social values of the society; and to enable students, acquire knowledge for the practical solution of the economic problems of the society, Nigeria, developing countries and the world at large.

The need to achieve these laudable objectives and also to improve academic achievement of students in Economics has necessitated so many researches bordering on the curriculum, instructional materials and strategies and so on. These researches aim at establishing strategies to improve academic achievement in Economics and to ensure that the objectives are well inculcated in the students in order for them to live meaningfully in the society.

Academic achievement is the extent to which academic goals of student, teacher or institution are being actualized, (Ward in Idika, Onuoha, Nji & Eze, 2018). Internal and national examinations are usually used to measure the extent of academic achievement. According to Ricarda (2017) academic achievement denotes performance outcome that indicate the degree to which a person has proficient specific goals that were the focus of activities in instructional environment, especially in schools, colleges, and university. Also, academic achievement is the sum total of a student's performance after the content of a curriculum has been taught or delivered by the teacher.

Academic achievement of students in Economics has been poor over the years. Statistical report from the West African Examination Council (WAEC) Chief Examiner's report (2015, 2016, &2017) identified that student's achievement in Economics has been poor. This is attributed to students' deficiency in the application of graphical representations of economic analysis, failure to expatiate points and students use of poor terminologies. Also, Bellow and Oke in Nji (2017) reported that the trend of students' achievement in Economics has negatively fluctuated over the years which showed that less than 57% had credit and above. In the conducted West African Senior Secondary Certificate Examination, (WASSCE 2018), students' achievement in Economics is said to be abysmal. This was attributed to; student's ignorance of what was being tested, misunderstanding of what was being tested resulting in deviations, inability of some candidates to express their ideas in clear language and listing of points by many

candidates although the rubrics demanded discussion or analytical approach, (WAEC Chief Examiners Report, 2018).

Many researchers have listed some factors that influence the academic achievement of students. These factors may be termed as student factors, family factors, school factors and peer factors (Crosnoe, Johnson & Elder, in Faroog, Chaudhry, Shafig & Berhanu, 2011). Also, there are factors such as teacher factors, parent factors, that play a significant role in students' academic achievement. This study sought to investigate school location and student variables that influence students' academic achievement in economics. Some authors such as, (Peter, Andy and Tracy, 2014), Sivapakiam and Nalinilatha (2017), Nwachukwu (2014), Elizabeth and Enose (2016), have emphasized that, the student variables influencing their academic achievement emanates from the following; attitude, gender, interest, attendance to classes, motivation, age and so on. However, this study will focus on the following student's variables such as; attitude, class attendance, interest and motivation.

An individual's attitude is capable of making him/her susceptive to innovative ideas that could increase his/learning outcome. According to Gbore, (2013), attitude as an element could be regarded as the sum of an individual's predisposition towards an object, institution or idea. With positive attitude, students will be more enthusiastic about a subject and they will be more successful (Sanjay, 2015). Attitude towards school and learning are associated with academic achievement in Economics. It was found out that, students with poor academic achievements have a more negative attitude towards learning and they believe that school and learning will not help them in being successful in future (Candeias, Rebelo & Oliveira, in Marcela, 2016).

Also, students' attendance to classes is another students' variable that could have influence on students' academic achievement in Economics. Valentin (2017) emphasized that class attendance is associated with better achievement. Attendance to classes does not limit students to information in the textbook alone but give them access to firsthand information from the lectures, review of notes, demonstration and so on (Ayodele, 2017). Therefore, students' attendance to classes is the level to which students are physically present in class during learning and fully participate in the class activities which has the tendency of boosting their intellectual capacity and interest in a given subject or discipline.

Another students' variable that influences student's academic achievement in Economics is interest. The importance of interest in what a person does cannot be undervalued. Interest is

referred to an individual predilection to respond positively in certain ways towards a particular aspect of the environment and interest is often developed based on an individual motive, (Ayodemo in Ogunjinmi, 2015). Interest can be considered as an essential determinant of academic achievement: if interests is highly developed, it manifests in a students' commitment to his/her academics, typically allied with positive outcome and tenacious engagement in related task, which in turn can lead to learning gains and condense in improved achievement test scores or school grades, (Jutta, 2014). Therefore, lack of interest can lead to poor academic achievement resulting to low test scores or exams scores. Interest is related to motivation, as interest can serve as a powerful motivator for students to learn, (Deci, 2016).

Motivation as one of the students' variables that influences student's academic achievement in Economics. It is a driving force that propels people to accomplish set goals. Motivation is a mental process which leads someone to act in a way that helps him/her to fulfill unsatisfied need, (Latham in Syed 2015). Nwachukwu, (2014), posits that, motivation is a factor required for the realization of the objectives of Education in Nigerian Secondary Schools. Inadequate motivation therefore may go a long way in decreasing students' achievement in Economics and vice versa. According to Deepika (2018), motivation is influenced by four factors of context (environment and external stimuli), temper (the internal condition of an organism), goal (goal of behavior, purpose and inclination) and instruments (instruments for achieving the goal). However, Nwachukwu (2014), carried out a research on motivation and academic performance of students in Economics. He concluded that motivation has effects on academic performance of students of Economics. He further stressed that, lack of needed resources and additional instructional facilities and lack of pertinent textbooks or materials in the library affect student's academic achievement.

The academic achievement of students can also be influenced by some factors arising from the school. These school factors (variables), which include the school size, school location, school ownership, school type, school structure and school environment are deem fit to affect students' academic achievement (Oluwaseun, 2016). The personality development of students is heavily dependent on the general condition of the school. As the students spend most of their life at school, the school environment is responsible for inculcating high values in them, (Mudassir, 2015). Therefore, this study will focus on the school location.

Whenever the school location is mentioned, what comes to our minds is the urban and rural environment. The school location according to Glossary of Education Reform (2013) can be defined as an urban or rural area where a school is located is a very important determinant of student's academic achievement. It even determines the distribution of educational resources and facilities in various environments (urban and rural). School location is one of the potent factors that influence the distribution of educational resources. Also, this influence the quality of teachers send to various locations, as most qualified teachers refuse to go to rural areas (Ojoawo in Owoeye 2011).

Researches on factors affecting student's achievement with respect to the variables of interest in this study such as motivation, school location, teacher's characteristics and so on have been done as a single exogenous variable (Nwachukwu, 2014, Dorcas, 2017, and Erin, 2015). Hence, no single outcome (academic achievement in Economics) can be influenced by a single variable. An outcome is always affected by many factors. Also, these investigations show only the direct relationship between the exogenous variable on the endogenous variable without showing the indirect relationship. But, the combine influence of all these variables discussed above on student's academic achievements in Economics can be analyzed through path analysis.

Path analysis is a subset of Structural Equation Modeling (SEM), the multivariate procedure allows examination of a set of relationships between one or more independent variables, either continuous or discrete, and one or more dependent variables, either continuous or discrete. SEM deals with measured and latent variables. A latent variableis a variable that cannot be observed directly and must be inferred from measured variables. Latent variables are implied by the co-variances among two or more measured variables. SEM are usually visualize by a graphic path diagram (Sinharay, 2010). These have been shown by various studies conducted by researchers.

Eme and Iniubong (2011) carried out an investigation on developing a causal model of some psycho-academic and school variables for mathematics achievement in junior secondary schools. The result of the findings generated a model with 14 significant path ways out of the 28 originally produced. The result showed that school location, school proprietorship, attitude towards mathematics and study habit were found to have a direct and significant causal effect on mathematics performance. Also, James, Aisling and Lars (2013) investigated the relationship among critical motivational variables and mathematics achievement as middle grades students

engaged in a reform-oriented curriculum using path analysis. The researcher performed a path analysis with subscales representing latent motivational variables and with achievement on the Iowa Test of Basic Skills as the outcome variable. The variables stimulation and control interacted to produce task interest, which, in turn, contributed to achievement gains.

From the above studies, it can be seen that most of the studies on path analysis are done outside Economics. This has therefore necessitated this study to investigate the composite influence of more than one variable on students' academic achievement in Economics through the use of path analysis. This study therefore, focuses on path analysis of the influence of students' variables and school location on student's academic achievement. Example of this path diagram can be seen below

Fig 1. Systematic Hypothetical Input Path Diagram
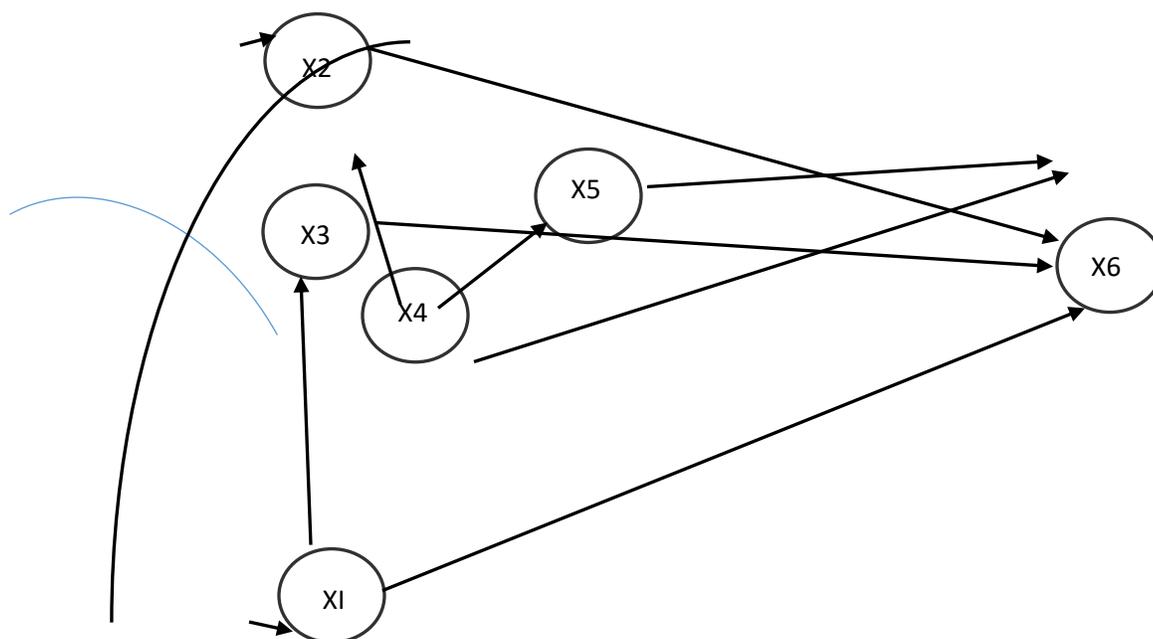
X1- school location

X2- Attitude

X3- class Attendance

X4- Interest

X5- Motivation

X6- Academic Achievement in Economics

Assumed Path Diagram.

The path diagram shown in Figure 1 is a hypothesized model of the relationships that exist between the variables of interest for the study. In the path diagram, students' achievement is predicted directly by students' variable. In turn, students' variable (class attendance and motivation) is predicted by another student variable (interest). Besides, students' achievement is predicted by school location this goes to show that, some variables, serve dual roles as predictors (exogenous) and outcomes. For example, students' variables (attitude, class attendance and interest) are predictor variable of students' achievement in Economics; but at the same time variables such as class attendance and motivation are outcome variable of interest. These important relationships among the theoretical variables are referred to as structural relationships. The corresponding model for these relationships is called a structural model.

Questions

1. What is the parsimonious causal model involving the exogenous variables, (school location and student variables) on the endogenous variable?

2. What is the composite influence of the exogenous variables on the endogenous variable in the model?

Hypotheses

1. There is no significant model fit for explaining students' academic achievements in Economics based on the exogenous variable.

2. There is no significant influence of the parameter estimate of the composite variables on students' academic achievement in Economics.

Methodology

Correlational survey research design was used. According to Nworgu (2015), correlational design is the type of study that seeks to establish what relationship exists between two or more variables. Usually, such studies indicate the direction and magnitude of relationship between the variables. In this case, this study established the relationship between school location and students' variables on student's academic achievement in Economics. In similar studies, this design has been adopted by Achagh et al. (2020), Eya et al. (2020), Ezema et al. (2019), Gana et al. (2019), Okenyi et al. (2019), Ugwuanyi and Okeke (2020), Ugwuanyi et al. (2020a, b, c, d).

Sample of the study consist of 377 SS2 Economics students drawn from 82 secondary schools in Ogoja Education Zone of Cross River State. Two instruments were used for data collection namely; Students Variable Questionnaire (SVQ) and Proforma for collecting SS2 Economics Students' Scores for first term 2018/2019 academic session. Face and construct validity were employed in validating the instruments and were also tested for reliability. Using Cronbach Alpha reliability estimate the internal consistency of ETQ was established at 0.79 and 0.94 for SVQ. Data collected were analyzed using IBM AMOS. Hypotheses were tested using Chi-square Goodness of Fit Index (CGFI), Root Mean Square Error of Approximation (RMSEA) and ANOVA.

RESULT

Research Question 1: What is the parsimonious causal model involving the exogenous variables, (school location and student variables) on the endogenous variable?
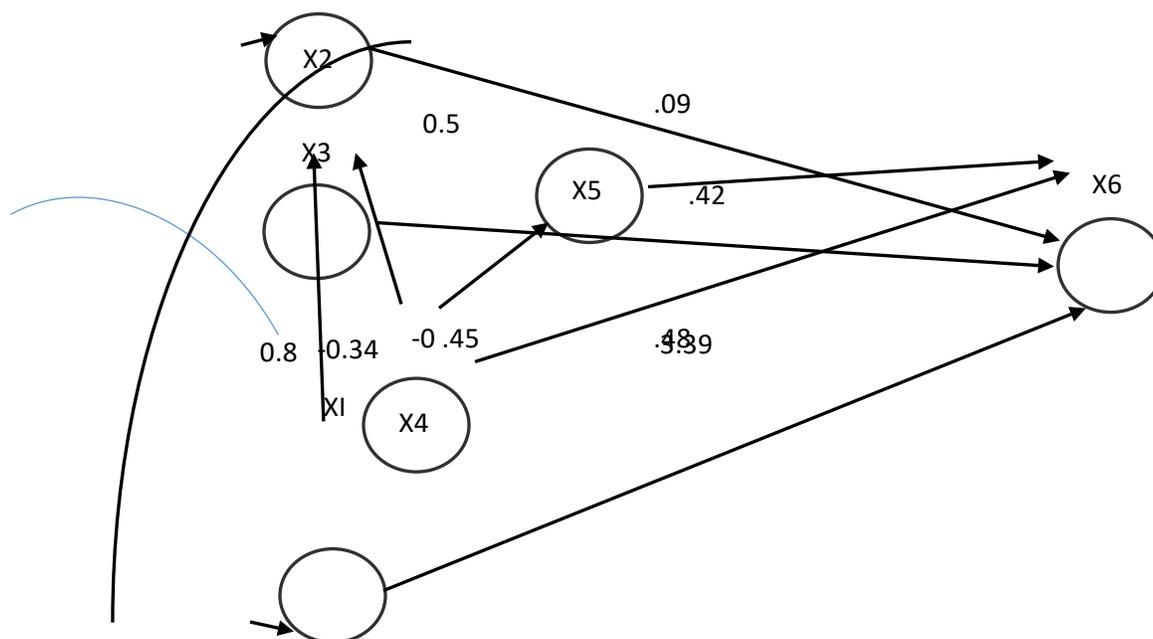
Figure 2 Theoretical path diagram
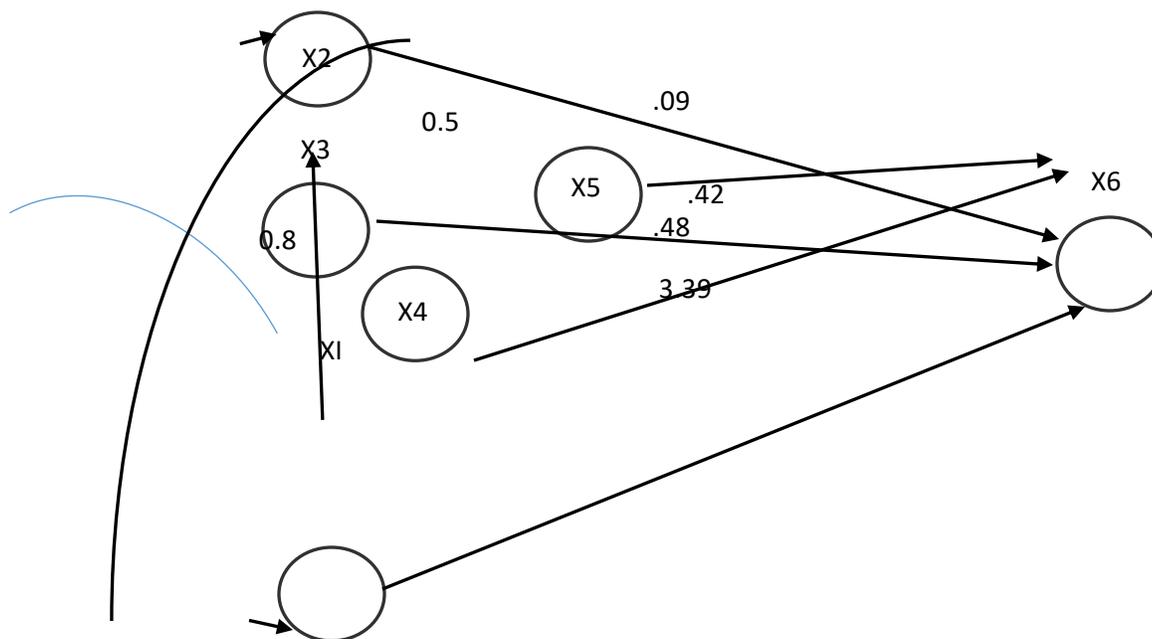
Figure 3, Observed Causal Model

Looking into the above diagrams 2 & 3 the two diagrams drawn by the AMOS program look identical, but there exist some differences between them. Figure 2 is a theoretical path diagram while diagram 3 is a Parsimonious causal model as it shows only the path coefficients greater than 0.05, meaning, all the path coefficients less than 0.05 were eliminated. Also, interest was assumed to have a causal path with attitude and class attendance. But these causal paths were eliminated because they were path coefficients were less than 0.05. Therefore, figure 3 shows that the parsimonious causal model has only 7 significant path out of the proposed 9 path in figure 2.

Hypothesis 1: There is no significant model fit for explaining students' academic achievements in Economics based on the exogenous variables.

Table 1: Root Mean Square Error of Approximation (RMSEA) model fit test based on the exogenous variables

MODEL	RMSEA	LO 90	HI 90	PCLOSE
Default model	.222	.206	.239	.000
Independence model	.023	.385	.410	.000

The root square mean square error of approximation (RMSEA) estimate lack of fit to the saturated model. A RMSEA of 0.05 or less indicate a good model fit. PCLOSE is the p-value which helps to test if the null hypothesis of the RMSEA is less than 0.05. In **Table 2,**the RMSEA under independence model is 0.023 with the p-value of 0.000 showing that the model is a good fit. This implies that there is no significant difference in the model fit for explaining students' academic achievement base on the exogenous variables in the study.

Research Question 2: What is the composite influence of the exogenous variables on the endogenous variable in the model?

Table 2: Influence of teacher variables on students' academic achievement in Economics

Model	R R Square		Adjusted R Square	Std Error of the Estimate
1	.91a	.82	.82	4.86760

a. Predictors: (constant), Attitude, Class Attendance, Interest, motivation and school location

b. Criterion: Academic Achievement

The Table 3 above shows the composite influence of the exogenous variables attitude, class attendance, interest, motivation and school location) on the endogenous variable (academic achievement). The result also shows that the correlation between the exogenous variables on students' academic achievement in Economics is 0.90 with a coefficient determination of 0.82. This therefore implies that 82% variation in students' academic achievement in Economics can be account for by the combine influence of the exogenous variables.

Hypothesis 2: There is no significant influence of the parameter estimate of the composite variables on students' academic achievement in Economics

Model	Sum of Squares	df	Mean Square	F	Sg
1 Regression	41504.476	6	6917.413	288.418	0 .00[b]
Residual	8826.100	368	23.984		
Total	50330.576	374			

a. Dependent variable: Academic Achievement

b. Predictors: (constant), Attitude, Class Attendance, Interest, motivation and school location.

Table 3 reveals the probability related with the calculated value of F 2.19 for the influence of the parameter estimate of the composite variables on students' academic achievement in Economics is 0.00 which is less than the 0.05 level of significance. Therefore, the null hypothesis was rejected. This implies that there is a significant influence of the parameter of the composite variables on students' academic achievement in Economics.

Discussion

The parsimonious causal model in figure 2 shows that the path model has 7 significant path out of the 9 path proposed in the original model as shown in Figure 1. This path displayed the beta weight of the exogenous variables that can be employed in predicting the future academic achievement of Economics students. This model was arrived at after removing any path that is less than 0.5. This result is in agreement with the findings of Eme and Iniubong (2011) who generated a model with 14 significant path ways out of 28 originally proposed path ways after eliminating any path that is less than 0,05 level of significance. Therefore, the entire output of the model that is, school location and student variables can be used to predict future students' academic achievement in Economics.

The result from the findings also shows the combine influence of all the variables (attitude, class attendance, interest and motivation) in the study on students' academic achievement in Economics. And there was a positive influence of the student variables (attitude, class attendance, interest and motivation) and school location on students' academic achievement in Economics. The result from the finding shows that 82% variation in students' academic achievement Economics is accounted for by these variables. The findings of the study agree with that of Agbaje and Alake (2014) and Elizabeth and Enose (2016) that found that student variables influence students' academic achievement in Science subjects. Also the study agrees with Owoeye and Yara (2011) who found that school location influence students' academic performance.

From the findings, it can be inferred that student variables and school location contribute greatly to students' academic achievement in Economics. The reason for this may arise from the fact that most of these student variables except class attendance are psychological in nature and so are internal which could be the pedestal for their behaviour in school. This agrees with the

Social Cognitive Theory by Bandura (1986) which holds that individuals possess self-beliefs that enables them to apply a measure of control over their thoughts, feelings, and actions. What people think, believe and feel affects how they behave. Also, from the parsimonious causal model in Figure 2, all the path pointing from the student variables and school location to academic achievement were all significant which further affirms that students' variables and school location contribute positively to their academic achievement in Economics. Base on this, the researcher made the following recommendation.

Recommendations

1. Students should be motivated and encouraged to learn through using teaching methods that increase the interest and curiosity of students to learn Economics.

2. Government should make available the necessary facilities, resources and materials to both students at the urban and rural areas for optimum achievement in Economics.

3. Curriculum planners should incorporate learning experiences that when the students are exposed to, will increase their interest and motivated them to learn Economics.

Conclusion

It is obvious that the all the exogenous variables in the study significantly influence students' academic achievement in Economics. The student variables play an important role in the students learning. Therefore, it is expected these students be encouraged through using teaching methods that boost their understanding of Economics. Also the government should make available the required facilities to schools located in both local and urban areas.

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