STUDENTS' PERFORMANCE IN PUBLIC EXAMINATIONS, HOME BACKGROUND AND SCHOOL FACTORS AS DETERMINANTS OF PERFORMANCE IN UNIVERSITY EXAMINATIONS IN THE SOUTH-WEST OF NIGERIA

BY

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ABSTRACT

The confidence in the validity of public examination results in predicting undergraduates' academic ability in Nigerian universities had drastically reduced. Studies have shown divergent findings on the predictive validity of public examinations but there seem to be a dearth of studies on the cumulative predictive validity of the public examinations of students' achievement at the university level. This study, therefore, investigated the causal effects of Junior Secondary School Certificate Examination (JSSCE), Senior Secondary Certificate Examination (SSCE), Universities Matriculations Examinations (UME) scores, home background and school factors on the Cumulative Grade Point Average (CGPA) of first year students in selected South-west Universities.

The study was an *ex-post facto* research. Multi-stage sampling technique was used to select the samples. Random sampling was used to select two states from the South-west while universities were clustered along public and private ownership. Two universities each were randomly selected from each cluster. Five faculties from which a department each was chosen were randomly selected. One hundred participants were randomly sampled from each department. Purposive sampling was used to select participants who graduated from secondary schools within the South-west, Nigeria. The sample was 988 first year undergraduates. Two instruments were adapted namely, Student Home Background Questionnaire (SHBQ) (r = 0.78) and School Factors Questionnaire (SFQ) (r =0.72).Records of participants' JSSCE, SSCE, UME and CGPA were obtained. Five research questions were answered. Data were analysed using path analytic procedures.

Variations on the CGPA of students were caused by the predictors through 37 significant and meaningful pathways. Four pathways were direct while 33 were indirect. There were minimal discrepancies between the original and the reproduced correlation coefficients. The mean difference is -0.04. Among the eight variables involved in the hypothesised model, three variables: V_1 (parents' education), V_2 (parents' income) and V_7 (SSCE results) had significant direct and indirect influence on first year CGPA of undergraduates while V_3 (Home facilities), V_4 (availability of physical facilities in school) and V_6 (JSSCE) had indirect influence. Students'

performances in public examinations, home background and school factors cumulatively predicted students' performances. Furthermore, V_8 (UME) had the only direct influence. The variables had the following path weights: parent education $P_{91} = 0.147$, parents' income $P_{92} = 0.092$, home facilities $P_{93} = 0.064$, availability of physical facilities in school $P_{94} = 0.134$, JSSCE $P_{96} = 0.200$, SSCE $P_{97} = 0.112$ and UME $P_{98} = 0.94$

Parents' income and parents' education positively determined the university undergraduates' performance. Parents should be encouraged to provide their wards with all needed learning materials both at home and in school to assist them improve their performances. Furthermore, government should award scholarships to indigent students to enable them purchase all the required materials for enhanced learning and the resultant improved performance. Government or the proprietors of secondary schools in Nigeria need to provide adequate infrastructure in the schools with well equipped facilities and provide competent hands to handle them.

Key words: Public examinations, parents' education, school factors, home facilities,
Undergraduate performance.

Word count: 479.

DEDICATION

This study is dedicated to the blessed memory of my beloved:

(i)   Father- Aafa Adepoju Ajao Raji who died on 31st July 1973;

(ii)   Mother- Mrs. Nimota Abewon Aderoju Raji (Nee Adeniji) who died on 15th July 2001.

(iii)   Father-In-law – Aafa Lamidi Adegbola who died on 4th January, 1989.

(iv)   Son – Fadlurahman Olaoluwa Raji who died on 1st October 1997.

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CERTIFICATION

I certify that this study was carried out by Mudasiru Adepoju Akanji Raji in the International Centre for Educational Evaluation (ICEE), Institute of Education, University of Ibadan, Ibadan, Nigeria.

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TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

CHAPTER TWO: LITERATURE REVIEW

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: RESULTS AND DISCUSSION

CHAPTER FIVE: SUMMARY OF FINDINGS, IMPLICATIONS AND RECOMMENDATIONS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

Introduction

1.1   Background to the Problem

The development of a functional and qualitative education has been the pre-occupation of most countries of the world. In this respect, a lot of resources   (human and materials) have been committed to ensuring that the benefits of education spread across every stratum of the society. In addition to this, attention has been focused on how to ensure improvement in the quality of education that most countries offer their citizens. Several means and methods have thus been devised with the aim of maintaining and improving the standard and quality of education. One of such efforts, according to Amori (2005), is the adoption of educational evaluation as a tool for ensuring the sustenance of enviable and lasting educational standards.

Ajala (2005) submits that the central goal of educational evaluation is to improve the quality of academic standards. He further stresses that all areas of educational programmes should be systematically planned and systematically evaluated. Examples of such areas are students' performance, staff development patterns, school – community feedback, policies and regulations, utilization of facilities and resources, design of specific programmes, effectiveness of instruction and administrative procedure. Students' performances are always evaluated to cover the three domains of learning; the cognitive, affective and psychomotor. In most cases, the easiest and most often evaluated among them is the cognitive domain (Falaye, 2005). It is through evaluation that teachers assess and grade students for promotion from one class to the other or the basis on which they transit from one cadre of the school to another. It is through evaluation that the level of learners' achievement is determined.   Umoru-Onuka (2001)   and Onuka (2004) conclude that feedback and accountability which are products of evaluation are twin concepts that aimed at programme improvement.

Measurement and assessment are the basic processes used in evaluating students' cognitive, affective and psychomotor achievements. Nations throughout the world have come to agree on the importance of measuring educational performance (Kellaghan, 2004). This is done by assessing current levels of achievement and identifying obstacles to progress, and improve the type, depth, as well as the breadth of education they offer. He asserts that the term 'assessment' may be used in education to refer to any procedure or activity that is designed to obtain

1

information about the cognitive, affective or psychomotor of a learner or group of learners. Information derived from an assessment can be used for a great variety of purpose.

According to Chris (2002), assessment is needed for improvement with its internal focus provides opportunities for the academic community to engage in self-reflection of its learning goals. It is to determine the degree to which these goals correspond to student and societal needs, and to evaluate if students' activities, products, or performances coincide with the academic community's expectations. It offers information to students about the knowledge, skills, and other attributes they can expect to possess after successfully completing coursework and academic programs. It establishes ways for academic units to understand the dimensions of student learning when seeking to improve learners' achievement and the educational process. Assessment is needed for accountability, with its external focus, provides evidence of student achievement to accreditation groups, state legislators, and other stakeholders in education.

There are three major procedures which can provide information on students learning. These are public (external) examinations; national assessments; and international assessments of educational achievement. Though some countries do not have government - backed examining system, thereby leaving that to some private bodies and individual schools to certify the achievements of students. However, there has been a move in recent years in these countries (e.g. the United States of America, Eastern European countries) to introduce public examining systems (Kellaghan, 2004).

In Victoria, Australia, for instance, all students are required to take a General Achievement Test and each student's achievement in their school assessment in corresponding subjects are compared to the result of those students in the general test (Panel of Experts, 2002). If the discrepancy between the two sets of results exceeds a threshold, external examiners visit the school to provide independent assessment of the papers marked within the school. In some other systems, there are no external examinations of the type conducted in many other countries. In Germany, the examinations for the arbiter are conducted and marked within the school although; the examinations are set externally to the schools. Checks on a school's marking of student's scripts are undertaken by external assessors typically drawn from other schools (Panel of Experts, 2002).

In the United States, schools operate much more independently in designing their curriculum and in conducting their assessments (Panel of Experts, 2002). Higher Education

institutions use these school assessments to determine admissions in combination with commercially prepared admissions tests. The dominant tests are the SAT (Scholastics Aptitude Test) conducted by the College Board and developed by the Educational Testing Service and the examinations of the American College Testing Program, now referred to as ACT (Panel of Experts, 2002).

Public (external) examinations have played a major role throughout the history of modern education in Africa. Such roles include the conduct of examination to larger number of candidates for certification and placement into higher institutions.   Examples of such examination bodies in Nigeria are the West African Examinations Council (WAEC) and the National Examinations Council (NECO) that conduct Senior Secondary School Certificate Examinations in Nigeria; as well as the Joint Admissions and Matriculations Board (JAMB) that conducts unified examinations into the tertiary institutions in the country (WAEC, 2003; NECO, 2006; JAMB, 2008).

Kellaghan and Greaney (2004) assert that the continued existence and central importance of public examinations in Africa can be attributed to the fact that they serve a number of important functions. These include provision of a specification of clear goals and standards for teachers and students, they control the disparate elements of the education system, helping to ensure that all schools teach to the same standards. Furthermore, public examinations are for selecting students for further education, and are perceived to allocate scarce educational benefits in an objective and unbiased way. Public examinations have a certification function. Formal certification of academic achievements, however, can be important for some students in gaining access to employment or training. Public examinations can be used to underpin changes in curriculum and teaching methods, and to maintain national standards. Public examinations, especially when results are published, may serve an accountability function for teachers and schools. Finally, examinations at the end of secondary schooling legitimate membership in the international global society, and facilitate international mobility.

A test is a systematic procedure in which individuals are presented with a set of construct stimuli to which they respond. There are different types of tests. These are achievement and teacher – made achievement tests.   Achievement tests are designed and used to evaluate the performance of students on an executed curriculum or syllabus. Achievement tests can be classified into two viz standardized tests and specifically constructed tests. Standardized tests

are published group tests that are based on general educational content common to a large number of educational systems. They are the products of a high degree of professional competence and skill in test-writing and as such, are usually quite reliable and generally valid. Teacher- made tests are to measure more limited and specific achievements. Achievement tests could be formative or summative. Formative test, also known as evaluation for learning is used to assess the progress of students in the acquisition of knowledge and skill before or during a course or unit of instruction. Summative achievement test is that used, to assess the degree of mastery of students at the end of a programme or course of study in institutions of learning. Therefore, test of knowledge is fundamental for shaping both the teaching – learning processes and certifying students mastering level.

According to Yoloye (2004) tests serve the following purposes when administered to students and their performances are assessed. Evaluating students' progress; given all the stakeholders a feedback on learning progress; motivating students to learn more; guiding students about tests and examination; evaluating level of achievement; giving feedback on teaching effectiveness; predicting future performance, providing the public with a guarantee for competence and providing a selection and a device for screening candidates for placement. Test as predicting future performances and providing a selection, device of screening candidates for placement are of interest in this study.

Some studies have been undertaken by various researchers in the area of predictive validity. Troutran (1978) studied the cognitive predictors of final grades in mathematics using intelligent Quotient (IQ) high school ranks, College Board Scholastics Aptitude Test – Mathematics (SAT –M) scores and high school mathematics grades as predictors of final grades in mathematics. He found that all combination of the variables were significant at 0.01 level.

Several early studies conducted at various universities throughout the world during the 1970s emphasized how well Pharmacy College Admission Test (PCAT) scores related to the academic performance of students entering schools of pharmacy. Research comparing the performance of first – year professional pharmacy students to their PCAT scores found that PCAT scores correlate positively with subsequent performance in specific coursework and throughout the course of a programme (Popovich, 1977; Lowenthal, 1979). In a 1985 study by the Psychological Corporation, in cooperation with the American Association of Colleges of Pharmacy (AACP), data collected from several pharmacy programs showed multiple correlations

between PCAT scores and GPAs of first-year pharmacy students ranging from 0.35 to 0.77. When first- year pharmacy students' PCAT scores were combined with their pre-pharmacy GPAs, the correlations with their first-year pharmacy GPAs ranged from 0.56 to 0.82 (The Psychological Corporation, 1985).

Thomas and Arangalis (2002) found that PCAT to be a significant predictor of student performance in the first year of pharmacy school with PCAT chemistry scores correlating highly with first-years pharmacy students' GPAs (0.58) followed by entering math/science GPAs (0.48) and PCAT composite scores (0.50). In combination with previous GPA and college degree earned, PCAT scores account for over 40% of variance in first-year pharmacy students' GPAs when multiple correlations were adjusted to account for chance error and sample size. Kidd and Latif (2003), Granberry and Stigler (2003), all concluded in their research works that the PCAT is a significant predictor of success in pharmacy classroom courses and in pharmacy school overall.

In another study, Meagher, Lin and Stellato (2006) examined the validity of PCAT scores for predicting GPAs of students in years 1-4 of pharmacy programs. Data were collected from 11 colleges and schools of pharmacy: entering cumulative and math/science GPAs, PCAT scaled scores, pharmacy program GPAs for years 1-4, student status after 4 years. Correlations, regression, discriminant and diagnostic accuracy analyses were used to determine the validity of the PCAT for predicting subsequent GPAs. The results showed that PCAT scaled scores and entering GPAs were positively correlated with subsequent GPAs. Regression analysis showed the predictive value of the PCAT scores, especially in combination with first year GPAs. Discriminant and diagnostic accuracy analyses supported these findings and provided practical suggestions regarding optimal PCAT scores for identifying students most likely to succeed. The researchers therefore concluded that both PCAT scaled scores and entering cumulative GPAs showed moderate to strong predictive validity as indicators of candidates likely to succeed in pharmacy school.

Komba and Kafanabo (2012) examined the Predictive Validity of the University Communication Skills (CS) examination on the Students' Overall Academic Performance. It is based on the study which was conducted at the Sokoine University of Agriculture (SUA). The objectives of the study were: to determine the extent to which the CS examination predicts the overall performance expressed in terms of the University GPA; to identify whether the

predictive validity varies by sex, type of school, and type of degree programme; and to examine whether the CS examination is a better predictor for the university GPAs than students' entry qualifications. The respondents were 358 finalists from six programmes selected randomly out of the 20 degree programmes at SUA. The findings indicated that the University CS examination positively predicted the overall students' performance expressed in terms of GPAs (r=0.416, p< 0.01). Furthermore, the predictive validity of the CS examination scores on the University GPAs varied by sex and was higher for males (r=0.483, p<0.01) than females (r=0.272, p<0.01). Moreover, the CS examination scores predicted the University GPAs better than did the students' university entry points. However, the type of school attended at both CSEE and ACSEE levels and type of degree programme enrolled at SUA had insignificant influence on the predictive validity of the CS examination.

Yasin, Nedjat, Mohammadi, Rad, Majdzadeh, Monajemi, Jamali and Yazdani (2012) examined the predictive validity of Konkoor scores, alone and in combination with high school grade point averages (hsGPAs), for the academic performance of public medical school students in Iran. The study followed the cohort of 2003 matriculants at public medical schools in Iran from entrance through internship. The predictor variables were Konkoor total and subsection scores and hsGPAs. The outcome variables were (1) Comprehensive Basic Sciences Exam (CBSE) scores; (2) Comprehensive Pre-Internship Exam (CPIE) scores; and (3) medical school grade point averages (msGPAs) for the courses taken before internship. Pearson correlation and regression analyses were used to assess the relationships between the selection criteria and academic performance. There were 2126 matriculants (1374 women and 752 men) in 2003. Among the outcome variables, the CBSE had the strongest association with the Konkoor total score (r = 0.473), followed by msGPA (r = 0.339) and the CPIE (r = 0.326). While adding hsGPAs to the Konkoor total score almost doubled the power to predict msGPAs (R2 = 0.225), it did not have a substantial effect on CBSE or CPIE prediction. They therefore concluded that the Konkoor alone, and even in combination with hsGPA, is a relatively poor predictor of medical students' academic performance, and its predictive validity declines over the academic years of medical school. The study recommended that care should be taken to develop comprehensive admissions criteria, covering both cognitive and non-cognitive factors, to identify the best applicants to become "good doctors" in the future.

In another research work, Mercer, Abbott and Puddey (2012) found out the relationship of selection criteria to subsequent academic performance in an Australian undergraduate dental school. In 1998, in addition to previous academic achievement, an aptitude test (UMAT) and a structured interview were introduced into selection for the Bachelor of Dental Science (BDSc), the undergraduate dental course at the University of Western Australia. The study therefore, determined the relationship between the combination of school-leaver dental students' entry scores, some demographic characteristics and subsequent student performance in the undergraduate course. Three hundred and ninety-eight school-leavers who enrolled in the BDSc from 1999 through 2011 were studied. Regression models were constructed comprising entry scores, gender and age as predictors in relation to subsequent academic performance. The main outcome measure was the weighted average mark (WAM) for each of five academic year levels as well as results in specific units, defined as either 'knowledge' based or 'clinically' based. Of the variables studied, previous academic performance and female gender had the strongest relationship with yearly WAM for Years 1 through 4 and for both 'knowledge' based and 'clinically' based units. The interview score showed a strong relationship in the major clinical years and in a range of 'clinically' based units. UMAT scores were less consistent in relationship to WAM. These results support assessment through a highly structured interview together with prior academic achievement as an evidence-based approach to selection of students for this undergraduate dental course.

Poole, Shulruf, Rudland and Wilkinson (2012) examined the Comparison of UMAT scores and GPA in prediction of performance in medical school: a national study. The study compared the predictive validity of the Undergraduate Medicine and Health Sciences Admission Test (UMAT), the admission grade point average (GPA), and a combination of both, on outcomes in all years of two medical programmes. The sample were students (n = 1346) selected since 2003 using UMAT scores and attending either of New Zealand's two medical schools. Regression models incorporated demographic data, UMAT scores, admission GPA and performance on routine assessments were used. The results across institutions were similar despite the different weightings of UMAT used in selection at the two institutions and minor variations in student demographics and programmes, The net predictive power of admission GPA was highest for outcomes in Years 2 and 5 of the 6-year programme,

accounting for 17–35% of the variance; UMAT score accounted for < 10%. The highest predictive power of the UMAT score was 9.9% for a Year 5 written examination. Combining UMAT score with admission GPA improved predictive power slightly across all outcomes. Neither UMAT score nor admission GPA predicted outcomes in the final trainee intern year well, although grading bands for this year were broad and numbers smaller. The study therefore concluded that the ability of the general cognitive test UMAT to predict outcomes in major assessments within medical programmes is relatively minor in comparison with that of the admission GPA, but the UMAT score adds a small amount of predictive power when it is used in combination with the GPA.

In Nigeria, Obioma & Salau (2007) determined the extent to which scores in examinations conducted by the West African Examinations Council (WAEC), National Examination Council (NECO) and National Business and Technical Board (NABTEB) in conjunction with the Joint Admissions and Matriculation Board (JAMB) predict future academic achievement of students in university degree examinations. Records on performance in the public examinations of a random sample of 4904 candidates were obtained from the sampled universities in eight core disciplines. Multiple linear regression analysis was used to analyse these data and the postulated hypotheses, tested at 0.01 significance level. The study revealed that there was a low but positive relationship ($0.118 \leq r \leq 0.298$) between each of the predictor variables under study. The researchers concluded that public examinations poorly predicted students' university academic achievements when compared individually with other predictors. The study therefore suggests the inclusion of aptitude test as one of the criteria for university admission.

Onuka (2004) also examined achievement in common entrance examination as a predictor of achievement in Junior Secondary School Business Studies. The investigation revealed a fair positive relationship (correlation) between performance at the primary school level as indicated by performance at the common entrance examinations and the performance at the Junior Secondary School Business studies. That is to say that the predictive validity index was fair at 0.41 but not as good as was expected. Demspter's (1954) in Okwilagwe (1999) contended that achievement scores in school subjects can be used to predict success in related subjects at a later date, since such scores of achievement tend to measure basic and vital temperamental qualities. This contention which has probably misled educators to rely solely on

achievement tests as useful tools for predicting success or failure in future academic achievement for several decades is already under attack the world over (Okwilagwe, 1999).

Olaniyan, Ajayi, Oyekanmi, Obemeata & Alarape (2006) examined the determinants of students' performances in the university. They used the grade point average (GPA) of students in Faculty of the Social Sciences of university of Ibadan as a model of characteristics of the students at the time of their entry into the university. The research tested whether SSCE and UME scores are reliable predictors of GPA. A sample of 866 students who graduated in three different sessions from five departments in the faculty was used for the study. The data collected were correlated and regressed. The result indicated that UME scores do not predict GPA of the students in the faculty. However, when decomposed by departments, UME was significantly negatively correlated with GPA in Departments of Economics (P = -0.251; P < 0.05) and Geography (P = -0.170; P <0.05). But for the other three departments (Political Science, Sociology, and Psychology), the result indicates non-significant correlation between UME scores and GPA scores.

Conversely, there existed a significant correlation between GPA and the performance at the Ordinary Level examinations in all the departments with exception of students in the Department of Geography. In all cases however, the performance in ordinary level examinations was a better indicator of students' GPA. In another study, Ehigie (2001), found that there was a significant relationship between students' performance and UME score by faculties of Arts and Sciences students while the relationship for Social Science students was not significant.

Olaniyan (2003) in a study of Economics students of the university of Ibadan found that UME score waas not a significant determinant of students' performance; although the study revealed that the dummy reflecting that a student took JAMB examinations more than once was significant at 10 percent level.

It is important to mention that there are some other variables that influence the performances of students. Akanle (2007) categorises these factors into three viz: home background, school administration and government involvement. The relationship between family socio-economic status (SES) and the academic performance of children is well established in sociological research works (Shittu, 2004; Rich, 2000; Akanle, 2007). While there is disagreement over how best to measure SES, most studies indicate that children from low SES

9

families do not perform as well as they potentially could have performed at school when compared to children from high SES families (Considine & Zappala, 2002).

On the other hand, National Environmental Education and Training Foundation (NEETF) (2000) categorises factors that influence learning outcomes into five. They include: external, internal, social, curriculum and administrative. Patrick (1991) found that achievement of students has been associated with the following factors; high educational attainment of parents, a home environment where reading and discussions of ideas are valued, limited television, significant amounts of time spent on homework assignments and stable family structure.

Israel,Beaulieu & Hartless (2001) observed that both parents' socio-economic status and social capital available in the family promote child's educational achievement. They also noted that community social capital also helps children excel in school, although it makes a smaller contribution to academic performance. Jensen & Seltzer (2000) showed that individual, family, and neighborhood factors all influence further education decisions of young Australian students. That is the general behavior in a particular environment has influence on the performance of a child.

Consequently, socio-economic status of families and general home background of individual have great influence on the academic performances of students and thus, are very important variables in this work. Studies have shown the importance of the type of school a child attends. This has influence on educational outcomes. While research in the US has found that SES variable continues to influence educational attainment even after controlling for different school types, the school context tends to affect the strength of the relationship between SES and educational outcomes (Considine and Zappala, 2002). Similarly, research in Britain shows that schools have an independent effect on students' attainment (Buckingham, 2000).

Several researchers and professionals in the field of education have argued that the glorious days of high academic performance and enviable achievement among Nigerian undergraduates have reached a vanishing point (Ige, 1979; Nwokocha, 1979; Obioma and Salau 2007). They thus called for education submits to rectify the situation. It is a disheartening to note that graduates from Nigerian Universities who happen to go for further studies abroad are often subjected to further examinations before they are admitted. The foregoing present a gloomy and worrisome picture considering the fact that Nigerian universities had been classified

to produce world-class graduates who had distinguished themselves in their areas of specialization.

Literature reveals that admission criteria into the Nigerian Universities do not always predict the performances of students at undergraduate level (Gbore, 2006; Olaniyan et al, 2006; Umo & Ezendu, 2008; Fehintola, 2012). The criteria for admission includes pass in five subjects at credit level in SSCE (WAEC or NECO) and a pass in UME at a required cut off point which varies from faculties and the universities. University of Ibadan alone had three hundred and sixty seven (367) students who were asked to withdraw from the University for their inability to meet the minimum academic requirements at the end of 2009/2010 academic session (University of Ibadan Bulletin, 2011). One wonders, how they passed through all these criteria and yet unable to cope academically in the University. However, students start the first certificated public examination attempt in Nigeria after JSS (Faleye & Afolabi 2005; Adeyemi, 2008). It was not known if any research work has considered this level of public examination as a predictor of students' performance in the University undergraduate across universities in Nigeria this work is intending to fill such gap. Critical examination of the literature, however, indicates that previous researchers on predictive validity of entry requirements into the universities have not focused on how each of the previous public examination predicts the immediate succeeding public examinations. Also, there is no any known empirical research that examined the cumulative predictive validity of all previous public examinations of the Nigerian undergraduate cognitive achievement. This study aims at filling these identified gaps.

Thus, the need to study how each preceding public examination predicts the succeeding ones has arisen in the light of the new post UME screening policy across Nigerian Universities before admission. This study also examined the need for additional requirement like aptitude tests for placement into the Nigerian Universities to solve the problem of poor performance.

1.2   Statement of the Problem

There have been persistent calls from several stakeholders for the re-examination of the present modes of selecting candidates for admissions into Nigerian Universities with a view to determining the credibility of each of the admission criteria. Such calls which are borne out of the observed mismatch between candidates' performance in public examinations and their subsequent achievement in university examinations have eventually resulted in the post UME

11

screening exercises in some universities. Thus, the view of the majority that achievement scores in school subjects can be used to predict success in related subjects at a later date. This notion therefore informed the study.

Studies have shown that using achievements in one or single previous examination to predict undergraduate achievement reveals little. This is because of the cumulative effect of achievement in some factors like JSSCE, SSCE, UME, home background, and school factors are likely to have on the 1st year CGPA of undergraduate students. There is the need to establish links in the achievement among each factor to the 1st year's CGPA of the undergraduate students is necessary. Therefore, this study evaluated the relative systematic predictive value of each of JSCE, SSCE, and UME in the succeeding examinations and in the students' performance in the University respectively. It also evaluated the cumulative predictive value of all students' achievements in previous examinations of their successor examinations and determined which of these examinations best predicts the performance of the Nigerian undergraduate. The roles variables like students' home background and school factors played in students' achievement were also examined.

1.3   Research Questions

(i)   What is the pattern of performance in term of CGPA of the undergraduate students during their first year?

(ii)   What is the most meaningful causal model involving the listed casuals: JSSCE, SSCE, UME, home background and school factors in the 1st year CGPA of undergraduate performance in the university?

(iii)   What are the directions as well as the estimates of the strengths of the causal paths of the variables in the model?

(iv)   What are the direct and indirect effects of the variables on the 1st year CGPA on the performance of the university undergraduate?

(v)   What proportions of the total effects are: (i) direct and (ii) indirect?

1.4   Scope of the study

This study covered four disciplines. These are Economics, Chemistry, English language and Mathematics. Economics is considered because of its importance in the area of social

sciences while Chemistry is given priority because of its position in the area of sciences. English language is considered from the Arts because; all candidates must pass it before they are considered for admission into the university. Mathematics is one of the compulsory subjects to be passed at O' level before a student is admitted to university. The study was conducted in two public and two private universities in the south-west, Nigeria. The sampled students were those who sat for the SSCE (either NECO or WAEC) in 2006 and 2007 and gained admission in each of these years into those universities.

1.5 Significance of the Study

The results of the study would be very useful to educational administrators and policy makers to decide whether the introduction of post UME examinations which was recently introduced in some of the Nigerian Universities could be an additional requirement for entrance into Nigerian universities. For example, United States of America do consider Scholastics Aptitude Test (SAT) as additional requirements for their respective candidates in entering universities. Scholars have equally criticized the adequacy of selection criteria used for university admission in Nigeria as low predictor of the students performances. The universities have taken up this challenge and the submission by many of them is that most of the students that enter the universities are not the right candidates; although they are selected for passing the selection test conducted by Joint Admission and Matriculation Board (JAMB). They argue that since they have no control over the inputs (admitted students), there is very little that universities can do to produce outputs that are better than the quality of inputs that JAMB admits for them. Furthermore, at the University of Ibadan alone, three hundred and thirty seven (337) students were asked to withdraw from the University for failure to obtain the university minimum academic requirements at the end of 2008/2009 academic session.

Similarly, three hundred and sixty seven (367) students were also asked to withdraw for the same reason at the end of 2009/2010 academic session. The question is how come those students were able to gain admission into the university? This is to say that something is wrong with the admission criteria used to select candidates for admission into the Nigeria universities. If an average of three hundred and fifty (350) candidates is wrongly placed into each of the universities in the country by JAMB, then, an investigation of this type of work is necessary to find out about the problems and proffer solutions to them. The findings of this work would

therefore throw more light on it if such tests like Scholastic Aptitude Test (SAT) and other personality tests would help Nigerian candidates predict high cognitive achievements in the university.

There is no any known empirical work on the degree to which each public examination predicts its successor and how cumulatively these examinations predict the successive ones and the university undergraduate performances in the first year; this research fills the vacuum. The study provides an empirical data on the strength and weakness of predictive ability of those public examinations. Lastly, the study provides an impetus for further research on the topic.

Operational Definition of Terms

- **Students' Performance:** This is the overall attainment of a measurable success in academic after instruction has taken place. Students' performance in this study refers to the overall achievement of students' after all external examinations taken.

- **Public Examinations:** is referring to all examinations conducted by a state, nationally or internationally accredited examining body.

- **Home Background** - This implies some kind of training a student got from home through the following variable: parents' education, parents' income, and educational facilities at home.

- **School Factors** - These refer to the facilities made available in the school and how adequate are they with the population in school. The school factors in this study include the following variables: physical facilities such as classrooms, library with current and adequate books, science laboratories, toilets and human resources.

Abbreviation and Acronyms

BRAC - Baton Rouge Area Chamber

CA - Continuous Assessment

CDC - Curriculum Development Council

CGPA - Cumulative Grade Point Average

DAT - Dental Admission Test

EC - Education Committee

EFA - Education For All

FRN	-	Federal Republic of Nigeria
HKEAA	-	Hong Kong Examinations and Assessment Authority
HREOC	-	Human Rights and Equal Opportunities Commission
JAMB	-	Joint Admissions and Matriculations Board.
JSSCE	-	Junior Secondary School Certificate Examinations
MCAT	-	Medical College Admission Test
NECO	-	National Examinations Council
NEETF	-	National Environmental Education and Training Foundation
NPE	-	National Policy on Education
PCAT	-	Pharmacy College Admission Test
PTTP	-	Pivotal Teacher Training Programs
PTU	-	Professional Teaches' Union
SAT	-	Scholastic Aptitude Test
SBA	-	School Based Assessment
SSCE	-	Senior Secondary School Certificate Examinations
UBE	-	Universal Basic Education
UCLES	-	University of Cambridge Local Examinations Syndicate
ULSEMC	-	University of London School Examinations Matriculation Council
UME	-	Universities Matriculation Examinations
USDE	-	United States Department of Education
UTME	-	Unified Tertiary Matriculation Examinations
WAEC	-	The West African Examinations Council

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

2.0   Introduction

The literature review was focused on the following areas:

2.1   Theoretical frame work

2.2   The Concept of examinations (Public, professional and school based types)

2.3   History of public examining and the usefulness of examinations

2.4   The Junior Secondary School Certificate Examinations (JSSCE)

2.5   West African Examinations Council (WAEC) mandate and modus operandi

2.6   National Examinations Council (NECO) mandate and modus operandi

2.7   Joint Admissions and Matriculation Board's (JAMB) mandate and the way it operates.

2.8   Validity and some types of validity.

2.9   Other factors that can affect students' achievement.

    (i)   Home background

    (ii)   School factor

2.10   Previous studies on predictive validity of achievement in examinations.

2.1   Theoretical frame work

The theoretical framework for this work is based on the Classical Test Theory (CTT). CTT is a body of theory and research regarding psychological testing that predicts/explains the difficulty of questions, provides insight into the reliability of assessment scores, and helps us represent what examinees know and can do. In a similar manner to theories regarding weather prediction or ocean current flow, CTT provides a theoretical framework for understanding educational and psychological measurement. The essential basis of CTT is that many questions combine to produce a measurement (assessment score) representing what a test taker knows and can do. CTT has been around a long time (since the early 20th century) and is probably the most widely used theory in the area of educational and psychological testing. CTT works well for most assessment applications for reasons such as its ability to work with smaller sample sizes (e.g., 100 or less), and that it is relatively simple to compute and understand the statistics.

The general CTT model is based on the notion that the observed score that test takers obtain from assessments is composed of a theoretical un-measurable "true score" and error. Just as most measurement devices have some error inherent in their measurement (e.g., a thermometer may be accurate to within 0.1 degree 9 times out of 10), so too do assessment scores. For example, if a participant's observed score (what they got reported back to them) on an exam was 86%, their "true score" may actually be between 80% and 92%.

CTT has served the measurement community for most of this century, the major advantage of CTT are its relatively weak theoretical assumptions, which make CTT easy to apply in many testing situations (Hambleton and Jones, 1993). Relatively weak theoretical assumptions not only characterize CTT but also its extensions. Although CTT's major focus is on test-level information, item statistics (i.e., item difficulty and item discrimination) are also an important part of the CTT model. At the item level, the CTT model is relatively simple. CTT does not invoke a complex theoretical model to relate an examinee's ability to success on a particular item. Instead, CTT collectively considers a pool of examinees and empirically examines their success rate on an item (assuming it is dichotomously scored). This success rate of a particular pool of examinees on an item, well known as the p value of the item, is used as the index for the item difficulty (actually, it is an inverse indicator of item difficulty, with higher value indicating an easier item). The ability of an item to discriminate between higher ability examinees and lower ability examinees is known as item discrimination, which is often expressed statistically as the Pearson product-moment correlation coefficient between the scores on the item (e.g., 0 and 1 on an item scored right-wrong) and the scores on the total test. When an item is dichotomously scored, this estimate is often computed as a point-biserial correlation coefficient.

The major limitation of CTT can be summarized as circular dependency: (a) The person statistic (i.e., observed score) is (item) sample dependent, and (b) the item statistics (i.e., item difficulty and item discrimination) are (examinee) sample dependent. This circular dependency poses some theoretical difficulties in CTT's application in some measurement situations (e.g., test equating, computerized adaptive testing). Despite the theoretical weakness of CTT in terms of its circular dependency of item and person statistics, measurement experts have worked out practical solutions within the framework of CTT for some otherwise difficult measurement problems. For example, test equating can be accomplished empirically within the CTT

framework (e.g., equipercentile equating). Similarly, empirical approaches have been proposed to accomplish item-invariant measurement (e.g., Thurstone absolute scaling) (Englehard, 1990). It is fair to say that, to a great extent, although there are some issues that may not have been addressed theoretically within the CTT framework, many have been addressed through ad hoc empirical procedures.

Item Response Theory (IRT), on the other hand, is more theory grounded and models the probabilistic distribution of examinees' success at the item level. As its name indicates, IRT primarily focuses on the item-level information in contrast to the CTT's primary focus on test-level information. The IRT framework encompasses a group of models, and the applicability of each model in a particular situation depends on the nature of the test items and the viability of different theoretical assumptions about the test items. For test items that are dichotomously scored, there are three IRT models, known as three-, two-, and one-parameter IRT models

Theoretically, IRT overcomes the major weakness of CTT, that is, the circular dependency of CTT's item/person statistics. As a result, in theory, IRT models produce item statistics independent of examinee samples and person statistics independent of the particular set of items administered. This invariance property of item and person statistics of IRT has been illustrated theoretically (Hambleton and Swaminathan, 1985; Hambleton, Swaminathan, and Rogers, 1991) and has been widely accepted within the measurement community.

The invariance property of IRT model parameters makes it theoretically possible to solve some important measurement problems that have been difficult to handle within the CTT framework, such as those encountered in test equating and computerized adaptive testing (Hambleton et al., 1991). However, as the cornerstone of IRT, the importance of the invariance property of IRT model parameters cannot be overstated, because, without this crucial property, the complexity of IRT models can hardly be justified on either theoretical or practical grounds.

Because IRT differs considerably from CTT in theory, and commands some crucial theoretical advantages over CTT, it is reasonable to expect that there would be appreciable differences between the IRT- and CTT-based item and person statistics. Theoretically, such relationships are not entirely clear, except that the two types of statistics should be monotonically related under certain conditions (Crocker and Algina, 1986; Lord, 1980).

Theoretically, the invariance property of the IRT item statistics obviated the need of equating tests; instead, it is (linear) scaling, rather than equating, that is necessary within the framework of IRT. The discussion implies that IRT models handle equating tasks better than the CTT equating approaches. The mixed picture has prompted some researchers to suggest that it might be unrealistic to expect one method to provide the best equating results for all types of tests (e.g., Skaggs and Lissitz, 1986). Literature search revealed that a study that empirically examined the comparability of IRT-based and CTT-based item and person statistics. Lawson (1991) compared IRT-based (one-parameter Rash model) and CTT-based item and person statistics for three different data sets, and showed exceptionally strong relationships between the IRT- and CTT-based item and person statistics. The major criticism for CTT is its inability to produce item person statistics that would be invariant across examinee/item samples. This criticism has been the major impetus for the development of IRT models and for the exponential growth of IRT research and applications in the recent decades. It is somewhat surprising that empirical studies examining and/or comparing the invariance characteristics of item statistics from the two measurement frameworks are so scarce. This study therefore adopted CTT as its framework because of its unique and relevance to the research topic.

2.2   The Concept of Examination

Education enterprises must be assessed to determine how worthwhile the efforts put into it has been.   In a welfare states country, children have to be educated according to their age, aptitudes and abilities. For this purpose, evaluation becomes a necessary tool in the educational process. In this way, it has a positive function.   Whilst our present system of examinations attempts to assess scholastic attainments, it should nevertheless have also a predictive function to help pupils courses of study suited to their talent and potential, so that they may develop into useful citizens. Examination is an important aspect of the education process. This is the stage at which the learner's knowledge, skills, ability and competencies are assessed, and judgment made about such performance. The outcome of such judgments is used for diagnosing as well as placement of students. Hornby (1995) defined the concept of examinations as "a formal test of somebody's knowledge or ability in a particular subject, especially by means of answering questions or practical exercises. In parallel, Balogun (1999) also defined it as the process through which students are evaluated or tested to find out the quality of knowledge they have acquired within a specified period. Examinations could be internal or external. It could be oral, written or

both. In the Nigerian context, examination could be called internal when we evaluate continuous assessment tests, terminal, semester and annual or promotion examinations. Conversely, examples of external examinations common in Nigerian schools are: Common Entrance Examination for admission into secondary schools, Secondary School Certificates Examination (conducted by West African Examination Council - WAEC), and National Examination Council (NECO). The Joint Admission Matriculation Board (JAMB) and National Teachers' Institute (NTI) conduct admission tests into tertiary institutions, while the National Business and Technical Examination Board (NABTEB) conduct professional examinations for teachers and technicians respectively. Like Jimoh (2009) observed, examinations still remain the best tool for an objective assessment and evaluation of what learners have achieved after a period of schooling. Hence, any action that undermines examinations poses a great threat to the validity and reliability of examination results and certification.

Public examinations are conducted by, or on behalf of the state and open to all those who meet defined entry criteria (World Bank Education, 2001). Historically they include examinations used to select those wishing to enter government services. Public examinations are typically competitive. They bring benefits to those individuals who are successful. This is in contrast to National assessments which are designed to provide information about a system. Public examinations are typically formal, summative and controlled by an agency external to the school where the student has studied. In high competitive situations, public examinations are usually preferred because these allow greater standardization of task and conditions; hence, greater comparability of result.

The first written public examinations were introduced over 2000 thousand years ago in China, to select the most able citizens for positions in the civil service and to reduce the effects of patronage (World Bank Education, 2001). News of the Chinese system was brought to Europe in the 16th Century and the Jesuits incorporated examinations into their schools. Prussia established an exam system for selection to the civil service around the middle of the 18th century followed by France after the Revolution. By the middle of the 19th century, competitive examinations had been introduced in Britain and India to select the increasing number of government officials require to service an expanding empire. In 1883, competitive examinations to select personnel for government service in the United State were established in law but were abandoned when congress failed to make appropriation to continue them.

2.3   History of public examining and the usefulness of examinations.

Public examinations in schools have a shorter, but still considerable history. The Abitur was introduced as a graduation examination for the classical middle school in 1788 and soon became a qualification examination for university.   The Baccalaureate was established in Napoleonic France in 1808 to admit students to the grandees Ecoles, government service, and the professions. In Britain however, London University held its first matriculation examination in 1838. It still conducts school examinations in the UK and around the world. In 1865, the New York Board of Regents conducted the first examinations in NY state schools. Whilst New York Regents examinations continue to this day, public examinations are not a common feature of schooling in the USA (World Bank Education, 2001).Western European examination systems spread as the French, British and Dutch empires expanded in the 19th century. Syllabuses and examination papers from the 'home county' were used, usually unchanged, in the colonies. As countries gained independence over the past years, they have taken control of their school examinations. However, the assessment methods, and in some cases the syllabuses, have remained largely unchanged. The European tradition of public examinations for school can be found in the Caribbean, Africa and South East Asia and the sub-continent. In the 20th century, America developed a significantly different approach to assessment of students. The most prominent features of this are a strong theoretical base of behavioral measurement (psychometrics) and a heavy reliance on objective and standardized modes of assessment – especially multiple-choice testing.

School based examination or assessment means formative task count towards final marks rather than grades being based entirely on student performance in public examination (Clem, 2005; Kenndy, Chan, Yu and Fok, 2006) regard this as "to move away from examinations to a greater reliance on school based assessment fuelled by teacher judgments is one further ways of ensuring less negative "backwash" from external summative assessment". Introducing school based assessment (SBA) in public examinations is believed to be one of the significant tools for enhancing assessment for learning (For, Kennedy, Chan and Yu 2006). In recent years, an important change in the public examination structure of so many countries secondary schools is the shift from a sole focus on external examinations to using both external and school based assessment (Yip and Chenng, 2005). In Hong Kong for example, SBA is continuously mentioned in various government education documents. It has been implemented in a number of

21

subjects like Chemistry (Advanced Level Examination), Design, Technology, Electronics and Electricity (HKEAA, 2005). Education Committee (EC) (2000), proposes to review the modes, content, and assessment methods of examinations, which allow students to display their independent thinking and creativity. Curriculum Development Council (CDC) 2001, following the line of thought of EC, pinpoints the aim of assessment is to help provide information for both students and teachers to improve learning and teaching and reiterates the need for assessment to select students for higher education.

Though the rational introducing school based assessment into the public examination is reasonably strong, there are various problems that provide another side of the story. SBA is a form of formative assessment; it is not the same as assessment for learning (Kennedy, Chan, Yu and Fok, 2006). Stiggins (2002, P.761) stressed that the concept of assessment for learning and formative assessment should be discerned.

> *It is tempting to equate the idea of assessment for learning with our more common term, 'formative assessment but they are not the same. Assessment for learning is about far more than testing more frequently or providing teachers with evidence so that they can revise instruction, although these steps are part of it.*

To make sure that SBA helps to enhance student learning, it is important to increase the accuracy of classroom assessments and to provide students with frequent information feedback (Stiggins 2002). However, it is unlikely that SBA possesses these features; Stiggins concluded.

The quest of using SBA to enhancing student learning, providing students with frequent informative feedback is another issue that teachers face. Feedback should be a key function on all forms of SBA. Adopting SBA in public examination has placed new responsibilities on teachers who are assumed to have a dual role of assessor and teacher (Donnelly et al, 1993; Yip and Cheung 2005; Yung, 2001). Indeed, teachers are concerned about the method of uniformity with SBA in such a high stake examination and the heavy imposed on them (PTU, 2006).

Teachers, being involved in SBA section of public examination, play an important role in all forms of assessment. However, numerous questions about the roles and judgments of teachers are raised, which are related to validity and reliability found in school based assessment (Chang, 2004; Hau, 2004). According to research and government document, problems of these

questions are difficult to be tackled (Chang, 2004). Broadfoot and Black (2004) rightly perceived that teachers role in summative assessment is not easy to be recognized.

2.4 The Junior Secondary School Certificate Examination

The Junior Secondary School Certificate Examination (JSSCE) is a public and summative examination taken by candidates at the end of Junior Secondary Education in Nigeria. The Examination is in two versions the first is the one being conducted by the States' Ministries of Education or its agent like State Examinations Board. The second version is the Federal one, being conducted by the National Examinations Council (NECO) Faleye and Afolabi (2005). As for the state version, each state develops, administers, marks and awards grades and certificates to all public schools under its jurisdiction. The National Examinations council (NECO) is responsible for conducting the JSSCE to all JSS III students of Federal Government Colleges and other private secondary schools that decide to take NECO conducted examination.

Students at JSS III level must pass the JSSCE in order to progress to the senior secondary school level. With the JSSCE, students are streamed according to their abilities into senior secondary schools; technical and teaching colleges or out of school vocational training centers or apprenticeships offering arrange of terminal trade and craft awards. In all objectivity, Faleye and Afolabi (2005) submitted that the Evaluation Department or units in the state ministries of Education, which shoulder the development and conduct of the JSSCE, cannot claim the experience, technical knowhow, specialized focus or the abundance of specialized staff and tremendous resources of WAEC and NECO. One may therefore argue that the standard of the JSSCE will vary from state to state in Nigeria, depending upon its human and material resources level of educational development, and the general state of its schools. The pioneer set of JSSCE candidates wrote the examination in 1988.

Since the JSSCE is meant to serve as the yardstick for admission into the senior secondary school, a student who is thereby admitted is assumed to possess the abilities and skills necessary to cope with the academic challenges of the SSS. However, it is common knowledge that performance in the SSCE has been low for quite a long time despite the fact that these same students obtained acceptable grades in the JSSCE and were consequently admitted to SS 1. (Omotoso, 1981; Faloye, 1987; WAEC, 1994, 1995; Faloye and Afolabi, 2006) This touches on the validity of the JSSCE as an adequate benchmark to judge students' capacity to cope effectively with SSS work (Popham, 2002).

The concern of JSSCE in this work is how it could predict the performance of students in SSCE. There are research works on how some of the subjects taken at JSSCE predict the SSCE. Osokoya (1999) examines how scores in integrated science at JSSCE can predict the students' achievement in Biology, chemistry and Physics at SSS. She also examines the extent to which students scores in integrated science can directly affect scores in Biology, Chemistry and Physics. Three hundred and twelve (312) students were randomly judgmentally sampled from nine senior secondary school class I (SS I) in Ibadan, Oyo State. The nine schools were those with both junior and senior secondary schools from the metropolis involving both single sex and co-educational schools. The students were also those who offer all the three basic natural science subjects. The results of 312 students in Integrated Science in JSSCE in the 1996/99 academic session and result of the same set of students in Biology, Chemistry and Physics at the end of third term of 1997/98 of their SS I were collected. Regression analysis was used to determine the relative contribution of students' score in integrated science to the prediction of scores in Biology, chemistry and Physics. The results indicate that scores in integrated science can best relatively predict the performance of students in Biology followed by physics and then Chemistry. The correlation observed between integrated science and each of Biology, Physics and chemistry is not so high as expected though it is positive and strong statistically.

Another research work by Faleye and Afolabi (2005) found out the predictive validity of Osun State Junior Secondary Certificate Examination in the SSS performances. The researchers found out whether there is a significant relationship between the overall performance of students in the JSSCE and their performance in the SSCE, including aggregate SSS 1 and SSS 2 results. The work also determines the nature and strength of the relationship between selected JSSCE subjects and their corresponding equivalent in SSS 1, SSS 2 and SSSCE.

The subjects for the study consisted of 505 students from six purposefully selected secondary schools in Osun State, Nigeria. The schools were the top three schools of science in the state plus three other public secondary schools. The students sampled were those whose results were obtained from the 1993 JSCE through SSS I, SSS 2 and WAEC's SSSCE. (i.e. those who completed SSS took the SSSCE and who had intact academic records). Examination scores of the students were obtained from school records in six JSSCE subjects. These include: English language, Mathematics, Integrated Science, Yoruba language, Social Studies and Agricultural Science. For the purpose of comparison, the researchers used the promotion

24

examination results of students in SSS I and SSS 2 and their final SSSCE results were also obtained in school subjects corresponding to the selected JSSCE subjects. The only exceptions were Chemistry and Biology in the SSSCE which were paired and matched with integrated Science in the JSSCE. Physics candidates were few in the three other public schools and Geography in the SSSCE was matched with social studies in the JSSCE. Economic, Government or History was not offered in any of the three schools of science sampled. JSSCE grades of A C P and F were awarded 3, 2, 1 and 0 points respectively while SSS promotion grades and SSSCE grades of Distinction, Credit, Pass and fail were treated likewise. Thus, aggregate scores were obtained from each student in all subjects that were amenable to correlation analysis using Pearson R.

The result shows that 56.9% of the students who obtained A in JSSCE also obtained A's in SSSCE. 70.8% of students who obtained C's in JSSCE also obtained C or better in the SSSCE; and only 59.4% of students who obtained F grade in JSSCE did likewise in the corresponding or equivalent SSSCE subjects. From the result of this research, it may be deduced that three of the six schools investigated had relatively low but significant correlations between JSSCE and SSSCE results. Two of them had significant correlations between JSSCE and SSS 2 results. Performance in JSSCE English and Mathematics could be used to predict performance in English and Mathematics in SSS 1, SSS 2, and SSSCE. Overall performance in JSSCE tends to have low capacity to predict performance in SSSCE.

It appears that the predictive capacity of the JSSCE could be affected by the quality of the examination questions and the integrity of the procedure of its administration and scoring (Faleye et al, 2005). This opinion may be true because most of the states that set and conduct JSSCE often leaked their question papers. More often than not, teachers in each school are also made to invigilate their own students! Likewise, the marking and awarding of grades tend to be abused. Even, the assignment of continuous assessment (CA) scores is often arbitrary and usually inflated (Ojerinde, 1986; Adejumo and Afolabi, 1990; Faleye and Afolabi, 2005). The practice of C. A. that provides part of the final score for each of the subject at the JSSCE needs to be improved.

Edokpayi and Suleiman (2011) examined the predictive strength of the Junior Secondary Certificate (JSC) examinations in integrated science in predicting the performance of students in the Senior Secondary Certificate (SSC) examinations in chemistry in Zaria metropolis, Nigeria.

25

The study employed the ex-post facto design. The study population comprised of four hundred students from four purposefully selected secondary schools in Zaria metropolis. Out of this population, a sample of two hundred students was selected through the stratified random sampling technique. Data were collected through an inventory and analysed with the use of z-test and correlation analysis. The results of the investigation revealed that the academic achievement of students in integrated science in the Junior Secondary School Certificate (JSC) examinations among the selected Secondary schools in Zaria metropolis was a poor predictor of later achievement in chemistry at Senior Secondary School Certificate (SCE) examination. It is recommended that more qualified and competent teachers should be trained and employed to teach Integrated Science in Junior Secondary School and classroom teachers should try as much as possible to relate the concept of integrated Science to chemistry and other basic sciences.

It has been confirmed by the researchers (Osokoya, 1999; Faleye and Afolabi, 2005) that not all JSSCE subjects have adequate predictive strength. This however, negates the principle of testing (especially for public examinations) where all the items are expected to have been pre-tested and all the necessary psychometric strengths (of adequate predictive power, discrimination index and moderate difficulty level) ensured before they are administered on real candidates (Hopkins, 1998; Popham, 2002).

2.5   West African Examinations Council (WAEC) Mandate and Modus Operandi

WAEC as a regional examination body has a geopolitical dynamism. Initially WAEC membership was restricted to British colonies (which between 1957 and 1965 all gained Independence), in 1974, the council's membership was enlarged to embrace Liberia. The country had been a sovereign state since its inception in 1847; and its education system was more heavily influenced by American than by British tradition (Bray, 1998). However, Liberia placed strong emphasis on English for official purposes and in its education system. This fact strongly contributed to the desire to join and to the success of the application for membership. The addition of Liberia was a very significant development in the post-colonial evolution of WAEC. However, it has not been able to move to the next stage of crossing former colonial boundaries to include French or Portuguese – speaking countries in the region (Esezobor, 1992; Bray, 1998).

WAEC initially acted as the local agency for the University of Cambridge Local Examinations syndicate (UCLES) and for the University of London School Examinations

Matriculation Council (ULSEMC). These were the main external agencies responsible for secondary school examinations in the British West African colonies and were instrumental in the formation of WAEC. Subsequently, it launched its own regional school certificate and Higher School Certificate examinations, which were taken by candidates in the Gambia, Ghana, Nigeria and Sierra Leone. Liberian candidates did not take these regional examinations because their school and assessment systems were structured differently (Bray, 1998).

The council conducts four categories of examination (WAEC, 2003). These include: National Examinations; International Examinations; Examinations conducted in collaboration with other examining bodies and Examinations conducted on behalf of other examining bodies. The National Examinations are restricted to the specific member countries for which they are developed and reflect their local policies, needs and aspirations while the international Examinations are developed for candidates in all the member countries. The National Examinations include the Junior Secondary School Certificate Examinations for Liberia, National Primary school and Basic Education Certificate Examinations for Sierra Leone and the Basic Education Certificate and Senior Secondary School Certificate Examinations for Ghana.

WAEC normally indicates the actual dates for all examinations by circular letters and by advertisements (WAEC, 2003). However, the detailed timetables are usually available at least six weeks before the commencement of the examinations. Entry schedule for candidates registrations are sent, without application to all schools or the council's list. Individual entry forms are available for private candidates.

It was at the beginning of this millennium that WAEC started electronic registration of candidates. The development according to Adegboye (2007), was as a result of several data related problems. There were concerns over the quality of entry data, duration of processing of entries, security storage of entry documents/assessment data, physical transfer of data from the satellite stations to the main computer installation, prompt release of results, communication of assessment information to major stakeholders, logistics problems and escalation of costs. WAEC is thus, compelled to constantly seek modern ways of addressing the concerns raised issues, in order to maintain an efficient service delivery system (Adegboye, 2007).

The council initiated actions in the year 2000 to maintain a presence on the Internet and deploy online services. The Internet connectivity project of WAEC enables its offices to be online real time. The project has two components. The first was the Intranet. It interconnects

WAEC offices, Yaba office with zonal offices/satellite stations to enable them share information and computing resources. Users within the Intranet are also able to access the Internet since all WAEC offices in Nigeria have been linked to the internet.

The second component was the Extranet. It allows an interface between the public and WAEC. Candidates are able to access information on examination results or register for examinations. Access is via Personal Identification Number (PIN) available on a scratch card. WAEC has the following corporate website: www.waecnigeria.org. These two are dedicated for results. Checking the result: (www.waecdirect.org) and www.waeconline. org.ng) for e-registration. E-registration of candidates took effect in November 2004 in Nigeria (Adegboye, 2007).

2.6   National Examinations Council (NECO) mandate and modus operandi

One of the last acts of the Abdulsalami Abubakar military administration was the promulgation of a decree, in April 1999, that created the National Examinations Council (NECO). That act, however, was only the climax of a process whose beginning predated the administration. Although calls for the creation of a national examination outfit had been on for over two decades earlier, the birth of NECO was not spared controversy. While some Nigerians saw its arrival as opportunity for choice of examination body for candidates to patronize, others doubted its capacity to conduct reliable examinations that could command widespread national and international respect and acceptability. Some others welcomed it for its potential, as a Federal Government parastatal, to offer subsidized registration to candidates; yet others queried even its legal status.

NECO was to take over the responsibilities of the National Board for Educational Measurement (NBEM) which was created, in 1992, by the Ibrahim Babangida administration, although its enabling decree was promulgated in 1993. However, the conduct of the Senior School Certificate Examinations (SSCE) which had, hitherto, been the exclusive preserve of the West African Examinations Council (WAEC) was made an additional responsibility of the new examination outfit. NECO was to take exclusive charge of the conduct of the SSCE for school based candidates while WAEC was to take charge of the same examination for private candidates. NECO was to conduct its maiden SSCE in mid 2000. The additional responsibility of NECO over those of its precursor called for some restructuring of NBEM. Not only was the staff strength to be increased, there was also need for offices to be

established in every State of the Federation and the Federal Capital Territory (FCT) if NECO was to effectively cope with the enormity of its mandate. Consequently, within one year of its creation, the staff strength of NECO had quadrupled that of NBEM in 1998.

Furthermore, NECO invested heavily in data processing technology to enable it cope with the anticipated increase in the volume of data it would need to process over a relatively short period of time. Consequently, its computer facility was upgraded to an administrative unit and a custom-built complex constructed for it. It was also equipped with state-of-the-art computer systems and professionals to man the facility. Two 250KVA back-up generators were also provided the Computer Unit Complex to ensure uninterrupted operations at all times, but especially during peak periods immediately preceding the publication of results. During such periods, the unit operated a 24 hour day schedule with three shifts each day. The story of NECO and its achievements is a continuously developing one and cannot be completely told in a piece as short as this. However, as has been observed elsewhere, Perhaps, the greatest achievement of NECO is that it has provided gainful employment for over a thousand Nigerians [and given hope to thousands more – candidates who had been able to keep their matriculation dates because of the timely release of their results by NECO]. By this, as many Nigerians have the opportunity to contribute to the development of their nation and the feeling of wellbeing that results from this sense of actualization is difficult to quantify in concrete terms. Moreover, the greater number of family members who depend on these thousand NECO staff [and who would depend on the many more thousand potential graduates of tertiary institutions referred to earlier] means a reduction from the number of potential sources of instability in the community. Further, whatever resources these might be able to plough back in the form of economic activity is a potential generator of wealth in the nation. Consequently, the dividends of NECO stretch well beyond the horizon of testing, measurement or evaluation. They touch thousands of Nigerian lives and do so for the better. That, perhaps, is the greatest achievement of NECO.

2.7 Joint Admission and Matriculations Board's (JAMB) mandate and the way it operates

The legal instrument establishing the Board was promulgated by the Act (No. 2 of 1978) of the Federal Military Government of Nigeria on February 13; 1978. By August 1988, the

Federal executive Council amended Decree No 2 of 1978. The amendment was since been modified into Decree No 33 of 1989 which took effect from 7th December, 1989 (JAMB, 2006).

The decree therefore empowered the JAMB to among other things, conduct matriculation Examination for entry into universities, polytechnics and Colleges of Education (by whatever name called) in Nigeria; appoint examiners, moderators, invigilators, members, of the subject panels and committees and other persons with respect to matriculation examinations and any other matters incidental thereto or connected therewith; and place suitable qualified candidates in the tertiary institutions after having taken into account:

i.   the vacancies available in each tertiary institution;

ii.   the guidelines approved for each tertiary institution by its proprietors or other competent authorities;

iii.   the preference expressed or otherwise indicated by the candidates for certain tertiary institutions and courses;

iv.   Such other matters as the Board may be directed by the Honourable Minister to consider or the Board itself may consider appropriate in the circumstances.

The Board was also given mandate to collate and disseminate information on all matters relating to admissions into tertiary institutions or nay other matter relevant to the discharge of functions of the board. Prior to the promulgation of this decree in 1978, individual university used to conduct its own entrance examination in Nigeria. (Okwilagwe 1999). Presently, many universities do conduct post UME screening exercise to select the best candidates for admission in to various departments. This post UME has gone a long way in contributing to chosen best candidates for various courses and has reduced the rate of dropping or withdrawing from various departments and universities. However, there are divergence opinions on this UME by the JAMB fro public. For instance, Amatareotubo in the article "*Post-UME screening; Matters Arising*" of 30 June, 2006 said that the post-UME screening exercise is a means of enhancing the Vice-Chancellor and other Administrative Officers of the institutions by giving them power to be in control of the admissions of candidates into institutions while stressing that when JAMB gives admission, it ensures that in spite of the cheating; only those with the highest and best scores get admission by centralizing the process.

Luke Onyekakeyah of *The Guardian, Tuesday August 26, 2008* said that Post-UME conducted by Universities in Nigeria, has been an avenue of ripping hapless students and their

parents and that students have being going through untold hardship and pains before getting their results. He further said that candidates are made to sit for two post-UME examinations in their 1st and 2nd choice of Universities, and thus go through the same rigor twice and pay double charges and yet no guarantee that the candidates would be offered admission. Biodun Oyeleye in the *Nigerian Compass, Wednesday September 10, 2008* corroborated that it is not justifiable for a candidate to write a second examination after he/she has passed the first one that is appropriately titled UME and recognised by the law as passing such test is no guarantee of admission, that the major factor pushing the Post UME test is the financial gain accruable to each university from the exercise.

In the words of Otunba Ayodele Osunmakinde in the *Daily Independent of Wednesday 24 June, 2009;* "JAMB is the sole giver of admission to prospective University candidates in the country, and not the Universities as it is now. Post-UME screening should be abolished as it is now a veritable platform for unscrupulous universities staff to extort money from parents and guardians". And that post-UME now encourages ethnicity, favouritism, patronage and other human factor that will be a cog in the new admission policy. He also said that if the Federal Government wants to scrap JAMB because of examination malpractice, other examination bodies like WAEC, NECO have to be equally scrapped because examination fraud takes place at all level of educational system, including tertiary institutions.

2.8   Validity and some types of validity.

Validity may be deemed as "the most important consideration in test development" (Luoma, 2004), as it underlies and attests for the quality of the data provided by test results. Validity according to Wikipedia encyclopedia (2007) is the ability of a test to measure what it was designed to measure, and the degree to which the results of an experimental method lead to clear-cut conclusions (internal validity) and how far those can be generalized (external validity).

Validity can be accessed in a number of ways, though there are just two distinct types of validity, the validity of an experiment, and the validity of an assessment method (e.g. structural interview, personality enquire etc) Wikipedia, (2007). Validity is first and foremost, a logical exercise, rather than a computational endeavour. Establishing validity is essentially, supporting the claim made that the test measures or predicts the construct it purports to predict. The heart of any validity must be the idea of construct validity. Another area of validity that must be

31

considered is the validity of the criterion. When the criterion measure is collected at the same time as the measure being validated, the goal is to establish predictive validity. Similarly to criteria validity is construct validity, where an investigator examines, whether a measure is related to other variables. Content validity estimates how far your tests cover the domain you want to measure. Face validity is an estimate for how good a test appears to measure a certain criterion; it does not guarantee that the test actually measures Phenomena in that domain (William, 2002). According to classical test theory, predictive or concurrent validity (Correlation between the predictor and the predicted) cannot exceed the square root of the correlation between two versions of the same measure. This is to say that reliability limits validity (Wikipedia, 2007).

There are several forms of validity, which may display different levels of achievement (Alderson, Clapham and Wall, 1995): construct validity, content validity, criterion-related validity (concurrent and predictive) scoring validity and face validity. These forms of validity will ease the process of validating a test and it is recommended that a test should be validated through as many ways as possible (Alderson et al; 1995). Thorndike and Hagen (1986), referred by Alderson et al. (1995) refer to three types of validity external validity, internal validity and construct validity. External validity is related to the comparison of text scores with other measures of students' ability also known as criterion validity. Internal validity deals with the study of the perceived content of the test and its perceived effect (content validity, face validity and response validity). Construct validity may be considered to be the main form of validity which certifies the other forms of validity, "a super ordinate form of validity contributes" (Ebel and Frisbie, 1991 referred by Alderson et al, 1995).

Hughes (2003) defines construct as any underlying ability or trait that is hypothesized in a theory of language ability (e.g. the ability to guess words from context). Therefore, every time, a test is designed to test a specific skill, it should comply with the theoretical construct that underlies that skill. If testing speaking, the test should focus on speaking activities not on reading or writing. As construct validity is somewhat abstract, there is the need to obtain empirical evidence of its existence, if it can be measured and it is being measured in a specific test. Therefore, the focus should be set upon the other forms of validity which Hughes refers to as "subordinate forms of validity", as these will be the ones that will provide the required empirical evidence.

As for the predictive validity, it relates to the degree to which a test can predict a candidate's future performance. For example, through the result of a proficiency test, it may seem to be futurology. But, it can provide an insight into the expected performances of learners in a particular context which may be confirmed later on by the outcome of a course or by an assessment done by a teacher. These two forms of validity – content validity and criterion related validity provide evidence for the overall validity of a test which is the same to say that they confirm the tests construct validity.

Other components of validity are scoring validity and face validity. Scoring of performances has to be directly related to what is being tested assuring coherence with the purpose of the test (Luoma, 2004). In addition, rating criteria should be clearly developed and defined correctly to make them easy to use. Besides, providing consistency and coherence to the rating process; thus ensuring the validity and reliability of a certain test. Scoring procedures may provide the basis for a feedback report to the students and stakeholders.   Students used to demand teachers to explain results and to tell them how to improve their performances while stakeholders (e.g. parents, administrators, ministries of education) demand prove of "efficiency and cost-effectiveness by more rigorous reporting of program outcomes" (Brindley, 2001).

In addition to scoring validity, there is face validity. This form of validity is not a scientific notion that provides evidence for construct validity (Hughes, 2003). It is a matter of looking as if it measures what it is supposed to measure. Ingram (1977) referred by Alderson et al (1995), defines it as a "test's surface credibility or public acceptability". Although, not being a scientific notion, it has gained more relevance with the Communication Language Teaching (CLT) approach (Pavao, 2007). According to College Board (2007), face validity refers to the judgment of people who are not necessarily context experts. Face validity is important in testing because it may deeply affect response validity. If on one hand, test takers do not recognize that the test is assessing what it should, they may not take it seriously and, therefore, it will have a harmful wash back effect. On the other hand, if test takers recognize the validity of a test, they might put a greater effort in their performance and, consequently, improve it. The improvement may eventually have positive future effect on teaching and learning process.

2.9   Other factors that can affect students' achievement

Students' academic achievement could be influenced by so many factors. These according to many research works include home background, parents level of education, socio-

economic status peer influence, school's factors, teachers and the head of schools including the general tone of the school (Akanle, 2007; House, 2002; Shittu, 2004; Considine and Zappala, 2002). Akanle (2007) refereeing to United States Department of Education (USDE, 2000) says that home background influences academic and educational success of students and schoolwork; while socio-economic status reinforces the activities and functioning of the teachers and students. From the above, it is revealed that the quality of parents and home background of a student goes a long way to predict the quality and regularity of the satisfaction and provision of a child's functional survival and academic needs. Poor parental care with gross deprivation of social and economic needs of a child, usually yield poor academic performance of the child. On the other hand, where a child suffers parental and material deprivation and care due to divorce or death, or absconding of one of the parents, the child's schooling may be affected as the mother alone may not be financially buoyant to pay school fee, purchase books and uniforms, such child may play truant; thus his performances in school may be adversely affected (Shittu, 2004).

Similarly, good parenting supported by strong economic home background could enhance strong academic performance of the child. This further predicts academic performance where the child is properly counseled in the choice of his/her courses and vocation that matches his mental ability, interest and capability whereas the children to the care of the illiterate mothers will find themselves, roaming about the street laboring to make ends meet. Danesy and Okediran (2002) lamented that street hawking among young school students have psychologically imposed other problems, like sex networking behaviour, juvenile delinquent behaviour, which takes much of the students school time that necessitated the poor academic performance and drop out syndrome noticed among young school students. Nevertheless, they also lamented that the maternal and paternal deprivation of the essential needs of the young students have prompted their poor performance in public examinations such as JSSCE, WASSCE and NECO.

House (2002) opines that students' characteristics, their living and learning environments and instructional activities, contribute to student achievement. However, NEETF (2000) divides factors that influence learning outcomes into five categories. These include. External, internal, social, curriculum and administrative. Patrick (1991) found that "achievement has been associated with the following factors; high educational attainment of parents, a home environment where reading and discussions of ideas are valued, limited television, significant

amounts of time spent on homework assignments and stable family structure. The author believes that student achievement is positively influenced by challenging subject matter; in-depth investigations of topics, discovery of alternative solutions to the problems; active learning and thinking; multiple resources and media for teaching and learning; use of technology; high expectation of student performance; a safe school climate; and authentic on-going assessment. Many other researchers also believe that students learn best when they have an opportunity to discover and investigate (House, 2002; NAAEE & NEETF, 2001; WDFD, 1999).

Considine and Zappala (2002) sum up the factors that affect students' academic performance to be socio-economic status (SES) family structure, type of school, absences, gender, ethnicity, geographical location and housing type. These factors were corroborated by other researchers like (Mukherjee, 1995; Rich, 2000; Marks et al, 2000; Buckingham, 2000; Horne, 2000; HREOC, 2000; Seltzer, 2000; Sparkes, 1999). In their research works, they found out that even within a group with considerable financial disadvantage, socio-economic status as reflected by the level of parental education, was a key predictor of student academic achievement. This finding lends support to the notion advanced by some studies (Zappala and Green, 2001; Calvert, 2000; Horne, 2000) that the social and the economic components of the socio-economic status equation may have distinct and separate influences on educational outcomes. While both components are important, social factors, such as parents' educational attainments, have been found to be more significant than economic factors in explaining children's educational outcomes and among the most replicated results in child development studies (Shonkoff and Phillips, 2000).

Martha (2009) examined factors affecting academic performance of undergraduate students at Uganda Christian University (UCU). Emphasis was put on trying to establish the relationship between admission points, parents' social economic status, former school background and academic performance of undergraduate students at Uganda Christian University. The study employed the use of correlation design to establish the nature of the relationships. The validity and reliability of research instruments was established and data was collected from 340 respondents selected from all the six faculties of Uganda Christian University using the simple random sampling method. Pearson product moment correlation statistical tool was used to analyse the data with the aim of establishing the relationship between students'

35

admission points, parents' social economic status, former school background and academic performance of undergraduate students at Uganda Christian University. This formed the basis of the detailed analysis, conclusions and recommendations. The findings revealed the existence of a significant relationship between students' A' level and Diploma admission points and academic performance, but there was no relationship between mature age points and academic performance. The findings also revealed that there was a significant relationship between parents' social economic status and academic performance and a significant relationship between former school background and academic performance. On the basis of the findings, the researcher made the following conclusions; A' level and diploma admission points are the most objective way to select just a few students from a multitude of applicants for the limited spaces available at universities in Uganda. Parents' social economic status is important because parents provide high levels of psychological support for their children through environments that encourage the development of skills necessary for success at school. That location, ownership and academic and financial status of schools do count on making a school what it is and in turn influencing the academic performance of its students because they set the parameters of a students' learning experience. On the basis of the conclusions made, the researcher recommended that; Uganda Christian University maintains its selection criteria of using previous academic performance as a measure of admitting students for undergraduate programs. However mature age students could be given supplementary year or probation year to test their competency in addition to the entrance exam. The university should improve the student support system such that students from low social economic backgrounds are identified and assisted through offering scholarships.

In a research study carried out by Baton Rouge Area Chamber (BRAC) (2005), which was in series, the first part of the research series provided an overview of student achievement and district performance in the Baton Rouge area. Part two compared public school districts in the region with those in other metropolitan areas across Louisian and the southern United States, paying particular attention to district performance; the difference between large urban and sub urban district; and socio-economic factors that impact student achievement. The initial findings show that the level of poverty in a district/region generally has a very significant influence on student achievement, with variation across individual areas. The study further explores key factors that impact student achievement in the region. Education experts according to the reports

have identified numerous "in-school" and "non-school" factors that have important influences on learning. In school factors include characteristics of faculty and administrator, district funding and resources, and classroom quality and activities. Non school factors include student life outside of school, parental involvement in education, family and household characteristics. The report submits that young people typically spend only 13 percent of their waking hours in school from birth through age 18. The remaining 87 percent is spent outside the school. The report therefore summarizes its finding through the below model.

FIGURE 2.1 OUT-OF-SCHOOL FACTORS INFLUENCE STUDENT DEVELOPMENT FOR MANY MORE HOURS THAN IN SCHOOL FACTORS
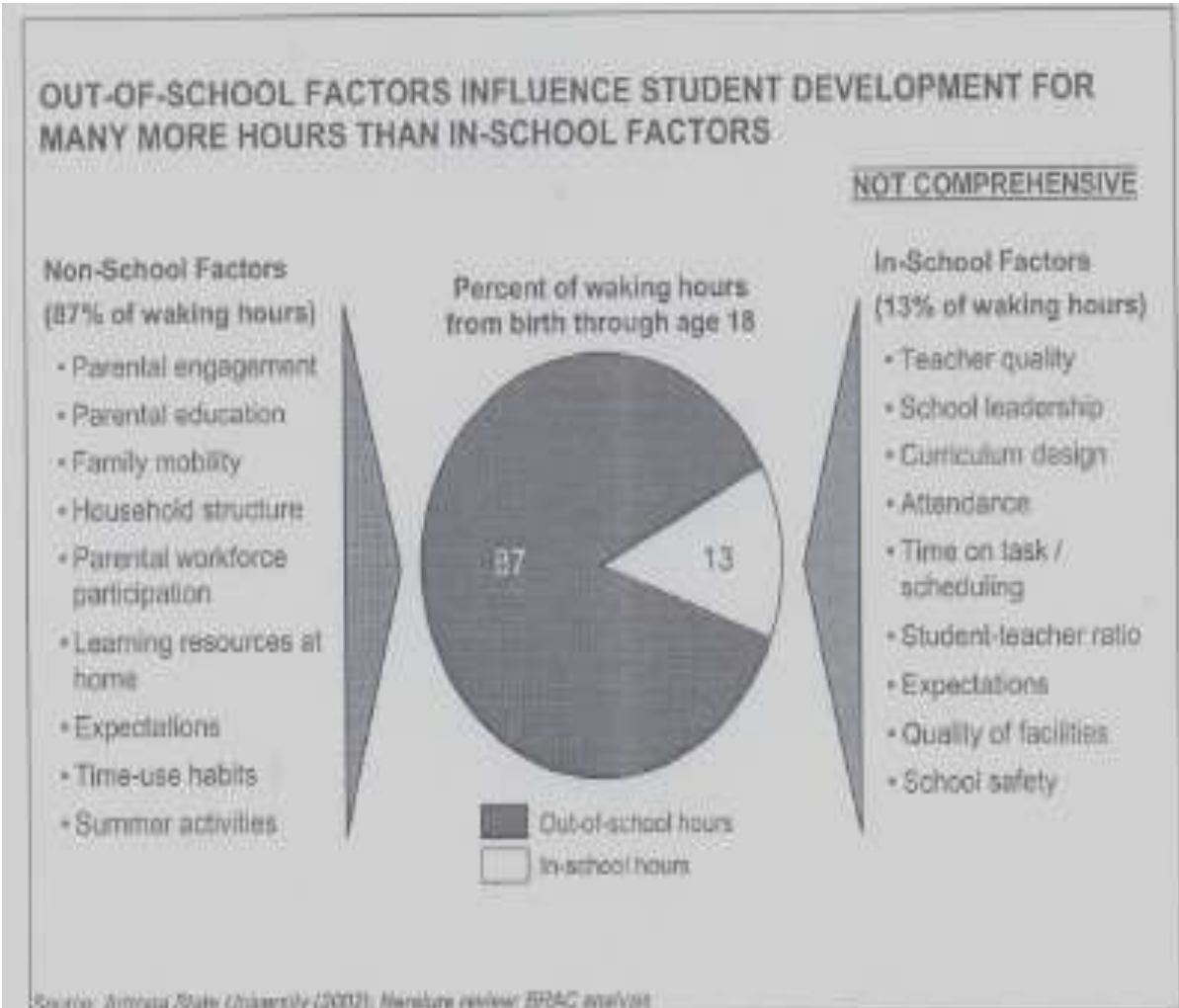
Source: Arizona State University (2002), Marakwa review BRAC analysis

In conclusion however, a combination of a healthy family background living in good environment plus the child being educated in a conducive environment with a fortified learning or instructional aides or motivational incentives will promote academic performance, and lack of it will retard students' outcome.

2.10   Previous studies on Predictive Validity of achievement in examination

Investigations into the predictive validity of public examinations on students' future performances are numerous. Useful summaries of the result of some the large number of predictive validity studies that have been undertaken elsewhere over the past several decades could be found in Morgan (1989), Hezlett et. al (2001), Gonnela et al (2004), Rothstein (2004), Geiser and Santellices (2007) among others. On the local scene, notable individual researchers on the subject include Ohuche (1974), Ojerinde (1974), Obeameta (1974), Alonge (1986), Adegboye (1997), Gbore (2006) and Obioma and Salau (2007).

However, a study by Karen (1990) found the predictive value for performance in medical school of undergraduate grades, the Medical College Admission Test (MCAT), information on the selectivity of the undergraduate institution, and selected transcript data. The performance data examined were basic science grades; clinical science grades; scores on National Board of Medical Examiners Examination, Parts I, II and III; and information on academic difficulty. Methodological sources of differences in validity data, including restriction in range, criterion attenuation, and method specificity are examined. The findings affirm the substantial value of traditional academic predictors of performance in medical school.

There are so many research works on the predictive validity of achievement in examination within the local and foreign scene. Park, Susarla and Massey (2006) evaluated the possible associations between a variety of measures used to evaluate didactic knowledge and clinical performance within a pre-doctoral dental program. Clinical performance was assessed by clinical productivity and clinical proficiency across four different competency areas. Operative density, major restorative density, fixed prosthodontics, and removable prosthodontics. Pre-dental and preclinical predictors were undergraduate GPAs (overall and science), DAT subtest scores including the perceptual Ability Test, PAT), and performance on subtests of part 1 of the National board Dental Examination. The sample consisted of eighty-four students at the Harvard School of Dental medicine who graduated during the period 2002-04. Associations between predictors and outcomes were first evaluated individually. Any

associations that were near statistically significant (P≤0.15) were then included in a multiple linear regression model. The criterion for statistical significance in the multiple linear regression model was $P \leq 0.05$, while a number of measures were associated in bi virate analysis. Few predictors were statistically significantly associated with clinical outcome in the multiple regression analyses. Those predictors that were associated with clinical outcomes were also not consistently associated with the different outcomes. The data indicated that, within the study population, there is little or no uniform association between preclinical didactics performance and measurements of clinical productivity and clinical proficiency.

Similar study was carried out by Bergman, Susarla, Howell and Karimbux (2005). The study examined the relationship between performance on the Dental Admission Test (DAT) and Part 1 of the National Board Dental Examination (NBDE Part 1) for students at the Harvard school Dental Medicine (HSDM). The study was a retrospective cohort examining HSDM students over an eight-year period. Data regarding DAT and NBDE part 1 scores were obtained from the office of the Registrar. Descriptive Statistics were computed for all study variables. Multiple linear regression analyses were subsequently computed to examine the relationship between DAT subtest scores and performance on NBDE part 1 subtests goodness of fit for the models was evaluated using the R-squared value. Statistically significant associations were those with P-value ≤ 0.05 Data were available for 244 students who matriculated at Harvard School of Dental Medicine (HSDM) during the period of 1995-2002.

DAT reading comprehension scores were statistically significantly associated with performance on all four subsections of the NBDE Part 1. DAT general and organic chemistry scores were associated with performances on the microbiology and pathology subtest of NBDE part 1. Performance on the perceptual ability test was associated with performance on the dental anatomy and occlusion subtest. Performance on the DAT reading comprehension subtest was the most reliable predictor of performance on the NBDE Part 1. However, the variability in NBDE Part 1 scores is not accounted for significantly by variability in DAT scores. Other few research studies out of a lot in the foreign scene over the past several decades include Morgan (1989), Hezlett et al (2001), Geiser and Studley (2003), Geiser and Santelices (2007), Latif and Robertson (2000), Bastias, Vallarroeal, Zuniga, Marshal, Verascola and Mena (2000), Bridgeman, Pollack and Burton (2006), Burton and Ramist (2001), Rothstein (2004), and House and Johnson (2002). In the local scene however, few ones among the studies include: Ojerinde

(1974), Obemeata (1974), Ohuche (1974), Alonge (1986), Adegboye (1997), Okwilagwe (1999). Some of the current ones include Gbore (2006), Umo & Ezendu (2008), Obioma and Salau (2007) and Fehintola (2012).

Obioma and Salau (2007) determined the extent to which scores in examinations conducted by the West African Examinations Council (WASSCE), National Examinations Council (SSCE) and National Business and Technical Examination Board (BNCE/NTCE) in conjunction with the Joint Admissions and Matriculation Board (UME) predict future academic achievement of students in university degree examinations. Records on performance in the public examinations of a random sample of 4904 candidates were obtained from 22 Nigerian universities that satisfied certain predetermined criteria. In addition, the candidates' academic records were obtained from these universities in eight core disciplines. The forward inclusion multiple linear regression analysis was used to analyze these data and the postulated hypotheses, tested at 0.01 significance level. The study revealed that there was a low but positive relationship ($0118 \leq r \leq 0.298$) between each of the predictor variables under study. Although, generally, public examinations poorly predicted students' university academic achievement, when compared individually with other predictors. WASSCE was the best single predictor of the students' Cumulative Grade Point Average (CGPA).

The result of the study revealed that even though public examinations were statistically significant, were not of much practical importance in predicting the achievement of university students. However, it was established that the first year university examination results accounted for about 48.2% of the final year examination results. It is therefore an indication that formative evaluation plays a significant role in predicting the achievement of university undergraduate (Obioma and Salau, 2007). The four public examinations in the study employed achievement tests. It may be considered adequate for the certificate examinations being conducted by WAEC, NECO and NABTEB that are designed to measure achievement; but for UME designed as a selection examination to employ achievement test is technically flawed. For this purposes, aptitude tests are preferred to achievement test. To this end, Obioma and Salau (2007) opined that there is a need for a paradigm shift from achievement test to aptitude test for UME.

Given the limited ability of public examinations to predict university outcomes, it is essential that admissions criteria exhibit "content" and "face validity" as well as "predictive validity". It is to say that the criteria bear a direct and transparent relationship to university work

as been advocated for by JAMB (JAMB, 2002). In so far as University Matriculation Examination (UME) or its variants will continue to be used as a criteria for admission, a strong case is therefore made by Obioma and Salau (2007) for curriculum-based, aptitude-type tests, since those tests not only have predictive value but also measure knowledge and skills that are unquestionably important in university work.

Another recent study was undertaken by Salami (2008). The research work investigated the relationship between psychopathology and students; academic performance and the moderator effects of study behaviour, self-efficacy and motivation. Participants were 476 SS2 students (228 males, 248 females) randomly selected form ten coeducational secondary schools in Ibadan, Oyo State, Nigeria. Measures of psychopathology, study behaviour, self-efficacy and motivation were administered on the sample. Data collected were analysed using hierarchical multiple regression. Results showed that psychopathology correlated negatively but non-significantly with academic performance. Study behaviour, self-efficacy and motivation correlated significantly with academic performance and moderated the psychopathology-academic performance nexus. The results suggest the need for counselors to design therapeutic interventions for alleviating the students' psychopathology, increasing their study skills, self-efficacy and motivation for improved academic performance.

Another study by Umo and Ezeudu (2008) also examined the relationship between the UME scores and the post UME scores at the University of Nigeria Uzukka (UNN). The UME results and screening scores of applicants in the 9 faculties in the UNN constituted the target population for the study. The faculties include: Arts, Social Sciences, Biological Sciences, Engineering, Environmental Studies, Medicine, Agriculture, Physical Sciences and Education. Systematic sampling technique was adopted in selecting the sample for the study. Fifty percent of the cases of candidates that sought admission in each of the 9 faculties were selected and used for the study. The analytical tools used were the Pearson-s Product moment correlation coefficient and the t-test of r for testing the significance of the correlation.

The result shows that only Faculties of Agriculture and Medicine have good correlation of 0.67 and 0.54 respectively. Faculties of Arts, Social Sciences and Physical Sciences have low correlation of 0.042, 0.056 and .162. This means that only 2 faculties out of the 9 faculties had correlation coefficients that suggest good positive relationship between UME and screening scores and they are highly professional areas. The study therefore suggests that something is

wrong with other faculties. Either the UME score or screening score is faculty or is fraught with error scores. It also sees medicine and Agriculture to appear to be hitch free of the examination fraud because people entering into both professions appear to be focused and they have discovered themselves. The study suggests that an exam malpractice is more in Arts, Social Science, Biological Science and Physical Science.

The study concluded by indicating that JAMB contributed enormously to the low level of correlation due to the malpractice which has eaten deep into the examination process. The researchers advocated for conducting the screening tests by the universities to further enhance the reliability of JAMB scores. It states, "if the screening test takes place for upwards of five years, malpractice in JAMB will fizzle out as candidates will know that JAMB alone does not provide the answer" (Umo and Ezeudu, 2008).

Gbore (2013) examined the relationship between cognitive entry characteristics, (SSCE, UME, ND and NCE) and academic performance (CGPA) of university undergraduate in South West, Nigeria. It employed ex-post facto research design. The sample, 600 university undergraduates were selected through stratified sampling technique from six government owned universities from South West, Nigeria. One hundred students comprising 50 male and 50 female undergraduates were selected from each of the universities using stratified sampling technique. An inventory, "entry characteristics and academic Performa proforma", was used to collect data from records for the study. Data collected for the study were analysed using mean, standard deviation and correlational analysis. The results showed that there is a positive and significant relationship between the criterion variable (CGPA) and cognitive entry characteristics (SSCE, ND and NCE). There is a low correlation coefficient (0.1751) between CGPA and University matriculation Examination (UME) results. There was a moderate correlation coefficient (0.6740) between CGPA and NCE results, and also, between CGPA and ND results. The researcher recommended the need to make NCE, ND and their equivalents the basic qualification for admission of candidates into undergraduate programmes in Nigerian universities to complement the admission of candidates with good and genuine SSCE and UME results in order to improve the quality of academic performance of the university undergraduates in Nigeria.

William (2010) found out the most effective and efficient way of improving the quality of graduate from Nigerian Universities, by offering admission to only qualified candidates who can guarantee the most desired quality of graduates needed in Nigeria that can compete favorably with the outside world. An ex-post facto designs was employed to investigate the relationship that exists between the academic performance of JAMB Students and Post-JAMB students. The study was carried out at the Federal University of Technology, Yola. The research was carried out in the six schools in the university namely: School of Agricultural and Agricultural Technology (SAAT), School of Engineering and Engineering Technology (SEET), School of Environmental Sciences (SES), School of Management and Information Technology (SMIT),School of Pure and Applied Sciences (SPAS), School of Science and Technology Education (STSE).

The population consists of 116 students admitted and registered into 100 level through JAMB in 2004/2005 academic session and 168 students who were admitted and registered into 100 level through Post-JAMB in 2005/2006 into Federal University of technology, Yola. Stratified random sampling technique was employed the sample. The researcher organised students' records according to departments and four departments were used randomly selected. Two instruments were mainly used for the study. Student's academic status was collected, the collected data was summarized in tables to answer the research questions and test the stated hypothesis. Only 4 years academic status was used because the Post-JAMB Students were yet to complete their 500 level at the time of the research work. Data was collected coded and analysed. Z-test statistical tool was used for testing the research hypothesis at 0.05 level of significant.

The findings of the study clearly show that Post-JAMB screening has a positive effect on academic performance of Nigerian Undergraduate students. This also justify the government policy on implementing the Post-JAMB screening test. The study can now be used to backup the conduct of the Post-JAMB screening in Federal University of Technology hence it is first of its kind in the university since the inception of the Post-JAMB screening in 2005/2006 academic session.

Similarly, Fehintola (2012) investigated the predictive value of SSCE result, UME scores and socio- personal factors on academic performance of university freshmen from five federal universities in the South West, Nigeria. An ex-post-facto research method using correlation designs was adopted for the study. 2518 university freshmen were randomly selected for the study. Academic confidence scale was used to collect primary data on academic self-efficacy from the students while the rest data were collected from the dossier of the students from Exams and records and admission office of the concerned universities. Using multiple regression analysis to process the data, result revealed significant composite effect and relative contributions of age, sex, UME score, SSCE result and academic self-efficacy to the prediction of academic performance of university freshmen. SSCE result was the most potent predictor (B=0.0140; t= 7.241, $p<0.05$) followed by academic self – efficacy (Beta = 0.029, t = 7.237, p <0.05), and followed by age (Beta = -0144, t = 7.024, $p<0.05$). However, sex and UME scores were not potent predictor of academic performance of university freshmen. The findings also revealed significant relationship among age, SSCE and academic self efficacy with academic performance of university freshmen and not with sex and UME scores. The findings also showed that there is significant difference in the academic performance of university freshmen of those wh holds SSCE result by WAEC and NECO, t = 6.795, $p< 0.05$ and there is significant difference in the academic performance of university freshmen with low and high academic self-efficacy and not with sex and the attribution rate is about 7.1%.

Ogbebor (2012) also investigated two modes of selection into the University. The intention was to find out which of them is more effective in ensuring that the best students are admitted. The two modes studied were the Joint admissions and Matriculation Board

mode (JAMB) and the entrance examination by individual university mode, generally regarded as Continuing Education (C.E). The purpose was to predict the effects of the modes in terms of selection of the best students according to intellectual ability. It was an inferential study which adopted the two group comparison design; and was guided by six research hypotheses. Data was collected using first year first semester examination in five subject areas English Language, Modern Mathematics, Additional Mathematics, Physics and Accounts. The data collected was analysed using the t-test statistic. The results showed that the JAMB mode of selection

was more effective compared to the C.E. mode. This result agrees with previous findings. The researcher recommended that the JAMB mode of admission be used exclusively for future admission exercise into Nigerian universities.

Adeyemi (2010) investigated the predictive ability of credit grades in Mathematics in senior secondary certificate (SSC) examinations in predicting the success of students in Educational Management in universities in Ekiti and Ondo States, Nigeria. As a descriptive research, the study population comprised all the 3 universities in the two states. Since Educational Management is being taught in only 2 of the universities, only 2 universities were purposively selected for the study, data were collected through an inventory and analyzed with the use of t-test, correlation analysis, analysis of variance and linear regression. The finding revealed that there was a significant relationship between the entry grade point of credit in Mathematics and the performance of Educational Management students measured by the Cumulative Grade Point Average (CGPA) in universities in the two States. It was also found that the entry credit grades obtained by Educational Management students in Mathematics in senior secondary certificate examinations on the findings of the study, it is recommended that more emphasis should be given to the teaching of mathematics in secondary schools in the two states to enable better performance of students in the universities.

In conclusion, public examinations such as JSSCE, SSCE, (WAEC or NECO) and UME suppose to be good predictors of achievement of university students at the undergraduate levels; but the case is not always true. The reasons could be factors like examination fraud which is common among these examinations. Many candidates passed the examination through malpractices and could not cope to defend the results they got from those public examinations. Other factors that make students perform below expectations in the University could be the background they had from their secondary schools system and the type of support they got from home through their parents.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology for this study as follows:

(i)   Research type

(ii)   Variables of the study

(iii)   Sampling procedure and sample

(iv)   Instrumentation

(v)   Data collection

(vi)   Data analysis

3.1   Research Design: The study is ex-post facto. The researcher did not manipulate any variable because they have already occurred. The ex-post facto research is a systematic empirical inquiry in which the researcher does not have direct control of the independent variables because their manifestation have already occurred or because they are inherently not manipulatable.

3.2   Variables of the Study

The variables of the study are:

(a)   Exogenous Variables

(i)   JSCE results

(ii)   SSCE results (WAEC, NECO)

(iii)   UME results

(iv)   Student home background

(v)   Secondary School factors (quality of facilities, equipment, staff and management).

(b)   Endogenous Variable

Undergraduate performance in the first year.

3.3   Population

The target population of this study comprised all university undergraduates admitted in 2006 and 2007 through UME in South-West, Nigeria. UME scores were used because JAMB has not introduced UTME as at that time. This is because those who gained admission in those years have obtained Cumulative Grade Point Average (CGPA) for the first   year in the various universities by the time of this study was undertaken.

3.4   Sampling Procedure and Sample

Multi-stage sampling was employed in selecting the subjects for this study. Simple random sampling method was used to select two states from the South-West zone while the Universities were clustered along public and private. Two Universities were then randomly selected from each of the clustered public and private Universities. From each of the University selected four faculties and departments were purposively selected because of the subjects we considered for this study. Simple random sampling method was adopted in selecting one hundred participants from each of the departments. Purposive sampling method was then used to select those samples whose secondary schools could be traced within the South-West zone. The students sampled have passed JSSC examination, SSCE and have gained admission into Universities through UME. In all, nine hundred and eighty eight (988) undergraduate were used in this study. Table 3.1 shows the number of participants that were selected from the departments and their universities.

Table 3.1 DISTRIBUTIONS OF THE SAMPLES FROM THE FOUR UNIVERSITIES

UNIVERSITIES	STATUS	DEPARTMENTS						TOTAL	PERCENTAGE
		ENGLISH	MATHEMATICS STATISTICS & COMPUTER	CHEMISTRY/ BIOCHEMISTRY	ECONOMICS	BIOCHEMICAL SCIENCES & BIOTECHNOLOGY	NURSING SCIENCES/ PUBLIC HEALTH		
UNIVERSITY OF IBADAN	PUBLIC	70	63	60	72	-	-	265	26.8
UNIVERSITY OF LAGOS	PUBLIC	62	67	68	60	-	-	257	26.0
CALEB UNVERSITY	PRIVATE	-	59	51	58	70	-	238	24.1
LEAD CITY UNIVERSITY	PRIVATE	-	66	53	36	-	73	228	23.1
TOTAL	-	132	255	232	226	70	73	988	100

Table 3.1 above shows that 265 (26.8%) students were sampled from university of Ibadan; while 257 (26.0%) students were sampled from university of Lagos. Caleb and Lead City universities had 238 (24.1%) and 228 (23.1%) students sampled from each of them respectively. One hundred and thirty two students were sampled from English department, 255 students were sampled from Mathematics, statistics and computer department. 232 students were sampled from Chemistry/Biochemistry department. Economic department, Biochemical Sciences & Biotechnology and Nursing Sciences/Public health has 226, 70 and 73 students sampled from each of them respectively. In all, 988 students were sampled for this research work.

3.5   Instrumentation

The following records and instruments were used to collect data for this study.

Records

(i)   JSSCE result of the sampled students (Records);

(ii)   SSCE results – WAEC or NECO of the sampled students (Records);

(iii)   UME result of the sampled students (Records);

(iv)   The 1st year results of the sampled students Cumulative Grade Point Average (CGPA) (Records);

Instruments

(v)   Student Home Background Questionnaire (SHBQ);

(vi)   School Factors Questionnaire (SFQ).

(i)   Junior Secondary School Certificate Examination Results (JSCER)

JSSCE is a public examination administered to all students at the end of the third year in secondary school. At that level it serves as a summative evaluation, since it terminates the end of the junior secondary school in Nigeria. This examination is conducted by two different bodies in Nigeria. The first one is the National Examinations council (NECO) which is responsible for the conduct of JSSCE in all Federal and Unity schools in the country. Interested private secondary schools also partake in the examination.

The second body is the state Ministry of Education or its designated agents such as State Examination Board. This body is responsible for the conduct of JSSCE in their state secondary schools. Interested private secondary schools do partake in the examination. The two bodies do construct and validate their questions before they administer them to the students. The JSSCE results were therefore collected through each of the student sampled and traced to their former secondary schools for the confirmation of the results. This result was the data used for predicting the performance of students in the SSCE results.

(ii)   Senior School Certificate Examination Results (SSCER)

Senior School Certificate Examination is conducted in Nigeria by two bodies. The first is the West African Examinations Council (WAEC) and the second is the National Examinations Council (NECO). The first is a regional examination body as the name indicates, West Africa; while the other is National examinations Council. The two bodies use experts in constructing their questions and validate them before the administration on the candidates. Research works have revealed that the processes used in the construction and validation of WAEC examinations were valid and satisfactory.   The SSCER were collected through each of the sampled students and through the students' records at their various universities. The data collected here were used in two folds. They were used to determine if the results of JSCE predicted the SSCE result. Also used on how best the data could predict the UME result.

(iii)   University Matriculation Examination Results (UMER)

University Matriculation Examinations is a public examination conducted by the Joint Admission and Matriculation Board (JAMB) to all respective candidates seeking admission into university in Nigeria. The UME has now been changed to UTME by JAMB. The questions being used are constructed, validated by the experts before they are administered to the respective candidates. The UMER was collected through each of the sampled student in the various departments and in the admission records of the sampled universities. The data were used to confirm if the SSCER was a good predictor for it. The data was also used to predict the performance of students at the first year in the university.

(iv)   The First year Results of the sampled students. Cumulative Grade Point Average (CGPA)

The results being referred to here are the Cumulative Grade Point Average (CGPA) of undergraduates. They are the scores of achievement tests and continuous achievements scores computed by the university lecturers. These records were collected at the academic offices of the respected sampled students. The data collected here were used to consider if the data collected from the UMER predicted and correlated with it. It was also regressed with the past records of the sampled students if they correlated with one another.

(v)   Student Home Background Questionnaire (SHBQ)

This was adapted by the researcher from Idowu (1991). The instrument was designed to elicit the home environment and maturation variables; and how each variable affects the performance of students. It is in four parts:

Part 1: This part comprises of 13 items that got information on respondents' demographic characteristic such as age; sex; name of secondary school attended, location, and number in the family and so on.

Part II: This was designed to obtain information about each student's parental educational and occupational levels. It also elicited information about the social status of the family. It comprises of four items.

Part III: This part was designed to obtain information about the learning environment provided at home for the students. This comprises of facilities available for learning at home. It comprises of eleven items (11) which requires "Yes or No" response.

Part IV: This part was designed to elicit response from the students about their experiences and feelings at home. It contains of eleven items (11). Each item was followed by possible responses. The instrument was revalidated by the researcher. Cronbach coefficient alpha was used to determine the reliability. The reliability was 0.78.

(vi)   School Factors Questionnaire (SFQ)

This instrument was adapted from Lawani (2004) inventory of facilities. It is a thirty three (33) items which sought information on the use of learning materials. This was designed to find information concerning teacher students' ratio, school location and inventory of the school facilities.

The questionnaire was divided into two sections. Section A elicited information concerning age of school; number of teachers in school; number of students in school and location of the school. It also asked for the scores of the past examinations. Section B sought out the inventory of school facilities, this borders on whether the materials available are adequate or not. The instrument was revalidated by the researcher. The reliability coefficient of 0.72 was obtained using Cronbach alpha.

3.6   Data Collection Procedure

The researcher collected letters from the Head of Unit, International Centre for Educational Evaluation (ICEE) Institute of Education University of Ibadan introducing him to all the four Universities sampled and other schools visited. The letters which were addressed to the Registrars of those universities served as the gateway to access all the documents of the sampled students in the various departments. These documents include their SSCE and UME results. The Cumulative Grade Point Average (CGPA) of the first year in the University of the Sampled Students was also collected from the registrars of the various universities. The researcher also got a written permission letters from the registrars to the various departments of the sampled students. This enabled him relate with the students officially. By having a direct contact with the students, it gave him the chance of requesting students to bring their JSSCE results from home since that result is not part of documents expected to get at the registrar's office. It also gave the researcher the opportunity to administer the questionnaires on the students.

The researcher trained eight research assistants. Two from each of the four universities sampled to assist in gathering data for the study. The class representatives were useful to the researcher in distributing and collecting of the instruments to other colleagues. The lecturers who are the course coordinators also helped in the distribution and collection of the instruments to the samples. The researcher and the assistants then traced the results to the respondents' secondary schools especially for the JSSCE results. Some of these results were also traced to the state Ministries of Education and state offices of NECO.

3.7 Scoring Procedure

The data collected was scored before the analysis. For this reason, JSSCE results was scored by awarding A-5; B-4; C-3; P-2; and F-1; eight subjects were calculated for each of the subject in the study. As for the SSCE NECO or WASSCE, the grading of both examination bodies is similar. A1 =9, B2 =8, B3 =7, C4 = 6, C5 =5, C6 =4, D7 =3, E8 =2 and F9 = 1 The best five subjects were considered for the candidates which include English and Mathematics. As for the UME, since the maximum marks are 400, the marks were regressed based on what each of the candidates scored. .

For the Cumulative Grade Point Average (CGPA) in the University, the raw scores collected on the various courses offered in the department which was not be less than ten in the first year. These raw scores have been computed by the universities. These scores were re-scored based on 5points as the highest a candidate can score.

The scores were then regressed based on what individual candidate scored.

Part 1 of SHBQ that has 13 items was scored based on each of the item. For example the variable Age was grouped thus:

15-20 - 5   21-25   -   4
26-30 - 3   31-35   -   4
36 & above - 1

Also sex was male = 1 and female 2.

Part 2 was used to elicit information on the general status of the parents. Education of the parents was scored as follows:

Degree/HND and above   4
School certificate/OND/NCE   3   First school leaving certificate   2

Did not attend school   1

Also the type of job was scored thus:

Politics   4   Public servant   3

Business   2   Farming   1

Part 3 of the questionnaire is dichotomous – Yes or No. Yes was awarded 1, while No was awarded 2. Part 4 too was scored based on the alternative provided. These are: A to represent 1; B to represent 2; C to represent 3; D to represent 3; while E to represent 4.

Scoring of school Factors Questionnaire (SFQ) was based on 1 or 2 points in section A and section B was scored by using 3, 2, 1 for available and adequate; available but not adequate; and not available respectively.

3.8   Method of Data Analysis

Path analysis was used to analyse this work. Path analysis is a method of studying the direct and indirect effects of variables taken as causes on variables taken as effect. Kerlinger and Lee (2002) opine that Path analysis is a form of applied multiple regression analysis that uses path diagrams to guide problem conceptualization or to test complex hypotheses. According to Mertler and Vannatta (2005) the following should be put into consideration if path analysis should be used.

a.   The model must accurately reflect the actual causal sequence.

b.   The structural equation for each endogenous variable includes all variables that are direct causes of that particular endogenous variable.

c.   There is a one-way causal flow in the model, that is, there can be no reciprocal causation between variables

d.   The relationship among variables is assumed to be linear, additive and causal in nature; any curvilinear relations are to be excluded

e.   All exogenous variables are measured without error (Tate, 1992, Pedhazur, 1982 in Mertler and Vannatta, 2005).

In path analysis, data will involve the use of confirmatory causal modeling consisting of two related multivariate analytical techniques, that is, multiple regression (backward solution) and path analysis. In the use of path analysis, the researcher is to:

(i)   build a hypothesized causal model on the basis of temporal order, research findings and theoretical considerations (Bryant and Doran, 1977)

(ii)   Path in the model through structural equations should be identified.

(iii)   The researcher needs to trim the paths of the model based on statistical significance and

(iv)   Validate the new model by reproducing the zero-order correlation matrix of the variables from a set of normal equations using the path coefficients in the new model.

3.9   Building the Hypothesized Recursive Path model

This is construction of the hypothesized causal model showing a linear relationship among the exogenous and endogenous variables on the basis of temporal order, research findings and theoretical basis. One needs to measure the variables as accurately as possible by using the appropriate variables.

a.   Consider the variables X1 (i=1, 6, 7 & 8). The relationship among these variables is represented in figure 3.1
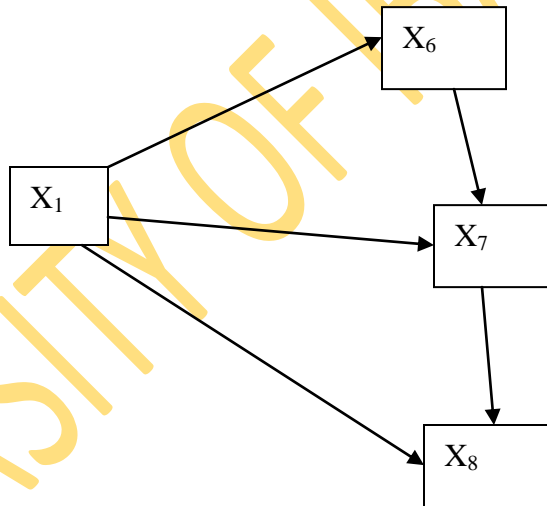
Figure 3.1: Causal paths among X_1
(I = 1, 6, 7 & 8)
X_1 = Parent education; X_6 -= JSSCE; X_7 = SSCE;
X_8 = UME.

Students' academic performance in University Matriculation Examination (UME) (X_8) depends on the performance of students in Senior School Certificate Examinations (SSCE) (X_7). On temporal order, the performance in the Junior Secondary School Certificate Examination (JSSCE) (X_6) affects the performance of students in SSCE (X_7). On the theoretical ground, parent education (X_1) directly affects the performance of students in JSSCE (X_6) SSCE (X_7) and UNE (X_8). A well educated parent gives necessary directions to his child such as counseling, provision of enabling environments etc.

On the grounds of research findings, Carlson and Christension, (2005); Connor, Tyers, Modood and Hillage, (2004) in their investigations found that parents' education (X_1) has a direct influence on their children's achievements in the College (X_6) and at their final examinations (X_7). In a similar research work by Desforges, (2003) he found out that the level of parents education (X_1) normally determines the type of career and the achievement of students after leaving college. This is to conclude that the parents education (X_1) has a direct effect on JSSCE (X_6), SSCE (X_7) and even at UME (X_8) where examination to determine students choice of career is taken. Parents with higher levels of education are more likely to believe strongly in their abilities to help their children learn. A study by McBride and Schoppe-Sullivan (2005), explored the relationships between level of parent education (X_1) parent self-efficacy, children's academic abilities and participation in a Head start programme found that level of parent education and programme participation were significantly related to parental self-efficacy. In turn, parental self-efficacy beliefs significantly predicted children's academic abilities and achievements.

    b.   Consider the variables X_1 (i=1, 2 & 3).

Figure 3.2: Causal paths among X_1 (i= 1, 2 & 3)
X_1 = Parent education; X_2 = Parent income;
X_3 = Home facilities.
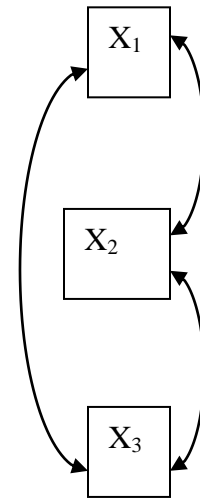
The variable X_1, X_2 & X_3 are exogenous variables in this study that can influence other variables but cannot be influenced by others. Theoretically, the linkages among X_1, X_2 & X_3 have double arrows and showing possible ways of relations. The variables are exogenous and are likely to be correlated because Parent income (X_2) may influence parent education (X_1) and the type of facilities at home (X_3). Also well educated parent (X_1) is likely to get a better job so as to facilitate his income (X_2). The type of facilities at home (X_3) affects his income (X_2) and

the level of education. A parent that lives in a 3 bedroom flat may likely pay more than the one living in a room apartment. This will in turn affect the income (X_2) and the conveniences in the two types of accommodation affect the education of the parent (X_1). It is therefore logical that the 3 variables affect one and other as shown in figure 3. 2.

  c.   Consider the variables X_1 (i= 2, 4, 6, 7 & 8). The relationships among the variables are represented in figure 3.
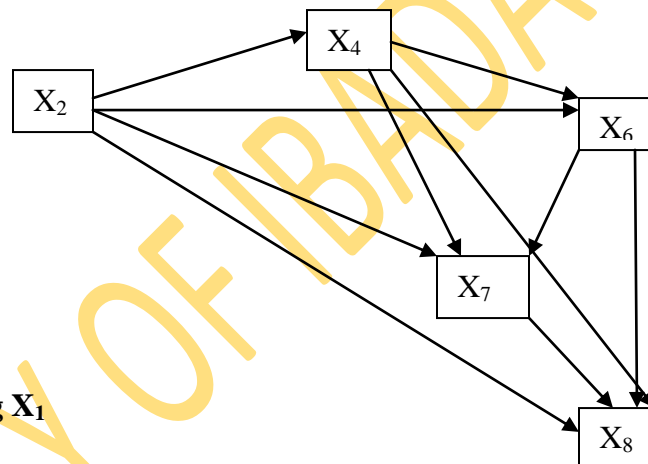
**Figure3.3: Causal paths among X_1
(I = 2, 4, 6, 7 & 8).
X_2 = Parent income; X_4 =
physical facilities in school; X_6 = JSSCE;
X_7 = SSCE; X_8 = UME.**

The performance of students in the UME (X_8) depends on their performance in SSCE (X_7) and in most cases their performance in JSSCE (X_6) is affected by the type of facilities in the school (X_4). On the theoretical grounds, parents' income (X_2) affects the facilities in the school (X_4). A well to do parent with a well packaged income can afford to contribute to the development of physical facilities in school (X_4) such as building library in the school or even contribute to the employment of PTA teachers where government could not provide. Provision of physical facilities in the school will definitely affect the performance of students in JSSCE (X_6) SSCE (X_7) and UME (X_8).

On the ground of research findings, Barton and Coley, (2007) reported that students living in poverty with low income of the parents (X_2) deal with numerous obstacles such as attending poor quality school, violence, and limited access to health care and insurance, all of which affect the students performance in examinations such as JSSCE (X_6) SSCE (X_7) and UME

(X_8). Achievement Gaps, (2008) remarks that low quality home life with low income of the parents (X_2) can mean not having the parents around these children to help in the school work because they have to work long hours to make ends meet as such it affects their performance in exams (X_6), (X_7) & (X_8). Jacob and Harvey, (2005); Mateakeju and Strakova (2005) and Picus, Marion, Calvo and Glenn (2005) all found out that parents' income (X_2) is a predictor of students achievements in life. Akanle (2007) further reported that parent's income (X_2) and the level of parents involvement in pupils education has great influence on their performance. However, Urban Students (2008) and Dyer, (2008) though agree that parents level or standard of living through the income (X_2) does affect academic achievement but not always in a negative way. A report published by the centre on Education Policy found that "low-income students at public urban high school generally perform as well on achievement tests as students who attended private high schools that pay high fee (Urban students 2008). Entwisle and Olson (2001); Redding, (2000) and Henderson and Mapp, (2002) all agree that parents income (X_2), school facilities and some other variables do affect students achievements.

    d.   Consider the variables X_1 (i=4, 5, 6, 7, 8 & 9). The relationships among the variables are represented in figure 4.
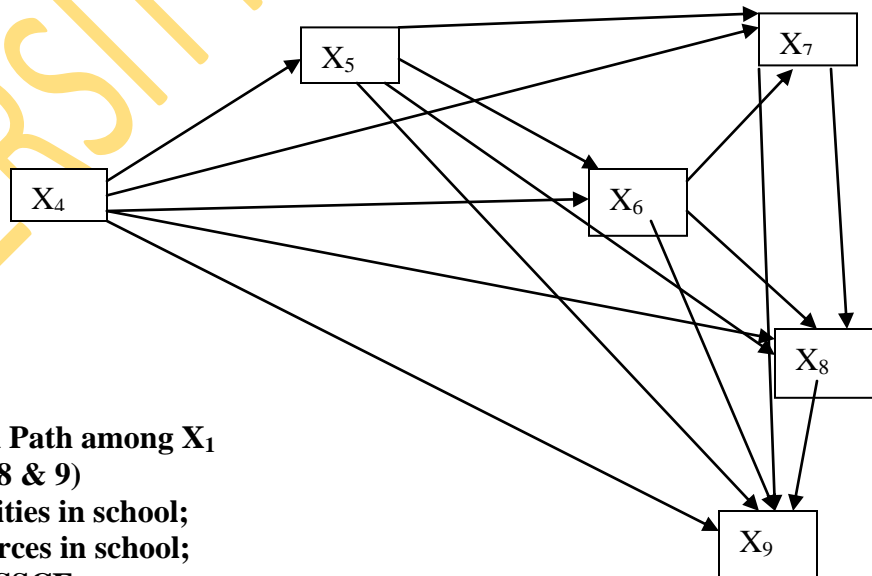
Figure 3.4: **Casual Path among X_1**
(I = 4, 5, 6, 7, 8 & 9)
X_4 = **Physical facilities in school;**
X_5 = **Human resources in school;**
X_6 = **JSSCE; X_7 = SSCE;**
X_8 = UME; X_9 = first year CGPA in the university.

Many studies have related students' performance to various aspects of education variables such as physical facilities in school (X_4) and adequate human resources (X_5). The breakdowns of such both human and physical facilities were highlighted by Kingdon and Teal, (2002). These include physical infrastructure in the school, such as library, good and well ventilated classrooms, toilets, laboratories etc. Human resources include adequate of teaching and non teaching staff, incentive for the teachers, training and re-training of teachers etc.

A comparative study on public schools among states in the United States found that physical facilities in school (X_4) with smaller class sizes contribute positively to students learning and achievement in exams (X_6) (Darling-Hammond, 2000). Another study found that there is a consistent negative relationship between students' teacher ratio-human facilities (X_5) and the average examination results SSCE (X_7) in UK private schools (Graddy and Stevens, 2003).

Other studies stated that teachers (X_5) are the most important influence on student progress and achievement $(X_6, X_7, X_8 \& X_9)$, even more than socio-economic status and school location (Archer, 1999 and Armentano, 2003), while Darling-Hammond, (2000) concluded that measures of teacher preparation and certification are by far the strongest correlates of student achievement in reading and Mathematics. Goldhaber and Anthony (2003).

Lasley, Siedentop and Yinger (2006); Mateakeju and Strakova (2005) and Picus, Marion, Calvo and Glenn (2005), all agree in their various research works that physical facilities (X_4) and human resources (X_5) in school have impact on students achievements at various stages of achievements $(X_6, X_7, X_8 \& X_9)$.

It is therefore logical to say that a school with good physical facilities (X_4) and well equipped with good and qualified teachers – human resources (X_5) will have affect on the achievement of students at JSSCE (X_6) SSCE (X_7), UME (X_8) and first year CGPA in the University (X_9).

d.   Consider the variables X_1 (i=1, 2, 4, 5, 6, 7, & 8). The relationships among these variables are represented in figure 5.
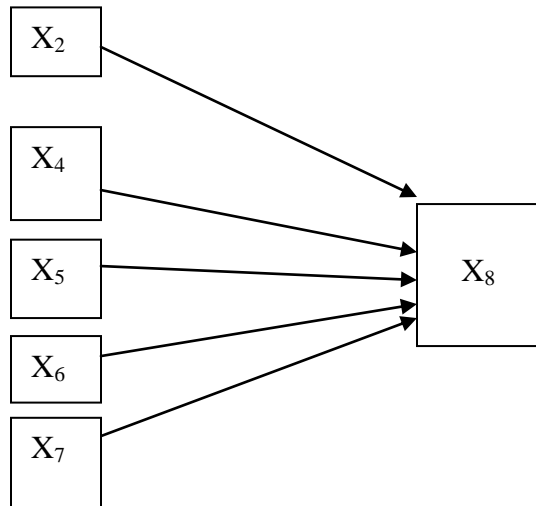
Figure 3.5: Causal paths among X_1 (i= 2, 4, 5, 6, 7 & 8).
X_1 = Parent Education; X_2 = Parents income; X_4 = physical facilities in school. X_5 human resources in school; X_6 = JSSCE; X_7 = SSCE; X_8 = UME.

According to Mateakeju and Strakova, (2005); Danesy and Okediran,(2002); and Jacob and Harvey, (2005) home support which include parents education (X_1) parent income (X_2) and socio economic background do affect students outcomes (X_8) in school. Also physical facilities in school (X_4) and the human resources (X_5) have great impact on students' achievement (X_8). Research monks by EPA, (2000); Kennedy, (2001) and Leach, (1997) found out that provision of good facilities in school such as well ventilated classroom, less congested classrooms affect the performance of students. The works concluded that poor indoor air quality makes teachers and students sick and sick students and teachers can't perform as well as healthy ones.

 In another study by Faleye and Afolabi (2005), JSSCE (X) has influence on SSCE (X_6) and subsequent examinations such as UME (X_8). The study was carried out to determine the relationship between the JSSCE (X_6) and SSCE (X_7) in Osun state Junior Secondary schools. The result concludes that overall performance in JSCE (X_6) across the six subjects investigated has a weak influence on SSCE (X_7) except English and Mathematics.

f. Consider the variables X_1 (I = 1, 2, 4, 5, 7, 8 & 9). The relationships among the variables are represented in figure 6.

Figure 3.6: Causal Path among Xi
   (i = 1, 2, 4, 5, 7, 8& 9)
X_1 = Parent education; X_2 = Parent income;
X_4 = Physical Facilities in school;
X_5 = Human Resources in school;
X_7 = SSCE; X_8 = UME; X_9 = first years CGPA in
   the university.

Parent education (X_1) and Parent income are taken as exogenous variables, have influence on facilities in school (X_4) and human resources in school (X_5). Educated parents that hold key and top positions in Government may use their influence to provide necessary facilities in school (X_4) including human resources (X_5) such as good teachers and better school administrators. Provision of these variables will have influence on the performance of students in SSCE (X_1), UME (X_8), and first year in the university.

According to Redding (2000), the home influence on academic learning of student is significant. Such home influence includes the financial support of the parent through the parent income (X_2) and the literacy attainment of parent (X_1) that has impact on the students are some of the variables he highlighted as the home influence. Patrikakon and Weissberg, (2000) buttress this idea by concluding in their research work that home supports for learning create positive habits of learning for students that enhance teachers' effectiveness and can be implemented with parents' level of income (X_2) and education (X_1). The outcome of which affects the performance of students in SSSCE (X_7), UME (X_8) and other future exams.

Christenson and Sheridan, (2001); Pianta and Walsh, (1996); and Hansen, (1986) agree that home factor (including parents education (X_1) and parents income (X_2) and school factor

(which include physical facilities (X_4) and human resources (X_5) can function as either protective factor or a risk factor for students learning and outcomes exams (X_7), (X_8) & (X_9). As a protective factor, families are active partners, supportive, and involved. As a protective factor, educators invite families, inform families, and include families in decisions. For a significant number of students, however, discontinuity between home and school is a risk factor, particularly with respect to expectations; value placed on learning and outcome as well as communication patterns (Pianta and Walsh, 1996).

According to Chall (2000), processes and characteristics that affect academic outcomes or achievement are essentially the same; whether found in the home (through parent education (X_1) and Parent income (X_2) or in the school via physical facilities (X_4) and human resources (X_5). Although this may seem initially to be an intriguing statement, the home predictors of school learning; work habits of the home, academic guidance and support, stimulation to explore and discuss ideas and events, language environment, and academic aspirations and expectations (Kellaghan, Sloane, Alvarex, and Bloom, 1993) are similar to school factors that enhance achievement. The various relationship show that the hypothesized among X_1 (I = 1, 2, 4, 5, 7, 8 & 9) are as shown in figure 3.6 above.

Consider the variables X_1 (I = 3, 6, 7, 8 & 9). The relationships among the variables are represented in figure 7.
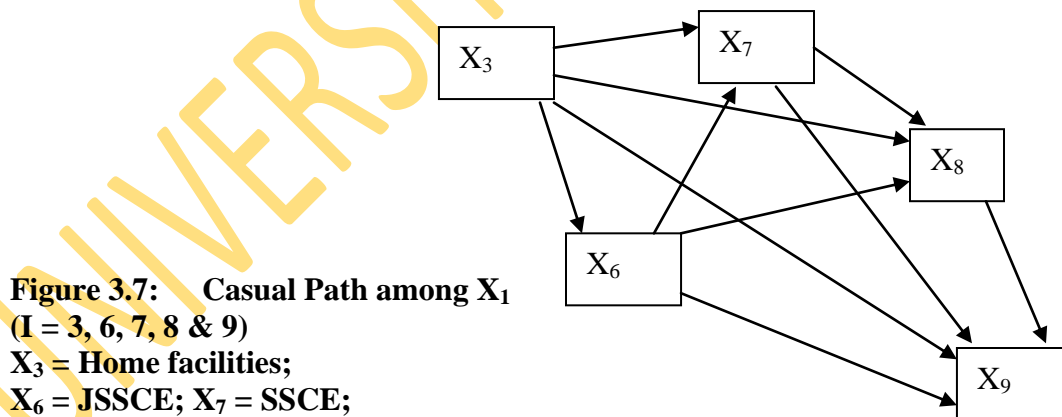
Figure 3.7:   Casual Path among X_1
(I = 3, 6, 7, 8 & 9)
X_3 = Home facilities;
X_6 = JSSCE; X_7 = SSCE;
X_8 = UME; X_9 = first year
**   CGPA in the university.**

Home facilities (X_3) taken as exogenous will definitely affect the performance of students in JSSCE (X_6) and other subsequent public examinations. On the ground of research findings, Patrikakou and Weissberg (2000) found out that home support for students through the provision

of a good house (X_2) creates positive habits of learning that enhance teachers' effectiveness and can be implemented with parents across income levels. Connor, Tyers, Modhood and Hilage, (2004); Desforges (2003) all agreed that parents standard of living including the type of house they live and the facilities at home (X_3) do encourage students to have better attitude to learning and thus affects performances in all examinations.

Consider the variables X_1 (i = 1, 2, 3, 4, 5, 6, 7, 8 & 9). The relationships among these variables are represented in figure 3.8
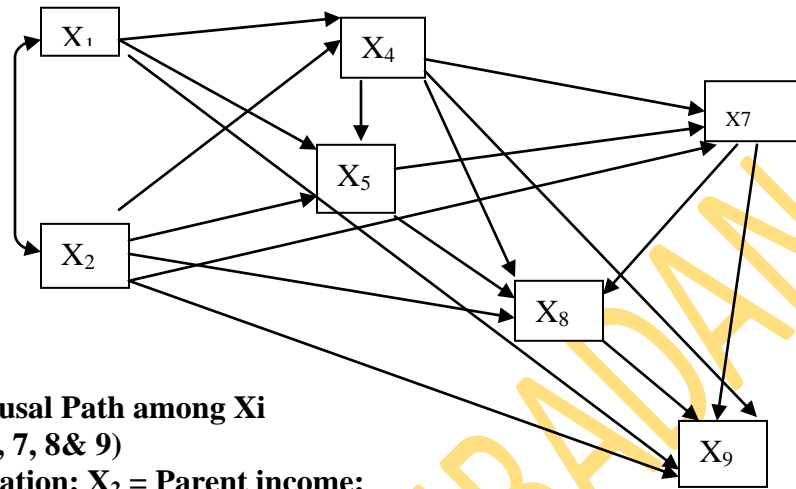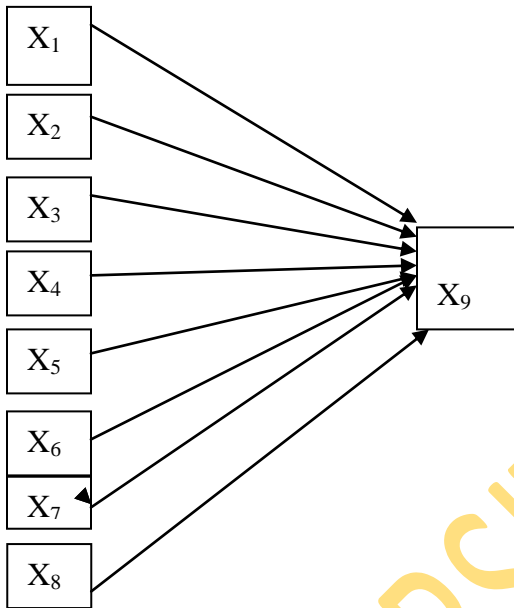

Figure 3.8: Causal path among Xi (i = 1, 2, 3, 4, 5, 6, 7, 8& 9)
X_1 = Parent education; X_2 = Parent income; X_3 = Home facilities; X_4 = Physical facilities in school; X_5 = Human resources in school; X_6 = JSSCE; X_7 = SSCE; X_8 = UME; X_9 = first years CGPA in the university.

On the ground of temporal order, theory and research findings evidence has shown that parent education (X_1), parent income (X_2), type of facilities at home (X_3), physical facilities in school (X4), human resources in school (X_5), JSSCE (X_6); SSCE (X_7), UME (X_8) have relationship with the first year CGPA in the university (X_9). (PISA, 2000; Shittu, 2004; Danesy and Okediran, 2002, Daesy, 2004; Akanle, 2007; Zhang, 2006; Jacob and Harvey, 2005; Picus, Marion, Calvo and Glenn, 2005; Desforges, 2003; Darling-Hammond, 2000; Carlson and Christension 2005; Connor, Typers Kosestaad and Hillage, 2004). The hypothesised linkages between variables Xi (i = 1, 2, 3, 4, 5, 6, 7, 8 & 9) are shown in figure 8. All the paths in the diagram except those linking 1-3 (r_{13}) have single arrow head indicating the direction of effect, thus showing that the paths in the diagrams are recursive models. For the path linking 1, 2, & 3

(r1, 2, 3) there is a two-way relationship. All unexplained or error variance are labeled 'e' (Onocha, 1985.)

The building up of this hypothesized recursive path model derives from previous research findings, temporal order and theory as suggested by Blalock (1971), Duncan (1975), and Bryant and Doran (1977). In identifying the paths in the model, several regression analyses will be run in order to compute the path coefficients for the model. However, many regression analyses of standardized scores were used to obtain beta weights whose significance was tested and meaningfulness determined.

Figure3.9: **Hypothesized Recursive Path of nine variable models**

KEY: X_1 = Parent education; X_2 = Parent income; X_3 = Home facilities; X_4 = Physical facilities in school; X_5 = Human resources in school; X_6 = JSSCE scores X_7 = SSCE scores X_8 = UME scores X_9 = 1st year CGPA

Figure 3.9 shows the hypothesized model with its causal paths. The researcher identified the significant paths of the model after exploring all the hypothesized linkages by forming a set of structural equations labeled 3.1 to 3.6. Each of equations 3.1 to 3.5 correspond to each independent variable while 3.6 corresponds to dependent variable. The structural equations are:

64

$$X_4 = P_{41} X_1 + P_{42} X_2 + P_{43} X_3 + e_4 \qquad \dots \quad 3.1$$

$$X_5 = P_{51} X_1 + P_{52} X_2 + P_{53} X_3 + P_{54} X_4 + e_5 \qquad \dots \quad 3.2$$

$$X_6 = P_{61} X_1 + P_{62} X_2 + P_{63} X_3 + P_{64} X_4 + P_{65} X_5 + e_6 \qquad \dots \quad 3.3$$

$$X_7 = P_{71} X_1 + P_{72} X_2 + P_{73} X_3 + P_{74} X_4 + P_{75} X_5 + P_{76} X_6 + e_7 \qquad \dots \quad 3.4$$

$$X_8 = P_{81} X_1 + P_{82} X_2 + P_{83} X_3 + P_{84} X_4 + P_{85} X_5 + P_{86} X_6 + P_{87} X_7 + e_7 \qquad \dots \quad 3.5$$

$$X_9 = P_{91} X_1 + P_{92} X_2 + P_{93} X_3 + P_{94} X_4 + P_{95} X_5 + P_{96} X_6 + P_{97} X_7 P_{98} X_8 + e_8 \qquad 3.6$$

It is however, clear that six regression analyses were run in order to compute values of the path coefficient for the hypothesized model. According to the experts in causal modeling, only meaningful paths with coefficient at 0.5 level and above were retained. The insignificant paths were erased while the absolute value of a path coefficient was taken to be at 0.05 as recommended by the experts Land 1969; Kerlinger and Lee, 2002; and Pedhazur, 1982.

Validation and verification of the usefulness of the model was done by reproducing the original path coefficient in the new model using normal equations. If the difference between the original and the reproduced correlations is minimal, it implies that the model is good and that the original data are consistent with the new model. If the difference is much, one may need to modify the model and re-compute. 'The more models one tries the nearer the reproduced correlation would be to the original data.

CHAPTER FOUR

4.0 Introduction

This chapter presents the results and discussions derived from analysis of data obtained from the respondents who participated in this investigation. The results are presented and discussed with respect to the research questions raised in chapter one.

4.1 Research Question One

What is the pattern of performance in term of CGPA of the undergraduate students during their first year?

The pattern of performance in term of CGPA of the undergraduate students during their first year is described in the following tables.

Table 4.1: Pattern of performance in term of CGPA of the undergraduate students during their first year

CGPA	Freq.	%
0 – 1.0	3	0.30
1.1 – 2.0	55	5.6
2.1 – 3.0	219	22.1
3.1 – 4.0	488	49.4
4.1 – 5.0	223	22.6
TOTAL	**988**	**100**

Table 4.1 shows that 988 students responded to the instruments. Those whose CGPA falls within 3.1 – 4.0 are the highest with 49.4%. It was followed by whose CGPA fall within 4.1 – 5.0 with 22.6%. Those who have 0 – 1.0 CGPA are 3 with 0.30%.

Table 4.1.2.

The Pattern of performance in term of CGPA of the undergraduate students during their first year

CGPA	N	MINIMUM	MAXIMUM	MEAN	SD
	988	0.86	4.60	3.4326	.77503

Table 4.1.2. above shows the minimum and maximum CGPA of the respondents. From the table, the minimum CGPA is 0.86 and the maximum CGPA is 4.60. The mean value is 3.4326 which indicates that majority of the students were at the second class lower division (2/2) and above after the 1st year academic session.

4.2. Research question two

What is the most meaningful causal model involving the listed causals: JSSCE, SSCE, UME, Home background, and the School factors in the first year CGPA of undergraduate performance in the university?

The hypothesised model already shown in figure 3.9 was reproduced as figure 4.1. The path coefficients and zero order correlation coefficient are written on each pathway with the correlation coefficients in parenthesis. Testing the significance of the path coefficients in the hypothesized model resulted in data which shows that 25 out 37 hypothesised paths met the criteria of significance at 0.05 levels meaningfulness and have a link with the criterion variable (CGPA). The hypothesized model was therefore trimmed and re-specified to produce a more parsimonious model with 25 surviving paths (figure 4.2).
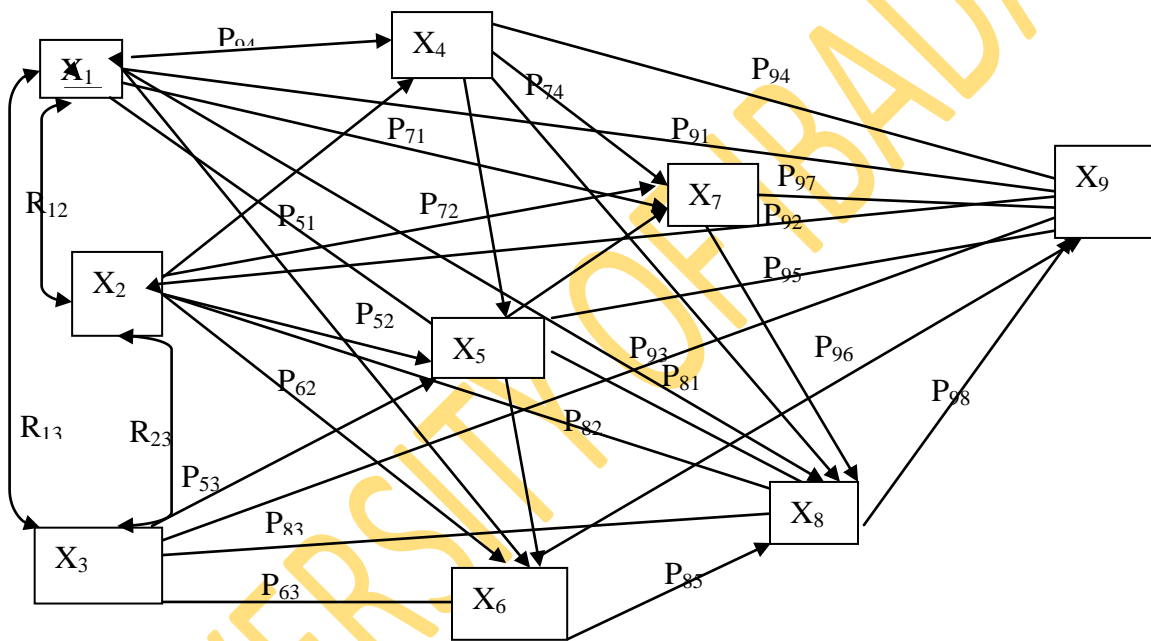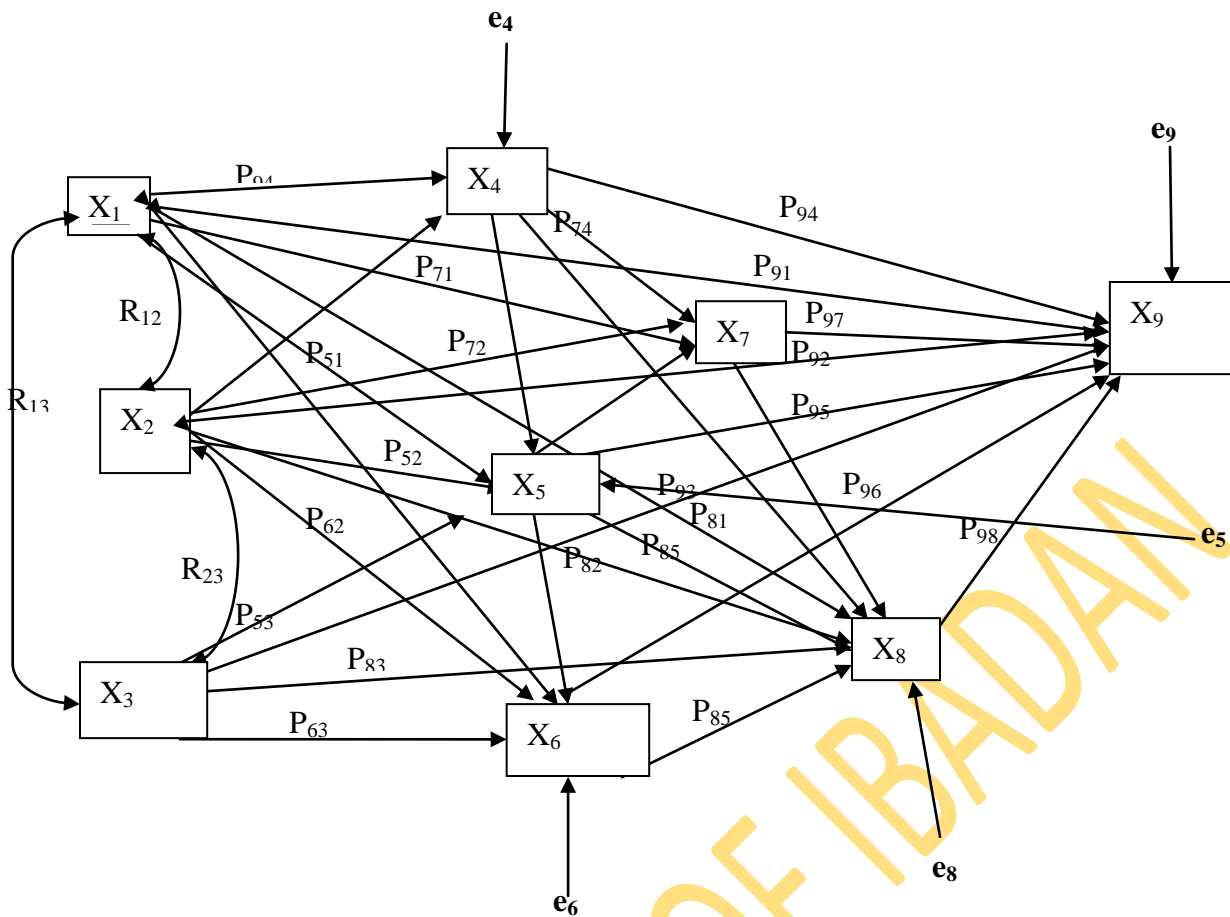
Figure 4.1.   Hypothesized Recursive Path of nine variable models

Key

X_1 = parent education X_2 = parent income X_3 =   home facilities X_4 = physical facilities in school X_5 = human resources in school X_6 = JSSCE X_7 = SSCE X_8 = UME X_9 = 1st year CGPA.

Table 4.1.3: Estimated path coefficients for the hypothesized model showing home variables, school factors, JSSCE, SSCE, UME and 1st year CGPA in the university.

Path	Standardised Path Coefficients	P-value
P41	.351	S
P42	.092	S
P51	.093	S
P52	-.029	NS
P53	-.026	NS
P54	.164	S
P61	.010	NS
P62	.072	S
P63	.035	NS
P64	.134	S
P65	.044	NS
P71	.039	NS
P72	.022	NS
P73	-.003	NS
P74	.034	NS
P75	-.003	NS
P76	.200	S
P81	.035	NS
P82	-.133	S
P83	.064	S
P84	-.117	S
P85	.048	NS
P86	.120	S
P87	.150	S
P91	.147	S
P92	-.065	S
P93	.001	NS
P94	.008	NS
P95	-.038	NS
P96	.035	NS
P97	.112	S
P98	.023	S

Figure 4.2: The new path model showing path coefficient and zero order correlation coefficient in parenthesis.
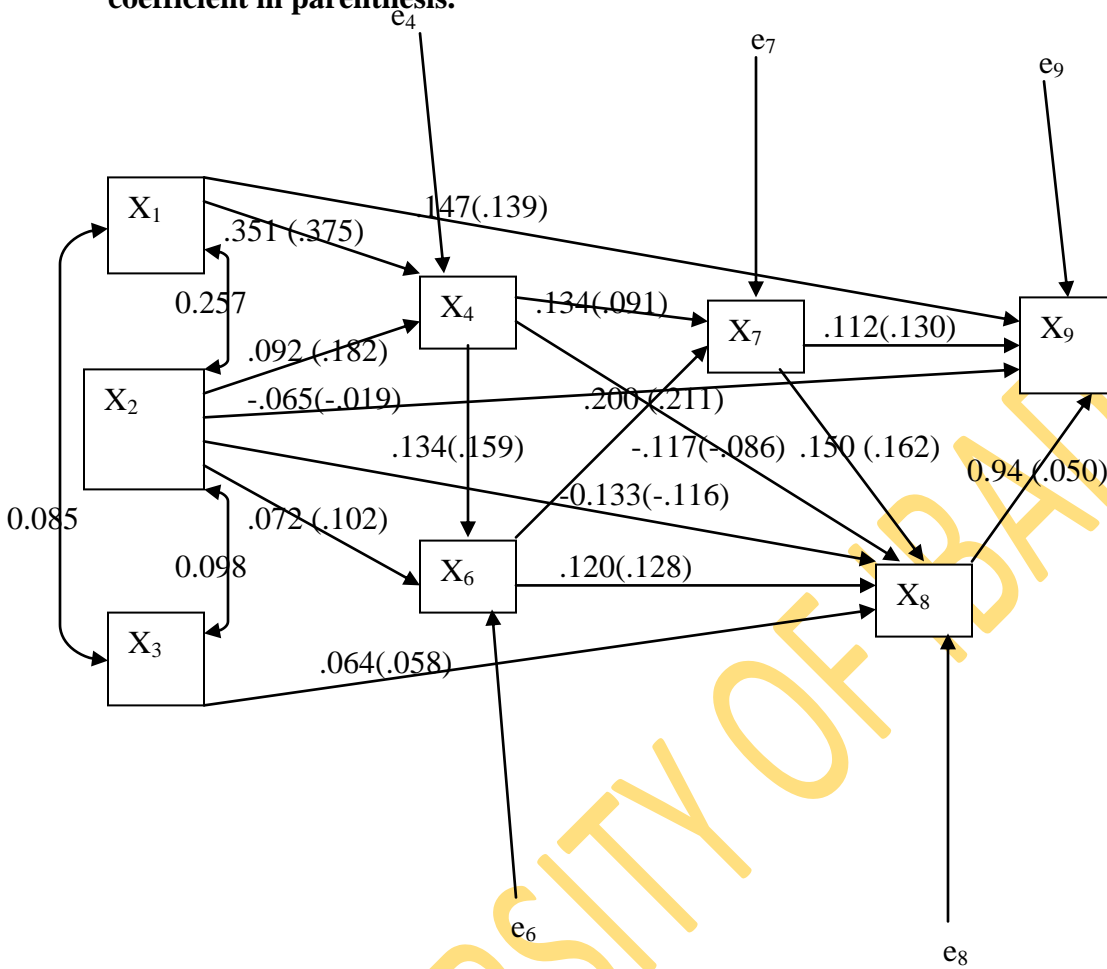
Key:

X_1 = parent education X_2 = parent income X_3 = home facilities X_4 = physical facilities in school X_5 = human resources in school X_6 = JSSCE X_7 = SSCE X_8 = UME X_9 = 1st year CGPA.

4.2.2. Validation of the new path model

Verifying the efficacy of the new path models in figure 4.2, the original correlation data are reproduced using the computed path coefficients in the more parsimonious model. This is in line with recommendations for standard path –analysis procedure (Adegoke, 2009; Kerlinger and Lee, 2002; Sprinthal, 2000; Mertler and Varinatta, 2005). Tables 4.3.2. and 4.3.3 show the original and reproduced correlation matrix and discrepancies between them. The tables show that the discrepancies between the original and the reproduced correlations are

considered very minimal (<0.05), an indication that the pattern of correlation in the observed data are consistent with the more parsimonious model. The new model is therefore considered tenable in explaining the causal intervention between the predictor variables (variables 1-8) and the criterion variable (variable 9). Figure 4.2, thus shows the most meaningful causal model involving home background variables (parent education, parent income and home facilities), school factor variables (physical facilities in school, human resources in school), JSSCE, SSCE, UME on the first year CGPA of undergraduate students in the university. This is the main submission of this investigation

4.3. Research question three

What are the directions as well as the estimates of the strengths of the causal paths of the variables in the model?

The directions of the causal paths of the variables in the model are shown in the pathways which are: (i) significant (ii) meaningful; and (iii) have a link with the criterion variable (CGPA). An analysis of Table 4.3.1. reveals that these paths are 33 in number which give the estimates of the causal paths of the variables in the model. However, the actual estimates of some indirect paths were obtained by multiplying the beta weights of component single paths

Testing the significance of the hypothesized path diagram:

Table 4.3.1 presents the standardised path coefficients of the new path models. It also shows the alpha level at which the path coefficients are significant or otherwise.

Table 4.3.1: Estimated path coefficients for the new path diagram showing home variables, school factors, JSSCE, SSCE, UME and 1st year CGPA in the university.

Path	Standardised Path Coefficients	P-value
P_{41}	0.351	< 0.05
P_{42}	0.092	< 0.05
P_{51}	0.093	< 0.05
P_{54}	0.164	< 0.05
P_{62}	0.072	< 0.05
P_{64}	0.134	< 0.05
P_{76}	0.200	< 0.05
P_{82}	-0.133	< 0.05
P_{83}	0.064	< 0.05
P_{84}	-0.117	< 0.05
P_{86}	0.120	< 0.05
P_{87}	0.150	< 0.05
P_{91}	0.147	< 0.05
P_{92}	-0.165	< 0.05
P_{97}	0.112	< 0.05
P98	0.023	< 0.05

The Table provides the evidence that all path coefficients are statistically significant at the 0.05 alpha levels.

Table 4.3.2: The original and reproduced correlation matrix for the nine variables

VARIABLES	X1	X2	X3	X4	X5	X6	X7	X8	X9
X1	1.00	.257	.085	.367	.144	.088	.074	-.009	.139
X2	.257	1.00	.098	.173	.021	.102	.058	-.116	-.019
X3	.085	.098	1.00	-	-.030	.034	.008	.064	.011
X4	.375	.182	-	1.00	.198	.157	.083	-.090	.056
X5	.144	.021	-.021	.193	1.00	.072	.024	.037	-.010
X6	.087	.102	.042	.159	.072	1.00	.210	.128	.067
X7	.074	.058	.009	.091	.024	.211	1.00	.162	.130
X8	-.008	-.116	.058	-.086	.037	.128	.162	1.00	.050
X9	.139	-.019	.012	.056	-.011	.066	.130	.050	1.00

Note: Entries above the diagonal are original correlation coefficients

Entries below the diagonal are reproduced correlation coefficients.

As can be seen from table 4.3.3., the discrepancies between the original and reproduced correlations are very small. This indicates that the patterns of correlations in the data are consistent with the more parsimonious path diagram. Hence, the new path diagram is tenable in explaining the interrelationship between home background variables, school factors, JSSCE, SSCE, UME and 1st year CGPA in the university.

Table 4.3.3: **Discrepancies between the original and reproduced correlation coefficients**

Correlation	Original	Reproduced	Difference
r_{14}	**.367**	**.375**	-.008
r_{15}	.144	.144	.000
r_{16}	.088	.087	.001
r_{17}	.074	.074	.000
r_{18}	-.009	-.008	-.001
r_{19}	.139	.139	.000
r_{24}	.173	.182	-.009
r_{25}	.021	.021	.000
r_{26}	.102	.102	.000
r_{27}	.058	.058	.000
r_{28}	-.116	-.116	.000
r_{29}	-.019	-.019	.000
r_{35}	-.030	-.021	-.009
r_{36}	.034	.042	-.008
r_{37}	.008	.009	-.001
r_{38}	.064	.058	.006
r_{39}	.011	.012	-.001
r_{45}	.188	.193	-.005
r_{46}	.157	.159	-.002
r_{47}	.089	.091	-.002
r_{48}	-.090	-.086	-.002
r_{49}	.056	.056	.000
r_{56}	.072	.072	.000
r_{57}	.024	.024	.000
r_{58}	.037	.037	.000
r_{59}	-.010	-.011	.001
r_{67}	.210	.211	-.001
r_{68}	.128	.128	.000
r_{69}	.267	.066	.201*
r_{78}	.162	.162	.000
r_{79}	.130	.130	.000
r_{89}	.050	.050	.000

*Means not significant at 0.05 alpha level

Total difference = -1.15   Mean difference = -0.04

4.4. Research question four

What are the direct and indirect effects of the variables on the 1st year CGPA on the performance of the university undergraduate?

Table 4.3.3 shows 37 significant and meaningful pathways through which all the predictor variables caused variations in the criterion variable as shown in Tables 4.4.1 and 4.4.2 respectively. Out of the 37 pathways, only 4 are direct while 33 are indirect paths. An indirect path is considered significant and meaningful if the constituent single paths are significant and meaningful. The results show that the four predictors that had direct effect on the criterion variable (CGPA) are the parent education, parent income, SSSCE and UME. The UME had the highest direct contribution with beta value of (β = 0.94) this was followed by the parent education with beta value of (β = 0.147). SSSCE follows with beta value of (β = 0.112). This also follows by parents income with beta value of (β = -.065). There were three predictors that had direct and indirect effects combined on the criterion variable (CGPA). These are: Parent education, Parent income, and SSCE. However, the two variables that have indirect effect only on the criterion variable were physical facilities in school and JSSCE. The only variable that has no effect at all on the criterion variable whether direct or indirect is human resources in the school which has been trimmed out of the new model.

Table 4.4.1.: Effects of Predictor Variables on 1st year CGPA of undergraduates in the University.

Variables	Direct Effect	Indirect Effect
V_1	P_{91}	$r_{12}P_{92}+r_{12}r_{13}P_{83}P_{98}+r_{12}P_{42}P_{64}P_{76}P_{87}P_{98}+r_{12}P_{42}P_{74}P_{87}P_{98}+r_{12}P_{42}P_{74}P_{97}$ $+r_{12}P_{42}P_{84}P_{98}+r_{12}P_{62}P_{76}P_{87}P_{98}+r_{12}P_{62}P_{86}P_{98}+r_{12}P_{82}P_{98}+r_{12}P_{92}+r_{13}P_{83}$ $P_{98}+P_{41}P_{64}P_{76}P_{87}P_{98}+P_{41}P_{64}P_{86}P_{98}$
V_2	P_{92}	$R_{23}P_{83}P_{98}+$ $P_{42}P_{64}P_{76}P_{87}P_{98}+P_{42}P_{64}P_{76}P_{97}+P_{42}P_{74}P_{87}P_{98}+P_{42}P_{74}P_{97}+P_{62}P_{76}P_{87}P_{98}+P_{62}P_{86}P_{98}+P_{62}P_{76}P_{97}+P_{82}P_{98}$
V_3	-	$P_{83}P_{98}$
V_4	-	$P_{64}P_{76}P_{87}P_{98}+P_{64}P_{76}P_{97}+P_{74}P_{87}P_{98}+P_{74}P_{97}P_{84}P_{98}$
V_6	-	$P_{76}P_{87}P_{98}+P_{76}P_{97}+P_{86}P_{98}$
V_7	P_{97}	$P_{87}P_{98}$
V_8	P_{98}	-

Note: Direct effect = 4   Indirect effect = 33   Total = 37

Therefore, % of Direct effect = 10.81
%of Indirect effect = 89.19

TABLE 4.4.2. Direct and indirect effect on CGPA

Predictor variable	Total Effect (TE)	Percentage (%)	Direct Effect (DE)	Percentage (%)	Total Indirect Effect (IE)	Percentage (%)
V_1	.139	29.45	.147	31.14	-0.008	-1.69
V_2	.019	4.03	-.035	-5.71	0.046	9.75
V_3	.011	2.33	-	-	.011	2.33
V_4	.086	11.86	-	-	0.086	11.86
V_6	.067	14.19	-	-	0.067	14.19
V_7	.130	27.54	.112	23.73	0.018	3.81
V_8	.050	10.59	0.050	10.59	-	-
Total	.472	99.99	0.274	59.75	0.198	40.25

Note: Total effect (TE) = Original correlation

Direct effect (DE) =Path coefficient

Indirect effect (IE) = Total effect – Direct effect

4.5. Research question five

What proportions of the total effects are: (i) direct, and (ii) indirect?

The total effects (direct and indirect) of all the predictor variables on criteria variable are shown in Table 4.4.2. The total effect is (0.472). Indirect effect is (0.198) while direct effect is (0.274). The table also shows the proportion of the total effects that is direct (59.75%) and indirect (40.25%) respectively as can be seen on it. The table also presents the total effects of each influencing variable on the dependent variable. The table also provides the proportion of direct effects of the influencing variables on the criterion variable and the total indirect effects attributed to other variables in the path diagram. It however shows that variables 3, 4, 5, and 6 have no direct effect on the criterion variable (CGPA).

In order to verify the efficacy of the new model and to identify the areas of differences, the original and the reproduced correlation coefficients were compared and the discrepancies were found to be minimal for 25 out of 37 path coefficients are significant at alpha <0.05. It follows that the pattern of the correlation in the observed data is consistent with the new model. The model is therefore, considered tenable in explaining the causal interaction between the predictor variables and the criterion variable (CGPA). The total difference is -1.15 while the mean difference is -0.04.

Discussion

This study shows that some of the path coefficients of the hypothesised model were not meaningful and this brings about re-specification of the model. In the re-specified model, 31 significant pathways were recorded. These pathways were derived from six structural equations for producing the most meaningful causal model (Fig. 4.2) involving home background variables (parents' education, parents income and home facilities), school facilities variables (physical facilities in school, human resources in school) JSSCE, SSCE, UME and 1st year CGPA of undergraduate students in the university.

The results of the study show that the computation of the reproduced correlations for the revised model is consistent with the empirical correlations as only 1 out of the 37 reproduced correlations exceeded a difference of 0.05. This was about 2.7% of the reproduced correlations and only 25 path coefficients were significant at the 0.05 levels. The direct, indirect and total causal effects of the revised model are presented in Tables 4.4.1 and 4.4.2 respectively.

The outcome of primary interest in this work was the 1st year CGPA of undergraduate performance in the university and its determinant was indicated by total effects from the predictor variables parents' education (X_1), parents' income (X_2), home facilities(X_3), physical facility in school (X_4), human resources in school (X_5), JSSCE (X_6), SSCE (X_7), and UME (X_8). Tables' 4.4.1 and 4.4.2 show that the percentage of direct effect is 59.75% and 40.25% is the percentage for the indirect effect. However, parent's education (X_1) has the highest total effect percentage of 29.45% of the total effect on the 1st year CGPA of university undergraduate.

The result of the study (in relation to research question 1) indicates that the discrepancies in the original and the reproduced correlation were found to be minimal for 25 out of 37 have coefficients (< 0.05). This shows consistency in the pattern of correlation in the observed data which is now tenable in explaining the causal interaction between the home background variables, school factors, JSSCE, SSCE, UME, and CGPA. The result of this study also indicates that 37 significant pathways were recorded from the re-specified model. These pathways were derived from the six structural equations for producing the most meaningful causal model. The maximum CGPA from this study was 4.60 and the minimum was 0.86. The mean for the whole sample is 3.4326. This implies that majority of the students fall within second class lower division and above. The minimum CGPA of .86 is not a good result for a university first year undergraduate. Such candidate got the minimum requirements for admission

in to the university. The results from the public examinations got by such candidate are questionable! This is not far from the allegations of examination fraud that has been levied against public examinations in Nigeria (Adeyemi, 2010; Sooze, 2004; Onyechere, 2004; Ijaiya, 2007). This study therefore lends support to those researchers and some others who claimed that students and other syndicates do involve in examination malpractices in the public examinations to get in the university most of them had very low CGPA as shown in table 4.1.2.

However, some other factors may contribute to such low performances. Such as poor home background which includes low income of the parents, inadequate home support for the students. It could also be as a result of the type of secondary school such students passed through where infrastructure and human resources are lacking.

Table 4.4.2 reveals that parents' education has significant influence on the 1st year CGPA of undergraduate students in the university. It has both direct and indirect effects on the CGPA. The direct effect is 0.147 and the indirect effect is -0.008. This is because the parents' education exerted the first place in hierarchy of the total effect on the criterion variable. The beta value of parents' education was found to be ($\beta = 0.147$). This observation provides the evidence that students of educated parents performed better than students of uneducated parents in the university undergraduate. The findings in this work support to the results of Musgrave (2000) and Grissmer (2003) which reported that parents' level of education was the most important factor affecting students' academic achievement. However, the table also shows that parents' income had a total effect of 0.019 of which -.035 was the direct effect of the variation on the 1st year CGPA of performance in the university undergraduate. Parents' income contributed 0.046 to the total indirect effect of the 1st year CGPA in the university undergraduate. This submission also buttresses the research findings of Mateakeju and Strakova (2005), Danesy and Okediran (2002), and Jacob and Harvey (2005) that home support which include parents education, parents income and socio economic background have effect on students outcomes.

The home facilities variable (X_3) has no direct effect on the 1st year CGPA performance of undergraduate students in the university. It has only one indirect effect with 0.006 significant levels. Tables 4.4.1 and 4.4.2 show that home facilities have no direct effect on the CGPA. The total effect it has is 0.011 with 2.33% which is indirect. The findings in this respect does not conform with the earlier findings of Redding (2000), Patrikakon and Weissberg (2000) and

79

Christenson and Sheridan (2001) that home factors including facilities at home have positive direct influence on students performance in school.

Variable (X_4) which is physical facilities in school has only indirect effect on the 1st year CGPA of undergraduate students in the university. In the tables 4.4.1 and 4.4.2., it was revealed that variable (X_4) has total effect of 0.86 which is 11.86%. It has no direct effect on the criterion variable, (CGPA). This finding lend support to the earlier research findings of Entwisle and Olson (2001), Redding (2000), and Henderson & Mapp (2002) that parents income, school facilities and some other variables do affect students performance in the school. It could therefore, be concluded that if all stakeholders in education could provide all necessary infrastructure in the school with proper utilization and monitoring, students will be performing brilliantly better than how they are performing now.

Human resources in school (X_5) do not have any direct or indirect effect on the 1st year CGPA of undergraduate students in the university. Human resources in school include the good and qualified teaching and non teaching staff in the school. This including the good headship and adequate security guards in the school. The findings of this study with respect to the effect of human resources in school are not conformity with the findings of some earlier researchers Kingdon and Teal (2002), Graddy and Stevens (2003), and Armentano (2003) that human resources in school has positive influence of students performances.

Variable (X_6) is the JSSCE; it does not have direct effect on the 1st year CGPA of undergraduate students in the university. It has only indirect effect of 0.067 which is 14.19 (table 4.4.2.). With this effect, JSSCE result could affect the performance of students at the undergraduate levels. In fact, JSSCE variable(X_6) has a link and correlation with the SSSCE variable (X_7). Figure 4.2 shows the effect on SSCE as 0.211 which is significant at 0.01 level. The finding here therefore lends the supports to some earlier researchers Faleye and Afolabi (2005) and Adeyemi (2008) that JSSCE has positive effect on SSCE.

One of the variables that has both direct and indirect effect on the 1st year CGPA of undergraduate students in the university is variable (X_7). It has ($\beta = 0.112$). Tables 4.4.1 and 4.4.2 reveal that SSCE has significant influence on the 1st year CGPA of undergraduate students in the university. It has both direct and indirect effects on the CGPA. The direct effect is 0.112 and the indirect effect is 0.018. This observation provides the evidence that students with very sound SSCE result perform better than other students in the university undergraduate. The findings of

this result support the results of Obioma and Salau (2007) and Giser and Santelics (2007) which concluded that high school grade and school certificate are good predictor of performance of students in the college or university. However, the tables also show that UME, variable (X_8) had a total effect of 0.050 with 10.59%. It has 0.050 as the direct effect with 10.59% and has no indirect effect on the 1st year CGPA of performance in the university undergraduate. The finding in this variable is not as strong as one would expect. UME is the last examination a candidate is expected to write before is short listed for admission in to the university. One would have expected that it will be the strongest influencer on the 1st year CGPA of undergraduate students in the university. It is however, clear that this submission buttresses the research findings of Obioma and Salau (2007) and Umo and Ezeudu (2008) that UME score is not a strong predictor of performance in the University undergraduate.

In general, the findings of this work indicate that students from well educated parents with good parental income and attended good school with adequate and enough facilities are likely to   perform better than students who do not have the opportunity of those variables mentioned above. Therefore, it is suggested that stakeholders should consider the outcome of this work so as to be able to increase the 1st year CGPA of undergraduate students in the university.

In summary, there is evidence that the more parsimonious path diagram is tenable in providing explanations for the interrelationships between predictor variables (parents education, parents income, home facilities, availability of physical facilities in school, availability of human resources in school JSSCE, SSCE, UME and 1st year CGPA of undergraduate students' in the university.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0   Introduction

This chapter summarises the findings, discusses the implications of the results and recommendations. Conclusions, limitations of the study and suggestions for further study were also highlighted. The performance of university undergraduate students has been a great concern to stakeholders; educators, parents, guardians, institutions and even the students themselves. This general concern stems from the prevailing poor academic achievement recorded by students almost every year at the end the session. In the University of Ibadan alone, about three hundred and fifty students were thrown away for inability to cope with the academic performance. In spite of the recommendations from various studies, the academic performance of students, especially in the university, does not seem to have improved significantly. Although various studies have been carried out in seeking solutions to the problem of poor academic performance of students in the university, little would seem to have been done in the area of the combined influence of home background variables, school factors, JSSCE, SSCE, UME on the 1st year CGPA of undergraduate students performance in the university in Nigeria. Therefore, this study found out whether home background variables, school factors, JSSCE, SSCE, and UME can bring about improvement in the 1st year CGPA of undergraduate students performance in the university in Nigeria.

5.1   Summary of Findings

The major findings are summarised below:

(i).   Public examinations alone did not effectively predict the performance of students in undergraduate first year university examinations.

(ii).   The predictor variables of parents' education, parents' income, home facilities, school physical facilities, JSSCE, SSCE, UME, accounted for 47.2% of the variance of students' performance in first year university examinations.

(iii).   A new model (the most meaningful causal model) involving the listed home background variables, school factors, JSSCE, SSCE,UME and 1st year CGPA of undergraduate students in the university was developed with 37 significant pathways, 4 direct and 33 indirect

paths. The pattern of correlations in the observed data was found to be consistent with the new model.

(iv)   Out of the eight predictor variables hypothesised to exert causal influence on the 1st year CPGA, four variables (parents education, parents income, SSCE, and UME) had direct causal influence.

(v)   Out of the predictor variables three had direct and indirect influence on the CGPA. These are parents' education, parents' income, and SSCE.

(vi)   The predictors that had only indirect effects from the model are: Home facilities and JSSCE; while human resources have neither direct nor indirect effect on the 1st year CGPA of undergraduate students in the university.

(vii). The variable, parents' education was the most potent predictor of students' performance in the 1st year CGPA of undergraduate students in the university. Also, SSCE, UME, parents' income, physical facilities in school in a decreasing order of   magnitude,
made slight significant contributions to the prediction of students' achievement in the 1st year CGPA of undergraduate students in the university.

5.2   Educational Implications

The findings summarised above have useful educational implications for all stakeholders in education which includes: the government, or the policy makers, the proprietors, the parents, the students and those who are charged with the conduct of public examinations.

Governments or Proprietors

A physical facility in school is one of the variables considered in this research work which has effect on students' performance in school. The implication is that if government and other proprietors of schools could provide adequate infrastructure in schools with well equipped facilities and provide competent and qualified hands to handle them, the students are likely to perform better in their JSSCE, SSCE and UME. It will also allow the students to have solid foundation before gaining admission into the universities. If government could award scholarships to indigent students to enable them purchase all the required materials for enhanced learning, it goes a long way in improving their performance at the university undergraduate.

83

Parents

Parents' education, parents' income, and home facilities have influence on students' performance. The implication is that if parents could have good educational background, and has a stable source of income to finance their wards' education; it will go a long way in enhancing the performance of students in schools and university undergraduate. In addition, if parents can make environment at home to be conducive for learning by providing a place as library and fairly equipped with books and other materials as well as distracting the attention of their wards from uncontrolled watching on television, they are likely to perform better in their academic achievements.

Students

The criterion variable in this work is the 1st year CGPA of undergraduate students in the university. It is the variable that all other exogenous variables affect. This implies that if students are more serious right from when they are in secondary school, and properly utilizes the resources provided for them by their parents, their academic performances are going to be improved. Also, if students could shun all forms of examination malpractice, and those that pass alone are considered for promotion and certification, it will increase their performances at the university levels.

Public examining bodies

Junior Secondary School Certificate Examination (JSSCE), Senior Secondary Schools Certificate Examinations (SSCE), and Universities Matriculations Examinations (UME) are all conducted by examining bodies in Nigeria. All these variables have effects on the performances of students at the undergraduate level. It implies that if these bodies could maintain their standard of examining their candidates, and could also find other means of reducing examination malpractice, it will increase the performances of those who could pass their examinations at the university undergraduate.

5.3   Conclusion

From the findings of this study, the following conclusions were reached:

Since upon all these criteria for admission in to the university in Nigeria could still be producing about three hundred and fifty dropout every year per university, this work will like to recommend that additional criterion like aptitude test or interactive oral examinations which should be conducted by individual university should be approved to checkmate the intake in the universities.

All agents that conduct public examinations need to control examination malpractices to the nearest minimal so that the results issue to candidates will be more meaningful and candidate should be able to defend the results they get from them in any further endeavour in their lifetime. Given that the present study is limited to South West Zone, similar studies could be carried out in other parts of the country to affirm or refute the conclusion reached. Thus, present study should be a pointer in such direction.

In the part of university system, adequate orientation programmes should be designed for the students to intimate them more about the academic life in the university.

Government or the policy makers need to consider this type of findings that affects educational system whenever they are making policy

5.4.   Recommendations

- ➢ Government or the proprietors of secondary schools in Nigeria need to provide adequate infrastructure in the schools with well equipped facilities and provide competent hands to handle them. This will increase the performance of students right from the JSSCE, SSCE and even UME. It will also allow the students to have very solid foundation before gaining admission into the universities.

- ➢ The findings have shed more light on some of the home background variables that affect academic achievement. Thus, the study suggests the need for the parents to have more time for their ward and provide conducive environments for them at home.

- ➢ The findings also provide ample evidence that the JSSCE as the 1st summative public examination a candidate attempts in Nigeria, adequate supervision should be done by the bodies responsible for the conduct of the examination.

- SSCE as one of the predictor of the 1st year CGPA of undergraduate students in the university, extra care need to be taken by the examination bodies that conduct it to be more vigilant during the conduct so as to minimize examination fraud.
- UME is also a predictor of 1st year CGPA, this work recommends that JAMB should device different ways of minimizing examination malpractices embarked upon by the candidates.
- Since upon all these criteria for admission in to the university in Nigeria could still be producing about three hundred and fifty dropout every year per university, this work will like to recommend that additional criterion like aptitude test or interactive oral examinations which should be conducted by individual university should be continued to checkmate the intake into the universities.

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5.5   Limitations of this Study

The preceding chapters have provided the background to the study, the relevant literature, methodology, results and discussions as well as the summary of findings. The merits of findings in any study are limited by certain factors. In this study, the sources of limitations were identified as follows:

As an *ex-post-facto* type of study, the operating conditions did not allow for direct standardisation and manipulations of variables, since both the effects and the alleged causes have already occurred and must be studied in retrospect. The researcher had to resort to statistical control as the only means of establishing equivalence across the various variables. This is an inherent limitation of typical ex-post-facto investigations, especially when causal linkages are being discussed.

As already observed in the categories of educational indicators, there are many factors that could affect students' performance in 1st year CGPA of undergraduate students in the university. Thus, selection of the variables was not easily done by the researcher. In this study few of these factors were selected as variables for consideration. Other variables that might be considered could not be measured effectively within the available resources to the researcher.

The use of statistical significance and meaningfulness as criteria for trimming the paths and rejecting the contributions of some predictor variables to the variance in achievement might have been too strict to obey. In addition to this, the researcher considers the minimum value of 0.05 for meaningfulness as arbitrary.

In causal modeling investigations, if the original and reproduced correlation matrices are "the same or nearly the same", the more parsimonious (most meaningful) model is not rejected. However, lack of precision in the result of the findings poses a limitation.

5.6   Suggestion for further study

In view of fact that this study revealed significant impact of certain variables on students' academic performances in the 1st year CGPA of undergraduate students in some universities in the South West Nigeria, the research should be replicated in other geo-political zones of the country in order to affirm the influence that the variables examined have on students' academic performance in the 1st year CGPA of the university undergraduate and to make for the wider generalization of the research findings. Researchers should replicate the study using similar sample and extending the sample size so as to test the validity of the conclusion reached.

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STUDENT HOME BACKGROUND QUESTIONNAIRE (SHBQ)

Please complete the information below and tick where necessary carefully. The purpose of collecting the information is strictly for research work only. The questionnaire is not a test, so you are not going to be graded on it. It is important that you are truthful about the information you supply. Every information supplied will be strictly kept in confidence. Your cooperation will be highly appreciated.   Thanks.

PART I

Read carefully and supply the information required:

1. Name of your institution……………………………………………………………

2.   Your name …..

3.   Name of the secondary schools where you attempted your:

a. JSSCE…………………………………………….. Date………………………

b. SSCE…………………………………………….. Date……………………..

4.   Town……………………….State…………………... LGA………………………

5.   Your Department……………………………. Your Level……………………….

6.   Age last birthday…………………………………………………………………..

7.   Sex: (a) Male

(b)   Female

8.   How many wives has your father?

1 ☐   2 ☐   3 ☐   4 ☐   More than 4 ☐

9.   Number of father's children……………………

10.   What is your position among your father's children? _____ e.g. first _____ last _____ others _____

11.   What is your position among your mother's children? e.g. first _____ last _____ others _____

12.   The distance from my home to my secondary school is

(a)   Less than 1 kilometer
(b)   Between 1-5 kilometers
(c)   Between 5-10 kilometers
(d)   10 kilometers

13.   I used to go to school by

   (a)   walking
   (b)   Parents car
   (c)   Public transport
   (d)   Others (specify)_____

PART II

14.   What is the highest educational qualification of your parents?

                                                        Father   Mother

   (a)   None   □   □

   (b)   First School Leaving Certificate   □   □

   (c)   School Certificate /NCE/ND   □   □

   (d)   Degree/HND and above   □   □

15.   What are your parents' occupations?   Father   Mother

   (a)   Farming   □   □

   (b)   Business   □   □

   (c)   Public service   □   □

   (d)   Politics   □   □

16.   How many car(s) do you have in your family?

   (a)   None   (b) One   (c) Two (d) More than two

17.   Which type of house your parents are living in?

   (a)   One/two rooms apartment
   (b)   Rented house/official quarters
   (c)   Personal owned house
   {d}   Family house

PART III

Below are some statements about the learning environment provided at home. Read each of the statements carefully and put a (√) in the column you considered appropriate.

S/N	ITEMS	YES	NO
18	There were educative pictures and almanac in our house		
19	There was a reading area with well lighted in our house		
20	There was regular supply of daily newspapers to our house		
21	A computer set with internet facility was available in the house		
22	Television was available in our house and my father used to call me to listen to educative programmes		
23	There were several textbooks, periodicals and magazines that were regularly bought home by my parents.		
24	There was scrabble game to play after completing my home work		
25	There was piano to practice music in our house		
26	There were toy telephone, card games and board games in our house		
27	There were drawing papers, board, crayon and marking pens to do my art works.		
28	There was a small vegetable garden in our compound		

PART IV

Below are some questions about your experiences and feelings in your home. Please answer the questions to the best of your knowledge by ticking or completing the statement where need be. Please try and answer each question as truthful as you can. There is no right or wrong answer. Thanks.

29. If your parents are separated, whom do you live with whenever you are at home?
    (a) Father only
    (b) Mother only
    (c) Relatives
    (d) Others specify..................

30. Who decides on what any of you (children) should do always?

    (a)   Father only

    (b)   Mother only

    (c)   Relatives

    (d)   Others specify..................

31. Who takes decision with regard to the education of the children?

    (a)   Father only

    (b)   Mother only

    (c)   Relatives

    (d)   Others, specify..................

32. In what way is the occupation of your father affecting his role (duty as a father) at home?

    (a)   No effect

    (b)   No time to devote to the children

    (c)   No time to stay at home

    (d)   Others specify................

33. In what way is the occupation of your mother affecting" her role (duty as a mother) at home?

    (a)   No effect

    (b)   No time to devote to the children

    (c)   No time to do the house work

    (d)   Others specify................

34. If your parents are living together, how do you see the level of interaction, between them?

    (a)   No interaction at all

    (b)   Greetings and providing food only

    (c)   Working together as a team

    (d)   Others specify...............

35. How does the relationship between your parents affect

    Your education?

    (a)   No effect

    (b)   Have positive/good effect

(c)   Have negative/bad effect

(d)   Others specify...

36.   How would you describe the level of interaction between you and your parents?

(a)   There are too many restrictions

(b)   They discuss and play freely with me

(c)   Have no time for me at home

(d)   They are hardly available at home.

37.   Please tick the activities you are engaged in after school each day.

(a)   going to farm or market

(b)   watching television or video

(c)   going for home lesson

(d)   engaged in indoor or outdoor play

38.   How often are you allowed to play, watch late night shows/films over the television or-
read far into night

(a)   Very often

(b)   Occasionally

(c)   Hardly allowed

(d)   Not allowed.

39.   How do you feel in the class when you do not have enough sleep the previous night?

(a)   Perform poorly in academic by learning little or nothing.

(b)   Very inattentive, sleeping in the class.

(c)   Mentally weak, feel very inactive.

(d)   Others Specify...............

APPENDIX 2

SCHOOL FACTORS' QUESTIONNAIRE (SFQ)

This questionnaire is designed to find out from you, some information concerning the availability and the use of facilities in your former secondary school. The information gathered from the questionnaire will be used for research only; the outcome of which could bring an improvement of such facilities to that school. Please be honest in your responses which will be treated with utmost confidentiality.

Thanks.

SECTION A

1. Type of School: (a) Day School   (b) Boarding School.
2. Category of School: (a) Boys only   (b) Girls only   (c) Co-educational
3. Location of School: (a) Urban   (b) Sub-Urban (c) Rural
4. How old was the school?
    (a) Less than 20 years

    (b) Between 21 – 30 years

    (c) 31 years and above

5. No of students in the school

    (a)   Less than 500

    (b)   Between 500 – 1000

    (c)   Above 1,000

6. No of teachers in the school.

    (a)   Less than 10

    (b)   Between 11 – 30

    (c)   Above 30

7. How many students did you have in a class?.

    (a)   Less than 50

    (b)   50-100

    (c)   100 and above

8. How many streams did you have per classes?

    (a)   1 stream

    (b)   2 streams

    (c)   3 and above streams

9.　　　Did you have qualified teachers for all subjects offered in the school?
　　　(a)　　Qualified teachers are available in all subjects
　　　(b)　　Qualified teachers are not available in all subjects
　　　(c)　　No teacher for so many subjects in that school.
10.　　Please, kindly write the grade you got in your JSSCE:
　　ENGLISH………..MATHS………INT.SCIENCE………. BUSINESS STUDIES……….

　　INTROTECH……….YORUBA…………AGRIC…………IRK………..CRK…………..

　　SOC. STUDIES………….H/ECONS……….. F/ARTS…………..

11.　Please, kindly write the grade you got in your SSCE:

　　ENGLISH……MATHS………BIOLOGY……CHEMISTRY………PHYSICS……...

　　AGRIC………ECONOMICS………COMMERCE………ACCT………GOVT………

　　HISTORY……...IRK……...CRK………GEOGRAPHY……...LIT. IN ENG…………...

　　YORUBA……...F/NUTRITION……...F/MATHS………F/ARTS…………………...

12.　Please kindly write the score you got at the UME (JAMB) result ………………………..

SECTION B

　　Below is a list of some materials and facilities normally expected to be found in secondary school. Please, indicate by ticking in the appropriate column whether or not these materials/facilities are available in your former secondary school; and if available how adequate are they.

S/N	Materials/Facilities	Available and Adequate	Available but not Adequate	Not Available
1	Classrooms			
2	Assembly Hall			
3	Administrative Block			
4	Staff room (s)			
5	Chalkboard			
6	Magnetic Boards			
7	Library			
8	Library books			
9	Relevant/Current books			
10	Science laboratories			
11	Intro-tech – workshop			
12	Furniture for teachers			
13	Desk and Chairs for students			
14	Charts/pictures for Aids			
15	Computer room for learning			
16	School farm for practical			
17	Internet facilities			
18	Language Laboratory			
19	Toilets			
20	Home Economics laboratory			
21	School fence			