RELATIONSHIP BETWEEN ENTRY GRADES IN MATHEMATICS AND STUDENTS` PERFORMANCE IN BUSINESS MATHEMATICS IN COLLEGES OF EDUCATION IN NORTH-WEST ZONE, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS EDUCATION DEGREE

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DEDICATION

This research work is dedicated to my late father, MalamYunusa Musa, my dear mother Hajiya Binta Fatima Ibrahim, my beloved wife, Zainab Ado Gezawa, and my children Ibrahim, Yunusa, Adam, Habiba and Aisha.

DECLARATION

I hereby declare that this dissertation, titled Relationship between Entry Grades in Mathematics and Students Performance in Business Mathematics in Colleges of Education in North-west Zone, Nigeria, has been carried out by me in the Department of Vocational and Technical Education. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other Institution.

_____ _____

Misbahu YUNUSA Date

CERTIFICATION

This Dissertation titled: RELATIONSHIP BETWEEN ENTRY GRADES IN MATHEMATICS AND STUDENTS PERFORMANCE IN BUSINESS MATHEMATICS IN COLLEGES OF EDUCATION IN NORTH-WEST ZONE, NIGERIA, written by Misbahu YUNUSA, meets the regulations governing the award of the degree of Master of Business Education of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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LIST OF ABBREVIATIONS

CGPA:	Cumulative Grade Point Average
GPA:	Grade Point Average
JAMB:	Joint Admissions and Matriculation Board
NCCE:	National Commission for Colleges of Education
NCE:	Nigeria Certificate in Education
NCEA:	National Certificate for Educational Achievement
NECO:	National Examination Council
O' Level	Ordinary Level
Pre NCE:	Preliminary Nigeria Certificate in Education
SSCE:	Senior Secondary School Certificate Examination
UTME:	Unified Tertiary Matriculation Examination
WAEC:	West African School Certificate
XIDIFF	Mean difference between the groups
PPMCC	Pearson Product Moment Correlation Coefficient

ABSTRACT

The study investigated the relationship between entry grades in mathematics and students' performance in business mathematics in colleges of education in North-west zone, Nigeria. Four research questions were raised for the study and four null hypotheses were tested at 0.05 level of significance in order to determine the relationship between the entry grades in mathematics and the students' performance in business mathematics at the federal colleges' education in Nigeria. This study used ex-post facto design. The population was seven hundred and ninety-nine (799); this was made up of students with entry grades in mathematics. The whole population was used for the study and therefore, no sampling was made for the study. The instrument used for data collection was documentary records of students` performance in business mathematics of NCEI in colleges of education. The research questions were answered using mean and standard deviation. The null hypotheses were tested using Pearson Product Moment Correlation (PPMC) at 0.05 level of significance. The findings of the research reveals that there is a positive relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE I. Based on this, conclusion was made that good entry grades in mathematics are the appropriate measures that could improve the performance of the students at the tertiary institutions as well as the provision of one year Pre-NCE Programme for the students with Pass in mathematics 0-level entry grades should enable them to perform better in their business mathematics semester examinations. The research recommended that emphasis should be put on credits entry grades in mathematics for any student admitted to the business education programmes in federal colleges of education in Nigeria.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

A successful completion of Senior School Certificate Examination (SSCE) with good grades in five subjects including mathematics and English language coupled with good pass mark in Unified Tertiary Matriculation Examination (UTME) normally qualifies a candidate for admission into any Nigerian Tertiary Institutions (colleges of education or technology, polytechnics or universities). The grades and scores obtained by the candidates that are given admission into tertiary institutions are expected to be a measure of their cognitive or academic performance that each candidate will exhibit in their chosen discipline in the tertiary institutions. In other words, a high performance in S.S.C.E and UTME as a measure of the candidates' previous background knowledge in the subject matter ought to serve as a pre-requisite to the intended course of study by a candidate at the tertiary level in learning a subject such as mathematics (Ajogbeye and Borisade, 2006).

Mathematics is an essential subject and knowledge of it enhances a person's reasoning, problem-solving skills and general ability, and ability to think logically; hence it enables an easy grasp of most subjects, whether science or technology, medicine, the economy of business and finance. (Mathematical tools and techniques such as the theory of chaos used for mapping and forecasting market trends). Learning mathematics has been recognized by many as important. It does not only develop students' ability to think in quantitative terms but it also enhances skills such as analytical and problem solving.

However, to enable the lecturers to tell their students how important mathematics is, we have to understand students' background in learning mathematics so as to find

ways to improve students` performance in mathematics. The term ``students` performances`` is the determination of level of success and failure in learning experience which could be qualified as a measure of child's academic standing in relation to those of other children of his age. Academic performance of a child, as the learning outcomes of the child, includes the knowledge skills and ideas acquired and retained through their course of study within and outside the classroom situations.

Students` performance continues to be a major concern amongst academics, researchers, and policy makers. The persistently poor performance, especially in mathematics related courses is alarming. The students` performances in mathematics examination depend on their level of interest in the subject. Close examination of students' attitude and the influence of their environment on their performance in mathematics depend on how much interest they have in the course. Clearly, all students across all disciplines in higher institutions take business mathematics courses either in the first or second year.

Business mathematics is mathematics used by commercial enterprises to record and manage business operations; business organisation use mathematics in accounting, inventory management, marketing, sales forecasting and financial analysis. Mathematics typically used in commerce includes elementary, arithmetic, elementary algebra, statistics and probability. Business mathematics is a compulsory subject for Nigeria Certificate in Education (NCE) in business education department.

The subject is taken in NCE I during the first and second semesters. The content of this subject are applied in business applications in real life. For example, how to calculate simple and compound interests, simultaneous equations, computation of payroll

and annuity values. Unfortunately, student achievements in this important subject over the years have not been encouraging at the primary, secondary, and tertiary levels of education in Nigeria. Parents and other stakeholders are worried about the present situation of mathematics education in Nigeria. This is because a credit level pass at the Senior Secondary School Certificate Examination (SSCE) is required for most courses at the tertiary level of education in the country.

Obodo (2004) lamented that many students in tertiary institutions in Nigeria today are not studying the courses they wanted to study because of not making the required SSCE grades in mathematics to gain admission to courses of their choice. Students' required entry qualifications and grades are assumed to predict their academic performances in higher institutions of learning - hence the reliance often placed on credit grades performance at the ordinary level entry requirement for admission also, lecturers of business mathematics in colleges of education are complaining about students' performance in business mathematics I and II in their NCE 1 results, it has been a worry for a long time. It is on the basis of this background that the researcher is carrying out research work on the relationship between entry grades in mathematics and student performance in business mathematics in colleges of education, Northwest zone, Nigeria.

1.2 Statement of the Problem

In Nigeria, generally the study of mathematics and business mathematics at all levels of education is less fulfilling, as confirmed by Obodo (2004), who noted that there is generally low interest in the study of mathematics and mathematics-related disciplines at all levels of education in Nigeria. This has serious implication for a developing nation

aspiring for scientific and technological advancement, students` poor performances in internal and public examination in mathematics have been attributed to students' attitudes (National Mathematics Centre, 2009).In most secondary schools and tertiary institutions in Nigeria student absent themselves from mathematics lesson and Business mathematics, while those that stay pay little or no attention to their teachers. Students` low success level in mathematics and business mathematics has been a worry for a long time in our colleges of education, as observed by the researcher`s experience and his colleagues' in teaching business mathematics in college of education over a long period of time as a result of the method used by the lecturers.

The method of teaching business mathematics has been identified as ineffective and as one of the major factors responsible for the poor performance of students in Business mathematics, likewise the method used by business mathematics lecturers are traditionally ineffective. Among various reasons pointed out by scholars, as reported by Amoo (2002), is poor learning interest and assimilation of business mathematics ideas, concepts, principles and processes and teacher failure to use appropriate and stimulating teaching methods in secondary schools are responsible for student poor academic performance in business mathematics in colleges of education in Nigeria as a result of student anxiety.

General factors affect the success of students in business mathematics among which is ``mathematics anxiety`` (Baloglu, 2001). Students with high mathematics anxiety show negative attitude toward their success and their performance would be low in business mathematics (Anakpua & Okoli, 2012). A comparison of examination results of the School of Business Education in Federal College of Education Bichi and Shehu

Shagari College of Education Sokoto revealed that the results in business mathematics for the 2012 to 2014 sessions in (Appendix II in Table III) showed that 49% of the students for the two academic sessions passed business mathematics with A, B, and C grades, 43% scored D and E grades, while 8% failed business mathematics in FCE (T) Bichi, similarly, the results of Shehu Shagari College of Education Sokot., revealed that 34% scored A, B, C grades 29% made D and E grades and 37% failing the course for the period covered., The analysis showed that 51% failed below merit grade level in Sokoto during the period 2012 to 2014.

The obvious conclusion one can draw from this information is that many students in these colleges score very low grades in business mathematics. This prescription is based on the understanding that there is a correlation between a student`s performance grade at ordinary level and grade in higher education. However, students' results in FCE (T) Bichi, Kano, and Shehu Shagari College of Education, Sokoto, have been observed by the researcher to be low when compared with other subjects like Economics and Commerce, The inability of entry grades in mathematics obtained by the students that qualified them to get an admission into federal colleges of education to predict their performance in business mathematics. These are some of the problems which this study has intends to address using empirical evidence.

1.3 Objectives of the Study

The major objective of the study is to determine the relationship between entry grades in mathematics and students' performance in Business mathematics in colleges of education Northwest zone, Nigeria. The specific objectives of this study are to:

1. establish the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in colleges of education in Northwest zone, Nigeria.
2. determine the relationship between students admitted through Pre-NCE with pass entry grade in mathematics and their performance in business mathematics in colleges of education in Northwest zone, Nigeria
3. determine the relationship between credit and above entry grade in Mathematics on the performance of male students in business Mathematics in colleges of education, Northwest zone, Nigeria.
4. determine the relationship between pass entry grade in mathematics on the performance of female students admitted through Pre-N.C.E in business mathematics in colleges of education, Northwest zone, Nigeria.

1.4 Research Questions

Based on the specific objectives, the following research questions are raised:

1. What is the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in colleges of education in northwest zone Nigeria?
2. What is the relationship between students admitted through pre-NCE with pass entry grade in mathematics and their performance in business mathematics in colleges of education in Northwest zone Nigeria?
3. What is the relationship between credit and above entry grade in mathematics on the performance of male students in business mathematics in Colleges of Education Northwest zone Nigeria?

4. What is the relationship between pass entry grades in mathematics on the performance of female students admitted through pre-NCE in Business Mathematics in Colleges of Education Northwest zone Nigeria?

1.5 Null Hypotheses

In line with each stated research question the following null hypotheses are formulated for the study:

1. There is no significant relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1in colleges of education Northwest zone, Nigeria.
2. There is no significant relationship between students admitted through pre-NCE with pass entry grade in mathematics and their performance in business mathematics in colleges of education Northwest zone, Nigeria.
3. There is no significant relationship between credit and above entry grade in mathematics on the performance of male students in business mathematics in colleges of education Northwest zone, Nigeria.
4. There is no significant relationship between pass entries grades in mathematics on the performance of female students admitted through Pre-NCE in business mathematics in colleges of education Northwest zone, Nigeria.

1.6 Significance of the Study

The findings of this study are expected be of benefit to the lecturers, curriculum planners, college management, parents, policy makers, and students as shown below:

Lecturers should improve their methods of teaching business mathematics which include the following methods: demonstration, project, problem-solving, etc., while utilising this work for effective delivery in colleges of education. The curriculum planners in National Commission for Colleges of Education would benefit from the result of the study in developing curriculum for colleges of education in their effort to design policies on courses, skills, and knowledge relevant to the field of study. The government should benefit from the result of the study because it shoulders their responsibilities in employing and training of its manpower, by sending the lecturers for conferences and seminars so that they would become competent and capable of teaching business mathematics effectively with expertness in our colleges of education.

The management of the colleges should benefit from the result of the study by the implementation of policies to improve the performance and quality of education by changing attitude of students and improving teaching procedure. The result of the study would help parents to understand the strength, performance and weakness of their children in Business mathematics courses, so that they will provide solutions to their problems through organising extra mural classes or lectures to remedy the problems.

The policy makers will benefit from the study by using the strategies provided in the process of determining the possible required changes to improve students` performance in business mathematics which will lead them to be self-reliant as well as

functional members of the society. The findings of the study will mobilise and create awareness among students who are the recipients of the knowledge (business mathematics), and will help them in tackling the learning difficulties they are encountering in solving business mathematics problems in colleges of education.

1.7 Assumptions of the Study

Based on the objectives of the study, the following assumptions were made:

1. Students with credit in O' level mathematics will perform better in business mathematics at N.C.E Business Education programme.
2. Students with good background in mathematics will be anxious to study business education.

1.8 Delimitation of the Study

This study focuses on relationship between entry grades in mathematics and students' performance in business mathematics and is delimited to five Federal Colleges of Education in the Northwest geo-political zone of Nigeria, offering business education programme, in the department of business education. It is also delimited to NCE I students in the department of business education who offered business mathematics as a core course of study in NCE I. The choice is made based on the understanding that these groups of students are admitted with different entry qualifications and with varied grades in mathematics at ordinary level, comparisons of result were made between students' entry grades in mathematics and their performance in business mathematics in the 2013/2014 session.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

The review of the related literature is under the following subheadings:

2.1 Theoretical Framework

2.2 Conceptual Framework

2.3 Objectives of Mathematics

2.4 Students' Academic Performance

2.5 Objectives, Function, Advantages, and Benefit of Business Mathematics

2.6 Entry Grades in Mathematics as Predictors of Students` academic Performance

2.7 Students Requirement in Business Education Department

2.8 Relationship between Mathematics and Business Mathematics

2.9 Gender and Mathematics Performance in Senior Secondary schools.

2.10 Empirical Studies

2.11 Summary of Reviewed Literature

2.1 Theoretical Framework

The study is based on Piaget's Cognitive Development Theory. The reason behind selecting this theory is that the theory deals with skills and cognitive abilities such as general reasoning which leads to positive relationship between entry grade in mathematics and students' academic performance in business mathematics in colleges of education in northwest zone, Nigeria. The Relationship occurs as a result of both mathematics and business mathematics involving critical reasoning in solving problems. However, students' performance in mathematics examination depends largely on the level of interest in the subjects indicated by the students.

The stage of cognitive development of the Piaget is: sensory motor (0-2 years of age) children begin to use imitation memory and thought. They begin to recognise that objects cease to exist when they are hidden from view. They move reflex actions to goal directed activity. Pre operational (2-7 years) children gradually develop language and the ability to think in symbolic form. They are able to think operations through logically in one direction and they have difficulty seeing another person's point of view

Jean Piaget suggested that students are viewed as active learners that need to interact with their environment. This interaction with the environment allows students to create their own understanding reason, interest and meaning about the world mathematically. Piaget's theories also represent a constructivist view of learning. This view of learning posits that children are not blank slates; rather they interact with their environment as they attempt to learn a subject such as mathematics concepts. Learning results when children create their own knowledge as a result of this interaction using counting of numbers better, reading letters alphabetically; this will increase their cognitive reasoning for solving day to day activities (Van de Walle, 2001). The basic foundation of this theory is that children construct their own knowledge. Therefore, mathematical concepts cannot be simply presented to students; rather, these learners must be actively involved and able to extract meaning out of mathematical concepts through experience (Moyer, 2001).

Piaget's Concrete Operational stage of cognitive development lasts from age 7 to about 11. This stage is characterized by children being able to form relationships among objects. In terms of mathematics instruction, this means that children need to have concrete references and examples on which to hinge and relate their learning experiences

in mathematics, and thereby solve problems. After the Concrete Operational stage, students move on to the Formal Operational stage, which according to Piaget, starts from about the age of 11 and extends into adulthood. At this stage, children are expected to be able to think hypothetically and use metaphorical relationships. In terms of mathematics instruction, this means that students are capable of abstract thinking, and are able to generalize concepts to other concepts.

Ideally, intermediate-level students from age 12 to 15, should be operating in the Formal Operational stage. However, Hewitt (2004) draws attention to the fact that many adolescents in this age range are actually in transition between the Concrete and Formal Operational stages. Hewitt (2004) cites several studies that indicated 80% or more of young adolescents operate exclusively in the Concrete Operational stage rather than the Formal Operational stage. This has implications for mathematics instruction for students in this age range. The highly abstract concepts such as operations with integers, square roots, and solving equations, etc., are all topics covered in mathematics starting from the age of 12. If students are still thinking in terms of concrete operations, intermediate mathematics teachers need to address this by using appropriate instructional materials in order to facilitate learning, and make mathematics meaningful to the students.

In Lira & Ezeife (2006) review of the psychological foundations in the teaching and learning of mathematics, a description of Piaget's development stages was explained. The author states that in Piaget's research he found that children in the Concrete Operational state were able to "emphasize reversibility." For instance, a student is able to reverse addends in an addition problem and still realize that the sum remains the same. Also, students at this stage are capable of associatively with basic mathematics

operations. For example, students are able to add three or more numbers in any order and come out with the same result, or multiply numbers in any order and the product remains the same.

At the stage, it is very important for teachers to use concrete materials to solidify students' understanding of these concepts as the students prepare to move into the Formal Operations state where they would encounter these concepts in more abstract mathematical situations. Without a firm mastery of the concepts using concrete operational tools at the concrete operational stage, it would be difficult for the students to operate at the abstract level associated with the formal operational stage of cognitive development.

One modern extension of Piagetian theory may be found in Donald (2006), who provides an excellent example of research that continues to develop Piaget's original framework. He agreed with Piaget that there are developmental stages and that increasingly sophisticated structures develop at each, but he preferred to model mental structures using an information processing approach. Relying on this model, Donald suggested that as automaticity increases and more structures are developed, new developmental stages could be reached. He focused on the demands on memory for task performance and suggested that at all levels a person's capacity for gaining knowledge is divided between operating space and storage space. This should lead to relevance of the theory for the improvement of the students' cognition in relation to their performance in business mathematics in the department of business education in Federal Colleges of Education.

Concept of Mathematics

The importance of mathematics does not only lie in its contributions to scientific and technological development but also in its utility in day to day interactions at the market places, transportations and business of all sorts by both literate and illiterate members of the society. Mathematics is needed in the world today much more than before since a lot of equipment based on digital development is going on and calculations are becoming much more complex.

Gentlemen, (2005) Narrated that, mathematics was developed in response to the needs of early society with growing number of people living, working and even fighting together came to the needs to solve practical problems of their civilization–problems such as calculating the quantity of materials needed to build a store house or the amount of food needed to provide their army. Hence the need for human beings to keep records, know the exact need of its people, and plan for the future led to the development of a branch of science called mathematics. Hence mathematics is defined as the science dealing with quantity form, measurement and arrangement ad in particular with method for discovery concept and symbols, the properties and interrelationships of quantities and magnitudes. Therefore we can deduce from this definition that mathematics is relevant to all human activities as it relates to our daily dealings especially when buying and selling.

Rusic, (2008) the subject mathematics broadly includes the following areas foundations, Algebra, geometric. Analysis, probability and statistics, computer science and applied mathematics as it have the following objectives.

Concept of Business Mathematics

Business mathematics is a subject which is compulsory for any business education students to study at NCE I in order to enable him or her to deal with some other subject like accounting economics for betterment of business application in real life situation. This is in line with Stafford (2009) defined Business mathematics as a subject concerned with improving the quantity of decision making industry and commerce and it is not surprising that a high degree of mathematical ability has come to be accepted as a necessary part of a manager's equipment at every level of responsibilities.

Vinod, (2009) Business mathematics is the branch of mathematic which is helpful for businessmen, every Business men is in tension about how to solve different business problems. In these problems, we can include, interest calculation, hire rates, salary calculation and moreover, what is the quantity he should produce etc. Business mathematics is not only helpful for general public because, if they learn it, they can deal with business men with better way, business mathematics is easier than general mathematics somebody can learn business mathematics very easily.

Vault (2003) listed the topics in Business mathematics to include salaries and commission, gross and net earnings, gross and net profit, depreciation, investment, basic accounting ideas and budgets. The practical applications typically include checking accounts price discounts, mark ups and mark downs, payroll calculations, simple and compound interest, consumer and business credit and mortgages. For example while computational formulas are convey in most study material on interest and mortgages. The use of prepared tables based on these formulas is also presented and emphasized.

2.3 Objectives of Mathematics

The objectives of studying mathematics by all students as highlighted by Rusic, (1998) include the following:

1. Promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion
2. Promote confidence and competence with numbers and the number system
3. to develop the ability to solve problem through decision making and reasoning in a range contexts
4. Practical understanding of the ways in which information is gathered and presented.
5. Explore features of shape and space and develop measuring skills in a range of contexts.
6. Understand the importance of mathematics in everyday life.

In the same vein, Kajuru, (2009) identified four importance of mathematics one of which is that is essential for every life. Essential for understanding concepts life time distance, weight and temperature, mathematics provides knowledge for precise logic and procedure as well as critical evaluation of result and affording the means for checking the results. Similarly, Idahi, (2002) suggested that mathematics knowledge enable student to cope confidently with mathematics needed in their future studies, workplaces or daily life in a technological and information in the society, and thus opined that mathematics curriculum aims at developing in students:

1. The ability to conceptualize, inquire, reason and communicate mathematically and to use mathematics in formulate and solve problems in daily life as well as in mathematical contexts;

2. The ability to manipulate numbers, symbols and other mathematical objects;

3. The number sense, symbol sense, spatial sense and a sense of measurement as well as the capability in appreciating structures and patterns;

4. A positive attitude towards mathematics and the capability in appreciating the aesthetic nature and cultural aspect of mathematics

2.4 Student Academic Performances

Student Academic performance refers to what student achieve in their studies and how the cope with or accomplish different learning experience given to them by their teachers. Flegm (2005) reported that in education institutions success is measured by academic performance or how well a student meets the standard set out by the institution.

Ajogbeye, (2002) reported that the academic performance of students in school depends on factors such as quality of environment. This qualities characterized as goods and time input. Goods input refer to nutritious food, health care and materials that stimulate intellectual interest, while time input include parental time, reading and talking to children, school, colleges and universities have no worth without student, student are most essential asset for any educational institute the social and economic development of country is directly linked with student academic performance. The students' academic performance plays an important role in producing the best qualify graduates who will

became great leader said manpower for the country, this responsible for the country's economic and social development. (Ali 2009)

Student academic performance measurement has received considerable attention in various researches. It is a challenging aspect of academic literature and science student performance are affected due to social, psychological, economic environmental and personal factors. These factors strongly influence on the student performance, but these factors may vary from person to person and country to country.

Most studies have tended to focus on investigating academic performance in general (Bernard, 2004; Roberts 2007: shafiq et al, 2011)). Others that have examined performance in individual courses, concentrate on performance in Business mathematics (Maliki Ngban & Ibu 2009) performance in individual course units affects the overall academic performance, the few studies that have examined specific course units have tended to concentrate on college student's performance in Business mathematics (Beswick, 2006; Uusimaki wason, 2004; Wilkins & Brand, 2004)

The regular semester examination or testing of students' ability as demanded by the Nigerian system of educational goes a long way in discovering the performance of students and could be used to improve learning, the test given periodically, as formative test or semester examinations, are supposed to remove the threatening effects of single test (Summative lest) generally given at the end of course of study. Similarly, Ajogbeye (2000) also reported that certificate worth and entrance examination results were not related to academic performance but formative test scores were most effective measure of academic performance

Galiher (2006) in Darling (2005) used G.P.A to measure student performance because the main focus in on the student performance for the particular semester.

Some other researchers used test results or previous year result since they are studying performance for the specific subject or year.

Factors that Affect Student's Performance in Mathematics Subjects

Students' Academic performance in mathematics subjects commonly associated with many factors that have been identified by Adeleke (2007) are student attitude, background, learning method. Student's attitude can be categorized into three categories such as commitment, vision and emotional, it was proven that student commitment and vision have strong relationship with their mathematics performance. Nevertheless, emotional does not have any relationship. It shows with some commitment, student can improve their performance in mathematics. Students background is usually influenced by their parents style (strict but caring and consistent) is very significant in affecting student performance, Besides that mothers play a major role in shaping students attitudes. Unsuitable learning method will contribute to the drop in student's performance; suitable learning approach will give more positive impact to the student performance in mathematics. Beside that a boring teaching method in class and tutorial question without answers scheme will contribute to low success in this subject.

Appraisal of Students Academic Performance

Education involves the imparting of knowledge, experiences and basic skills by one person to another with the view to bringing a lasting change in behaviour and attitude of the individual to whom such knowledge experiences and skills are imparted, assessing,

measuring or appraising of the learners performance against certain predetermined standards or bench mark is important to both the teacher and the learner.

To the teacher, such evaluations would help to measure the extent to which the learner is coping with a particular subject content to which the learner is exposed or to find out whether the student is developing appropriate skills that may signify goal attainment in specialized area. To the learner, it is through evaluation that the student get to know whether or not performance is measuring up to the set Bench mark.

2.5 Objectives, Function, Advantages, and Benefit of Business Mathematics

The overall aims of Business mathematics are to increase knowledge of finance and to provide you with computation of skills needed for evaluating financial decisions, successful completion of Business mathematics will enable you to:

1. Clearly define the different ways in which interest on money can be calculated.
2. Explain the meaning of the following terms: simple interest, compound interest, equivalent rates of interest, promissory and demand notes, annuities, perpetuities, capitalized cost, depletion allowances and stocks and bonds.
3. Undertake the necessary computations for problems of interest annuities and perpetuities, capitalized cost deflation allowances and stocks and bonds
4. Use the results of mathematical calculations to help evaluate various options in reaching financial decisions. Whether personal or business related.
5. Evaluate and select financial arrangements which are best for you as a consumer

These are the following features of Business mathematics as highlighted by Vinod, (2009).

1. It is totally related to business and solution of business problem.
2. It is main branch of general mathematics
3. Statistics also include in it
4. Its main feature is also that variety of formulae is in this mathematics.

Business mathematics is not just for the business owner or for personal finance, business math is also important for the real estate profession, they need to know how to financially close a deal and to understand mortgages, calculate commission rates, taxes and fees and use a variety of formula effectively. Wealth managers and advisors, bankers, investment consultant, stock brokers' accountants and stock brokers and tax consultants all need to understand the financial transactions for investment purposes along with having an understanding about growth or loss over times. Business owners need to understand payroll applications and deductions. Then there are goods and services. Whether it's buying or selling and understanding of discount, mark ups overhead profits, revenues and costs are all essential components of the math needed to manage inventory whether it be goods and services or property, which also needs to be financially managed. Having a background in math opens opportunities and the job prospects are promising now is the time to embark on business math.

Functions of Business Mathematics

If you decide that business mathematics is for you or that you need business mathematics for your career or goal you will benefit from having an understanding of the following topics along with the ability to solve word problems. Function of business mathematics as listed by Vinod, (2009).

1. Fractions, decimals, and percent (use the four operations with fractions, convert between fractions and decimals and percent, calculate percent of a number with and without a calculator, convert, and simply fractions, reduce, and convert fractions.

2. Whole numbers (to a million, read, write, round and estimate numbers) and integers (understanding how to use the four operations with integers
3. Basic equations in algebra (solve equations involving more than 1 unknown term, solve proportions, solve equations using more than one operation, use the problem solving plan
4. Be able to use variety of formula's
5. Understand and work with the mean, median, and the mode.
6. Read charts and graphs

Advantages of Business Mathematics

1. With interest rate of Business mathematics, business men can calculate the interest on debt, loan or board
2. With matrix businessman can calculate salary bill or different department and branches.
3. With linear programming business can determine the quantity of two products at which profit is maximize or cost is minimize
4. With discounting and factoring technique business man can calculate present value of bill, rate of discounting the bill and banker's gain
5. With currency translation formula of mathematics business man can cost of currency between two countries.

6. With assignment solution technique business man can solve transportation problems.
7. Large numbers of business estimations are done on the basis of probability theory of business mathematics.
8. Market research bureau can use consistency data theory of business mathematics for calculating estimating profit, capital, and sale of business.

Benefit of Business Mathematics

1. Business mathematics helps the business person avoid making mistakes that one may make in the management of the enterprise.
2. If the business managers make good use of business mathematics they have, they will be able to target potential clients to the business, minimizes the production cost, choose the right product to sell, the turning the best marketing strategy and above all be able to break even
3. A business will also be able to plan its future in advance and avoid entering into risky contracts.
4. Business mathematics is also important in the preparation of business budgets since, without the arithmetic, time series, and probability knowledge, one is notable to determining the future business requirement.
5. Business mathematics assists to prevent and control the resource shortages and ways for the business.

2.6 Entry Grades in Mathematics as Predictors of Students academic Performance

Student school and home environmental variables have attracted considerable attention are those of gender, location of school, qualification of teachers, socio economic

status of students' parents, teachers teaching experience and type of school etc. for instance. Illugbusi (2002) found in his respective studies that male perform significantly better than their female counter part in mathematics.

While other researcher Lira and Ezeife (2006) affirmed that gender has little or no effect on students' performance in mathematics. Furthermore, many researchers have been carried out on all other students' school and home environmental variables listed above. But not much has been done on the effects of entry grades (qualifications) on performance of students in mathematics in colleges of education.

Before any student could be admitted to study Business Education in any college of education in northwest zone, there is a minimum entry qualification, which he/she must satisfy. This however, varies from department to department in a study carried out by Kenschaft, (2003) he found the student entry qualifications are good predictors of their academic performance at their NCE. While Wolfe, (2001) found in this study that entry qualification has low predictive value (strength) on the final academic performance of students at the do furthermore Ojerinde (2005) and WAEC found in their respective studies that there was a positive and significant relationship between candidates academic performance in SSCE and the college performance of the same set of student's at the SSCE has fair predictive power on college performance.

Academic performance is the determination of level of success and failure in learning experience which could be qualified by a measure of child's academic standing in relations to those of other children of his age. Academic performance of a child as the learning outcomes of the child which includes the knowledge skills and ideas acquired and retained through their course of study within and outside the classroom situations.

2.7 Students Requirement in Business Education Department

Student's admission into Nigeria Certificate in Education (NCE) Business Education programmes requires that a student pass English and Mathematics with at least a pass or credit grade and obtained three credit passes in three commercial subjects which includes Principles of Accounting/Bookkeeping, Office Management or Practice Office, Commerce, Economics, Typewriting, Shorthand, Geography or Government at ordinary level examinations. Colleges of Education are also required to organize and run Preliminary Studies in Business Education (Pre-NCE Business) to assist students that have deficiencies in meeting the prescribed entry requirements as specified in the minimum standard for Nigeria Certificate in Education (NCCE, 2008 Pre-NCE).

The Pre-NCE programme was introduced to address the issue of low intake of students into some programmes namely sciences, vocational and technical education. The emphasis on these levels of passes is based on the notion that such students will cope with training demands and become efficient and effective business education teachers. The National Commission for Colleges of Education made it compulsory that candidates must obtain credits In mathematics as an enhancing grade before getting an admission into colleges of education, and included business mathematics in the minimum standard of NCE I first and second semester of Business Education programme.

The Nigeria Certificate in Education (NCE) Business Education programme in colleges of education entry requirement stipulates that a student should have 4 credits including English and a Mathematics and obtained three Commercial subjects at credit level (to be achieved at a maximum of 2 sittings) before they are admitted into the programme (NCCE Minimum Standard for Colleges of Education 2012).

Similarly, the Pre-NCE programmes require that candidates should have three credits and two passes at ordinary level in relevant area of study (NCCE 2012, Pre-NCE).

A good grade in mathematics is a passport for a student to enable them to get accepted into any of institute of higher learning and of the same time, widening the scope of the choices of courses that they may take up. Learning business mathematics is a dynamic and complex process involving between previous acquired levels of understanding and conceptualization and incorporating of learned or acquired formulas in mathematics to business application in real life e.g. how to calculate simple interest compound interest and annuity values.

Gbore (2006) opined that general knowledge in the same subject matter will facilitate learning of new materials in a similar future learning task, but examination may not always consistently measure present performance or predict future performance since performance is not static but change s as attitude and interest changes with time and new abilities or ideas. Tapia and Marsh (2004) also concluded that the number and intensity of mathematical subjects completed in high school are excellent indicators of success in higher education. Furthermore, students exposure to challenging mathematics enhances self-regulatory skills that benefit achievement (performance) in all subjects attempt in post-secondary education (Mathews, 2000: pugh & lowther, 2004).

Group of 66 researchers from Maryland Higher Education Commission (2009) revealed that the high school GPA was best predictor of college mathematics performance. A study conducted that the students' secondary school mathematics background has a dramatic effect on the pass rates of four different mathematics and mathematically related subjects, business mathematics included at college level.

James, montelle, and Williams (2008) carried out a study at the University of Canterbury in Newzealand to analyse the association between the final second school qualifications in mathematics with calculus of incoming students, and their results in the first year mathematics, subjects at the university since 2005. They found that the mathematics results of the National Certificate for Educational achievement (NCEA) taken during the final secondary year a strong indicator of success in tertiary Business Mathematics study.

2 .8 Relationship between Mathematics and Business Mathematics

There are many factors which have direct influence on performance of business mathematics these are attitude, anxiety, ability and mathematical background. There are scare studies have been conducted on students attitude toward business mathematics, in many studies, it is indicated that students witnessed about having positive attitude and mathematical achievement (Orhun, 2007). Maria,Vera, & Franciso (2012).Opined that attitude of student contributes major parts in determining attainment and partaking mathematics, similarly, Thorndike and Thorndike (2010) revealed that Mathematics grades determine interest level and intention of student to study qualitative subjects in future education.

Burstein (2004) reported that students` attitude toward mathematics and their performance are directly related with each other. Therefore, those students are having positive attitude perform better than bearing negative attitude regarding mathematics (Jane, 2009). To teach business mathematics attitude has to be assessed, as it is having high importance to teach this subject (Tapia and Marsh 2004).

Leonard, (2011) pointed out than stronger affection with mathematics have greater upshot on mathematics partaking than those students, who are showing higher cognition level. Attitude is the most important determined to create higher interest level of student for business mathematic to make classroom environment where student possessing positive attitude (Ayub et al 2005).

Weinstein & Lavaghetta, (2009) point out that teachers can easily predict the student performance and results of business mathematics by analysing their affection level with this subject. Similarly by observing students comments about this subject, whether they like it or not, make easier for teachers, how to teach this subject and provide more learning for students. Positive attitude for business mathematics is very important. Positive attitude increases student learning of mathematics (Rylands and Coady 2009).

The students having poor attitude and difficulties faced in learning mathematics is also causes poor learning and performance in Business mathematics. So mathematics is one factor that contributes in facing difficulties in Business mathematics (Murtumen and Titler ton, 2004). Maxwell (2008) explored that in U.S.A the students who have under gone 12 years of their schooling without passing mathematics as a subject find it difficult to understand tertiary and university level and causes anxiety towards these subjects. Anxiety level towards Business mathematics subjects is high among those students came from non-mathematics oriented disciplines (Maxwell 2008).

In learning process the student and teachers are in the main role. Student's objective is to gain knowledge and skill where teacher's responsibility is effective knowledge transfer to the student.

In learning of a particular subject student attitude and behaviour matters a lot e.g. some students who are not 'good with numbers' assumed that Business mathematics will be difficult for them (Gal. I 2000). Positive attitude associated with improved performance and achievements. Positive attitude regarding mathematics will encourage business students to choose finance and qualitative subject (Liu and Wilson 2009) from the discussion it looks like attitude is decisive variable for better performance and achievement in mathematics.

There are many studies which are suggesting that gender is also having important part for success in mathematics (Fennema & Sharman, 2000). There are general perceptions and findings of many researches that male can prefer better than females (Beswick, 2007) some studies also indicates that girls are having more dominance in mathematics results (Galbraith and Haines 2000).

Crespo (2003) found that there is no difference in the achievement of boys and girls, when they are studying mathematics. If we analyse the different aspect mathematics achievement and gender according Hyde et al (2008) females are sharper in computation than male, while male are having dominance in problem solving. Females feel more comfort is performing better, when they are solving classroom and text problem. On the other hand, males show better result with non-text and routine mathematics (Henning, 2007).

Afala and Basira and Barrah, (2013) reported on the impact of gender in the success rate of Business mathematics I examination using the different academic programmes in

Lagos state polytechnic, the findings revealed that the female students performed better than the male students in most cases which is contrary to most research works.

2.9 Gender and Mathematics Performance in Senior Secondary Schools.

Gender in common usage refers to the sexual distribution between male and female. Social scientists however refer to the term a social construction rather than a biological phenomenon. The choice of subject of study, Mathematics, is guided by the literature. Rene Descartes (1596-1650), a philosopher, argued "that mathematics or the "mathematicised" sciences ensured our understanding of the world" (Nokoe, 2008). Science, to Descartes, relies on the power of mathematics. Nokoe (2008) rejected the tempting arguments of George Berkeley (1685-1753) and David Hume (1711-1776) that mathematics is rooted in bundles of assumptions about infinite desirability in want of any basis in experience. In reaction, Nokoe (2008) had argued that, mathematics carries an optimal degree of consistency, certainty, and credibility to guide the Sciences.

The great misconception about mathematics is the notion that mathematics is about formulas and computations that need to be memorized. This view has trifled and thwarted the efforts of students more than anything else. This misconception has moved further to identify mathematics as a male subject in the basic and second cycle schools in the Ghanaian society. Our nation has made great strides towards achieving gender mainstreaming in education over the past years. Now, more than ever before, the door is wide open for women to seek and obtain careers that their mothers have never thought possible.

It is clear that major academic hurdles have been successfully cleared by and for women. However, evidence suggests mathematics- and science-related careers continue

to be dominated by men. Moreover, evidence is beginning to mount in support of the fact that the difference in mathematical success between men and women lies not within abilities, but within attitudes and expectations of success. Obviously, this maladaptive societal attitude renders numerous problems, but perhaps most detrimental of all is the fact that girls are not realizing their full potential, thus limiting them not only in the classroom, but also in future career choices.

Leonard (2011) was among early researchers to identify and research a disabling condition known as math anxiety. This can be described as a set of beliefs and behaviours that prevent students from performing in mathematics. Although some males have math anxiety, it is primarily seen in females. Individuals with math anxiety may be intellectually capable of doing mathematics, but their emotional response literally locks up their ability to perform. Classic symptoms include quickened pulse, sweaty palms, and an inability to think. It is thought that females become math anxious because of erroneous but prevalent beliefs like **(1)** math and science are male domains; **(2)** math and science must be done quickly; or **(3)** there is only one-way to solve a math problem.

Many years ago, people believed it was not "healthy" for women to receive an education. Specifically, "doctors warned that education redirected blood, initially destined for the ovaries to the brain. The result: educated women would be less likely to reproduce and more likely to go insane" (Sadker, 2000). Although seemingly ridiculous statement today, that particular belief kept many women far from education years ago. Until around the middle of the twentieth century, gender differences in intellectual abilities were considered "natural" or inherently dependent on biological sex differences (Sadker and Sadker, Klein 2000).

It seems appropriate to discuss sex-related differences in mathematics in connection with algebra. Girls and boys often begin to study algebra concepts in senior high school. Myra and Sadker (2000) found that females lose self-esteem when they enter middle school. According to Fennema's and Sherman (2000) classic research, differences between females' and males' learning of mathematics increased as they moved into adolescence. Thus, females have problems with self-esteem and learning mathematics just when they are beginning to study algebra, the foundation of most high school and college mathematics courses.

Further studies by Fennema and Sherman (2000) documented differences for females and males in both achievement and participation in mathematics courses in grades 6 through 12. As example of the attitudes studied, males were found to be more confident in their ability to learn mathematics than females and males perceived mathematics to be more useful to them than females. While exploring the gender differences in mathematics performance, Matthews (2000) found out that, certain myths have become widely accepted as truth. One such myth is that "women are qualitative, men are quantitative."Another myth is the linkage of a math-gene in male. Parents and teachers alike hold lower expectations for girls in math and science than they do for boys. In addition to these myths, most models of orientation to mathematics emphasize on social factors such as gender stereotypes.

It is these gender stereotypical attitudes over the years, held by teachers and absorbed by students that play a major role in the future mathematical performance of females (Banaji, Greenwald, and Nosek, 2002).

Before we attempt to identify and solve this problem, we must first scrutinize and explore its many roots. The first major issue that needs to be explored is teachers' beliefs about gender differences, specifically in mathematics ability. Teachers, sometimes attribute students' success and failure in mathematics to ability or effort, depending on the gender of the student. A second one that needs to be examined is the difference in the amount of attention and types of attention teachers give to female students as compared to that of the male student in the classroom. Ayub et al, (2005) found that "females receive less attention, both positive and negative from teachers than do males." Additionally, Sadker and Sadker (2000) found that teachers' questioning methods and praise differed substantially for girls and boys. Specifically, "females tend to be praised simply for trying, whereas teachers tend to withhold praise for males until they produce a correct answer." (Pugh and Lowther, 2004). Both of these foster an atmosphere favourable to male learning while overlooking the needs of female students.

The third one, which needs additional study, is that in the classroom, girls are less likely to engage in risk-taking activities such as asking questions and providing answers than are boys. In support of this, Sadker and Sadker (2000), found that "many girls are reluctant to risks in co-educational classrooms in part due to boys' domination". As Ayub, et al (2005) pointed out, "students who are active participants in their own education tend to be higher achievers" Thus, without engaging in risk-taking activities in the classroom; it is not possible for girls to achieve their full academic potential in mathematics.

This leads us to the forth examination; girls lack of self-confidence in their ability to perform in mathematics. Charles Shield stated in his 2000 article, girls, math, and the

glass ceiling that: confidence is one part of self-concept and has to do with how sure a student is of his/her ability to learn new mathematics and do well on mathematical tasks. Confidence influences as student's willingness to approach new material and to persist when the material become difficult. Despite the immediate difficulty of the task, the student persists when she is confident that a solution will be found or that the material will be understood.

2.10 Empirical Studies

Related researches conducted by other researchers include:

Momoh-olle, (2008) who conducted research on relationship between student's entry grades and academic achievement at the Kwara state college of education, Ilorin, the population of the study consist of four hundred and thirty seven (437) that actually graduated, entry grade and academic achievement of two hundred and two (202) Nigerian certificate in Education (NCE) Graduates were selected by stratified random sampling technique. The Objective of the study was to determine the relationship between student entry grades and achievement in Kwara state college of education, Ilorin. The study tested two null hypotheses which were:

1. There is no statistically significant relationship between student entry grades (X) and the student's overall college academic achievement: Two major subjects (y), theoretical courses in Education (y), Teaching practice (ys), Vocational studies courses (Business studies, secretarial studies, wood work, and metal work (yr) and other areas.

2. There is no statistically significant difference in the college academic achievement of students with different levels or strengths of grades. Analysis was made for the data

collected with Pearson Product Moment Correlation coefficient for measuring relationship and chi square statistics was used to test for significant difference in relevant distributions. The study concluded that entry grades of a student could generally not predict his academic achievement at the college largely depended on previous experiences which influence the in learning at the college. There was however a statistically significant relationship between student entry grade and their academic achievement in (i) Education theory (ii) the language and vocational studies. There was also no statistically significant difference in college academic achievement of students with different strength or qualities of entry grades.

The study made four recommendations, among which is that sound predictive validity of previous qualification in higher institution appropriate authorities and bodies should evolve examination and admission criteria which will consistently predict student future academic achievement such as the construction of standardized tests and adequate improvement in supply of instructional materials to schools to enhance student performances.

This study is similar to the current study as both seek to correlates entry grades of NCE students and their academic achievement. The previous study differs with the current study. The current study determined the relationship between entry grades in mathematics and students' performance in business mathematics as against nine subjects that were investigated by the previous study which is considered to be too large to be cover adequately in one college of education.

Also, the previous study used Pearson Product Moment Correlation coefficient and chi-square for testing relationship between entry grades and performance at the end of the programme while the current study will use Mean, standard deviation .and Pearson Product Moment Correlation Coefficient for testing relationship between entry grades and performance of students in business mathematics in first and second semester of N.C.E 1.

The study further confirmed the inability to public examination to predict student's performance in higher institution of learning. The study also provided basis for assuming that a significant relationship exist between previous knowledge and achievement in vocational subjects. The previous study was conducted in one college of education which is considered inadequate to capture the peculiar characteristics of the students, and it did not consider the relationship of student's entry grades in mathematics and performance of students in business mathematics as such creating a gap between the previous study and present study, therefore the study will fill the gap and add value to the literature. The current study enlarges the scope of the study to states colleges of education as well as converting grades of ordinary level in mathematics.

Jibril (2011), Relationship between Entry Grades in Mathematics and Students performance in Financial Accounting in Colleges of Education in Nigeria. The research has five objectives, five research questions and a hypothesis. The population of the study consists of six hundred and fifty five (655) students offering accounting option, out of the total population a sample of four hundred and seventy students was taken using random solving technique.

The findings revealed among others that there was significant relationship between students' entry grades in mathematics and their ability of solving problems in financial accounting within a stipulated time in federal colleges of education in Nigeria. On this ground the hypothesis was also rejected. The result of Null hypothesis indicates the difference that exist between male and female entry grades in mathematics and their performance in financial accounting in federal colleges of education in Nigeria.

In view of the findings the study recommend among others the orientation programmes should be encourage to enlighten the secondary school students on the need to develop interest in mathematics, because it will provide them with the necessary knowledge, skills and abilities that will enable them to cope up with further educational challenges. The relationship of this study and present study is that both focused on relationship on relationship of entry grades in mathematics and how it affect college of education student performance but the present study differ from this study on how this entry grade relate with performance in financial accounting, present study on Business Mathematics. The present study is conducted on N.C.E I students result for business mathematics while these study was conducted on N.C.E III student accounting option, and they both have similar methodology except in linear regression, the previous study use descriptive statistics of frequency distribution, percentages mean score and range were used Pearson product moment correlation was used to test the null hypothesis one and two while linear regression was used to test hypothesis three and 2 test analysis will hypothesis four and five at 0.05 level of significance.

The research study did not specifically explain how he has conducted his three weeks teaching and how he administered the test and the place among the three colleges of

education, there is no consistency in the period of conducting the test, the researcher is not consistence with standard grading where 70 =A as distinction,

The previous study covered only federal colleges of education, north-east zone, while the current study cover federal colleges of education, north-west zone. The current studies filled the gap that the previous study did not, by including north-west Colleges of Education; this study provide evidence that there is positive relationship between previous performance in mathematics and performance in business mathematics in colleges of education, Northwest zone, Nigeria.

Anakpua and Okoli (2012), Impact of Mathematics Instruction on Students' Interest in Teaching and Learning of Mathematics. The research has three objectives, three research questions, one null hypotheses, the population of the study consist of six secondary schools in Onitsha Education zone. Out of the total population three hundred students randomly selected, the result of the findings revealed that there is no significant difference between the impact of mathematics instruction on male and female secondary schools students' interest in teaching and learning of mathematics. It was recommended that mathematics teachers should develop positive relationship with students and stress class room activities that involve active teaching-learning process and students' participation in the class.

Though the previous studies was conducted at the secondary school level and the current studies is conducted at college of educations, with different geo-political zone in Nigeria both of them have common interest in teaching and learning mathematics and factors that affect student performance in mathematics teachers should develop positive

relationship with students and stress classroom activities so that they will be fully involved in teaching and learning in classroom. Bothe studies take gender into consideration since male and female are found in mathematics classes of secondary school which is transitional stage to the tertiary institute of higher learning where business mathematics is taught at both polytechnic and colleges of education.

However, the researcher limit the study to only SS II students of one Zonal education of a state which will not give adequate representation compared with the present which will cover northwest zone, the researcher should have involve students in the study since students interest in teaching and learning mathematics at secondary school was studied. Because the student response will give an input that yield better result.

Ajogbeje and Borisade (2013), opined that the Cognitive Entry Characteristics and Semester Examination Scores as correlate of college students' achievement in mathematics; the research has two objectives, two research questions and two hypotheses. The population of the study consists of 8300 students of schools of Arts and Social Science and Schools of science, out of the total population a sample of four hundred and fifteen was taken using 5% of the total population. The result of the major findings revealed that positive and significant relationship existed between the cognitive entry characteristics Senior Secondary Certificate Examination, Unified Tertiary Matriculation Examination (SSCE, UTME) semester examination result and the final CGPA of college student in mathematics. However a very low and positive correlation coefficient existed between CGPA of college student in mathematics. It could be concluded that the blind method of guess in objective achievement rest or examination by

UTME and SSCE candidate and their inordinate desire to obtain good grade and secure admission of all cost have made them to result to various examination mal practice there by making jamb or SSCE result unreliable selecting best candidate for admission into college programme. The paper recommended that the UTME & SSCE Examination should not give emphasis on objectives, let the emphasis be on theory.

The relationship between the current study and previous one, the previous focused on cognitive entry characteristics of student achievement while present is on entry grade student performance. The difference between current study and previous one is that student achievement is measured on summative examination while student performance is measured on formative examination for the current study.

The quasi- experimental research design was not appropriate for that purpose; descriptive survey will give better and efficient result. And 5% sample was too small out of the total population of 8300 students, the larger the sample the higher the accuracy of the result. The gap which this study filled is that importance of formative testing should be given consideration because of its emphasis on student performance at each semester of the session the previous study did not attach emphasis on formative testing which create a room for remediation.

Ajala, Basir and Barrah (2013), Conducted a research on Empirical Analysis on Gender Disparity Towards their Performance in Business Mathematics – I examination in tertiary institution, Lagos state, Nigeria.

The research has two objectives, two research question, two hypothesis, the production of the study consist of 10,000 males, 10,000 females, students in school of

part time studies-day. School of Part Time Studies–Regular, School of Part Time–Evening and School of Part Time Studies–Annexes. Out of the total population a sample of 500 males and 500 females was taken using 5% of the total population.

The result of the major revealed that the result of the analysis shows that there is no significant difference in the overall performance of student in Business mathematics–across genders in all the schools put together, though the female students obtained a higher mean mark than the male students. It is concluded that the female students performed better than the male students in most cases which is contrary to most research work.

The current study benefitted from the study, since both of them investigate the performance of students in business mathematics at higher institute of learning, the previous investigate on gender disparity toward the performance and current study investigate whether there is difference between male and female student admitted with O'L credit grade and those with pass grade admitted through preliminary (Pre-NCE) in two different research questions & null hypothesis and their performance in NCE I first & second semester business mathematics at colleges of education in north west geo-political zone, all the students that the research was conducted were on NCE I result of Business mathematics first and second semester and the previous is conducted on National Diploma I students of Lagos state polytechnic. The researcher should have made the scope of the study wider, because he limit the study to only one tertiary institution so that the finding should be generalize to all tertiary institute of higher learning.

The researcher should have use Analysis of Variance since he was conducting a research on Gender Disparity towards Performance in business Mathematics.

The previous study and current study differs in location. The previous study is conducted in Lagos state polytechnic. South west geo-political zone, while the current study was conducted in colleges of education, northwest zone Nigeria. The study was filled that previous did not consider there is provision in polytechnics for student with deficiency in the requirements to be enrolled in to preliminary studies to enable them to be admitted into ND I but the study was silence about the provision but the current study take it into consideration.

Daniel (2014), investigated on the influence of entry grades in mathematics and accounting ordinary level on students' performance in Advance financial accounting in college of education in north eastern states, Nigeria, the population of the study consist of NCE III student-graduates for the 2010-2011 academic sessions in the nine colleges is six hundred and fifty (650) students. The sample population was drawn from six colleges representing each state in the zone to capture adequate characteristics of the students in these states. The objective of the study is to determine the influence of students O/L entry grades in mathematics and principles of accounting on Business Education students' performance in financial accounting for the Nigeria certificate in education in colleges of education.

The study has five (5) research questions and five (5) null hypotheses were tested. The findings revealed among others that entry grades in mathematics have significant influence on student's academic performance in advance financial accounting.

Good grade in principles of accounting at O/L contribute significantly and academic performance of students in advanced financial accounting also further revealed that significant different between male students with pass grades in O/L mathematics and their female counter parts in Advanced financial Accounting in colleges of education in north eastern states, in view programme should be mounted at secondary schools level to enlighten students interest in mathematics and provide them with the necessary knowledge, skills and abilities to cope with challenges in their future educational & endeavours, at secondary school level, schools should organized tutorial classes as a strategy to develop students critical thinking and higher cognitive skills to handle numbers comfortable.

The current study benefitted from the previous study. Because both researchers focus on the relationship and influence on entry grade on ordinary level mathematics and how it affects student performance in college of education which was also the purpose of the current study.

The current study consider preliminary requirements for those that have deficiency in the O' level to be admitted into NCE I in colleges of education while the previous did not include preliminary students because of the changes in colleges of education minimum standard, N.C.C.E (2012) This is the gap that current study was filled and increased the literature in considering student with deficiency and including performance of N.C.E I students in Business Mathematics I.

2.11 Summary of Reviewed Literature

The literature reviewed detailed the theoretical framework on the study Piaget cognitive development theory of learning was reviewed, literature reviewed showed that the teaching of Business mathematics at colleges of education is expected to lay scientific and reflective thinking, and it require effective functioning of brain, its teaching should aim at developing and adequate strategy to enable students be equipped sufficiently with the ability to think and make intellectual process using logics and ideas this will enable the learners to attain competence in knowledge acquisitions, skills and understanding are connected with what they know with the present and are of relevance to their lives, that is why this study adopted Piaget cognitive development theory.

The concept of mathematics was reviewed, the objective of mathematics were also identified as well as its importance, the review also discusses the concept of business mathematics and its objective as well as factors affecting business mathematics students. Review of the concept performance was carried out, the concept of performance discussed, the review suggested that a number of factors influence and or affect students' academic performance been low in recent years.

Six empirical studies were reviewed. From the empirical studies it was observed that, most of the researchers recommended that tertiary institutions to make a provision of a examination criteria that will consistently measure and predict students` future academic performance by constructing a standardised test and preliminary examinations. Despite all the literature reviewed, to the best of the researcher`s knowledge, none was found on the relationship between entry grades in mathematics and students` performance

in business mathematics in Colleges of Education, in Northwest zone Nigeria. This is the gap this study had filled.

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter specifically outlines the methods and procedures that were used for conducting this research study. The chapter is organized under the following sub-headings:-

3.1. Research Design

3.2. Population for the Study

3.3. Sample Size and Sampling Procedure

3.4. Instrument for Data Collection

3.4.1 Validity of the Instrument

3.4.2 Pilot Study

3.4.3 Reliability of the Instrument

3.5. Procedure for Data Collection

3.6. Procedure for Data Analysis

3.1 Research Design

The research design of this research is an ex-post facto design. The ex-post facto design is a systematic empirical inquiry in which the researcher does not have direct control on independent variables because their manifestations have already occurred.

This is in line with Kolawole and Ilugbusi (2007) confirmation that in adopting the ex-post facto design the entire research variable had already existed before the commencement of the study and hence the researcher neither controls nor manipulates the research variables he just collects the data and uses them as they occurred naturally.

The ex-post facto design is of two types:

(a). Correlation design and (b) criterion group design

To Avdesh (2011), correlation design is used to determine the relationship between two or more variables, lags to develop the cause and effect. The reason for selecting this design is to enable the researcher to source the data using documented results. Documentary sources are records relating to individuals or groups of individuals that have been generated in the course of their daily lives. (Payne and Payne, 2004)

3.2 Population for the Study:

The population of this study consists of seven hundred and ninety-nine (799) NCE 1 students of business education department in five (5) federal colleges of education. The five colleges of education are the only federal colleges of education that offered business education programme in northwest zone Nigeria in 2013/2014 session. The target population used in analysing the data are: four hundred and seventy-four plus two hundred and twenty-nine which is equal to seven hundred and three students (703) who presents students with credit and above entry grades. Fifty-eight plus fourty-one is equal to ninety-nine (99) serves as students with pass entry grades; four hundred and seventy-four (474) serves as male students with credit and above entry grades, and fourty-one (41) also serves as female students with pass entry grades. The breakdown of this population is presented in Table 3.1 for more clarifications.

Table 1 Population of the Study

SN	NAME OF INSTITTUTIONS	STATE	MALES		FEMALE		TOTAL
			CREDIT	PASS	CREDIT	PASS	
1	FCE T BICHI	KANO	259	08	45	01	313
2	FCE (T) GUSAU	ZAMFARA			49	10	059
3	FCE KANO	KANO	91	29	66	16	199
4	FCE KATSINA	KATSINA	58	05	12	07	082
5	FCE ZARIA	KADUNA	66	16	57	07	146
	T OTAL		474	58	229	41	799

Source: Academic records from the departments of Business Education in the five colleges of Education Northwest geopolitical, zone Nigeria 2015.

3.3 Sample Size and Sampling Procedure

The whole population of eight hundred and thirty-one students of the five colleges of education in Northwest zone, Nigeria were used as a sample size of this study. This is in line with the view of Glenn (2009), who recommended using the entire population of less than one thousand. A large sample size is more representative of the population. Morris (2013) stated that larger samples increase the chance of finding a significant difference when it actually exists.

3.4 Instrument for Data Collection:

The instrument of this research are documentary results of the respective colleges of education, which were collected from the students` affairs office in respect of entry grades from the students' documentary records of the office and business mathematics semester results of the students in Business Education Department in northwest zone Nigeria. Suggestion of Kolawole and Ilugbusi (2007) who recommend that the documentary record should be used as an instrument for data collection due to the fact that it gives the researcher the real information he or she is in need for the study. The data collected was validated by the colleges academic Boards.

3.4. 1. Validation of the Instrument

The entry grades were results obtained by students at the of their final or standardised examinations which are prepared by recognised examination bodies which include the West African Examinations Council (WAEC) and the National Examination Council (NECO) the result was validated by this examination and it was examined yearly and it is measuring what it is expected to measure since the result was yield continually, for business mathematics documentary result was also used for this study. This is in line

with the statement that the data of this research was validated by the colleges` academic boards in respect of federal colleges of education in Northwest geo-political zone. This is also is in line with Hongxing (2006) and Monageng, (2006) recommended that when documentary sources are used as primary sources of data collection, it is of cardinal importance that the researcher evaluates the documents and ensures the documents are authentic and a true representation of what they represent and meaningful. Authenticity refers to whether the evidence is genuine, reliable, and dependable. The researcher ensured that the documents consulted were genuine and of integrity. The supervisors of this thesis have went through the results of the students in five federal colleges of education and made their comments for validating the results in order to measure relationship between entry grade in mathematics and students' performance in business mathematics in federal colleges of education northwest zone Nigeria.

3.4.2 Pilot Study

This study does not require a pilot study; this means that the instrument of this study was validated by the West African Examinations Council as well as National Examination Council (WAEC and NECO) and academic board of each respective college of education. This implies that these records contains and measured what supposed to be measured.

3.4.3 Reliability of Instrument

This study does not require reliability of instrument due to the fact that the records used as instrument for this study were reliable in the sense that, it consistently measure what was supposed to be measured. This is in accordance with the views of Osuala (2005) that reliability concerns the internal validity, in which the goal is to demonstrate

that the inquiry is conducted in such a manner as to ensure that the subjects are accurately identified and described. For this reason, the researcher ensured that all document consulted were genuine and reliable.

3.5 Procedure for Data Collection

A letter of introduction, as in appendix I, was collected by the researcher from the Department of Vocational and Technical Education, Ahmadu Bello University, Zaria. The letter was used in order to seek the permission from the college management for the purpose of facilitating the collection of data. The collection of data was done by researcher personally within two weeks. The weeks were scheduled as follows. The researcher spent two days in each college of education for the purpose of collecting the data. At each federal college of education the Dean Student Affairs, directed the researcher to the Head of Department to provide the researcher with the documentary records. The photocopy of the students' results were collected from the examination officer as instructed by the Head of department to provide the researcher with semester results of the students in Business mathematics at Business Education Department for the 2013/2014 session. The researcher analysed the results collected for the purpose of analysis in order to determine the inference of the data.

3.6 Procedure for Data Analysis

In analysing the data generated from the study, the researcher coded the data collected from the respondents` response. The researcher employed the use of descriptive statistics in tables of frequencies, mean, and standard deviation to analyse the demographic characteristics data using percentage, as well as answer the research questions. All the null hypotheses were tested using Pearson Product Moment Correction

(PPMC), all at 0.05 level of significance, due to the fact that the researcher's interest is to measure relationship between two or more variables, this is in line with Osuala (2005), who stated that the Pearson Product-Moment Correlation co-efficient (r) is used to find the strength of the relationship between two variables. The degree of the relationship implies that when the correlation coefficient approaches plus or minus 1.00 there is strong positive or negative relationship.

A positive number, for example +1.00, indicates there is positive relationship whereas a negative number, for instance -1.00, indicates there is negative relationship, on the other hand, correlation of 0.00 indicates no relationship at all between the variables (Osuala, 2005).

Decision rule: a mean of 40 marks and above was considered as acceptable, while A Mean of 39 marks and below was considered as rejected, in relation to the study`s research questions. Because 40 marks are regarded as pass mark in the benchmark in both senior secondary schools examination bodies like WAEC and NECO and all tertiary institutions. (See Appendix III and IV).

All the null hypotheses were tested at 0.05 level of significance. In test of the hypothesis, when the calculated value of any tested hypothesis is less than or equal to the critical value, the null hypothesis was retained. On the other hand if the calculated value is greater than the critical value, the null hypothesis was regarded as rejected.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

In this chapter, data for this study are presented, and analysed based on the research questions and null hypotheses that guide the study. The chapter has the following subheadings:

4.0 Demographic Characteristics

4.1 Answers to Research Questions

4.2 Test of Null Hypotheses

4.3 Summary of Major Findings

4.4 Discussion of Major Findings

4.0 Demographic Characteristics of the Respondents

Table 2. analysed the features of the respondents according to their location using percentages for clarification of the research.

Table 2: Demographic Characteristics of the Respondents

F C E	NUMBER OF RESPONDENTS	PERCENTAGES %
Bichi	313	39
Zamfara	059	07
Kano	199	25
Katsina	082	11
Kaduna	146	18
Total	**799**	**100**

Source: Field Survey 2015

The analysis presented in table 4.0 shows that Zamfara state had the least respondents, with 59 (07%). Next in the table was Katsina state with 82 (11%), Kaduna state with 146 (18%) and Kano state with 199 (25%) as well as Bichi in Kano state also with 313 (39%) which had the greater percentages in the table as

respondents respectively. By analysis, the rate of returns of the records was in proportion to the differences in the population.

4.1 Answers to Research Questions

Responses used to analyse the demographic characteristics and answer to the research questions are stated in tables 4.0 to 4.4, for the purpose of giving more clarification to the reader(s); below is the breakdown of the tables:

Research Question One

What is the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE I in colleges of education in Northwest zone, Nigeria?

The research question was answered using the data collected from the colleges of education records, as summarised in Table 3

Table 3: Mean relationship between students with credit and above entry grades in mathematics and their performance in business mathematics

Respondents	**N**	$\bar{x}$	**SD.**	**Mean Difference**
Credit and Above	703	55.40	6.11	
				9.8%
Student performance in business mathematics	703	46.09	17.55	

Source: Field survey, 2016

Table 3 1reveals that the mean of the students with credit and above entry grades in mathematics is 55.40 and their performance in business mathematics is 46.09 while the SD for credit and above is 6.11 which is less than the students' performance in business mathematics 17.55 this means that their performance little bit improved in business mathematics.

Research Question Two

What is the relationship between students admitted through Pre-NCE with pass entry grades in mathematics in colleges of education in northwest zone Nigeria?

The research question was answered using the data collected from the colleges of education records as summarised in table 4

Table 4: Mean relationship between students admitted through Pre-NCE with pass entry grades in mathematics

Respondents	**N**	$\bar{x}$	**SD.**	**Mean Difference**
Pass entry grades	99	42.67	2.50	
				(4.69%)
Student performance in business mathematics	99	47.36	17.36	

Source: Field survey, 2016

Table .4 reveals that the mean of the students with the pass entry grades in mathematics is 42.67 and their performance in business mathematics is 47.36 while the SD for credit and above is 2.50 which is less than the students' performance in business mathematics 17.36, this means that their performance little bit improved in business mathematics when compared with the pass entry grades in mathematics.

Research Question Three

What is the relationship between credit and above entry grades in mathematics on the performance of male students in business mathematics in colleges of education in Northwest zone Nigeria?

The research question was answered using the data collected from the colleges of education records as summarised in table 5.

Table 5: Mean relationship between students with credit and above entry grades in mathematics on the performance of male students in business mathematics

Respondents	**N**	$\bar{x}$	**SD.**	**Mean Difference**
Credit entry grades	474	57.67	8.76	
				12.1%
Student performance in business mathematics	474	45.59	18.82	

Source: Field survey, 2016

Table 5 reveals that the mean of the students with the credit and above in mathematics is 57.57 and their performance in business mathematics is 45.59 while the SD for credit and above is 8.76 which is less than the students' performance in business mathematics 18.82. The analysis reveals that the entry grades in Mathematics have improved on the relationship that exists in the performances of male students in Business mathematics, in Colleges of Education in the Northwest zone Nigeria.

Research Question Four

What is the relationship between pass entry grades in mathematics on the performance of female students admitted through Pre-NCE in business mathematics in colleges of education in Northwest zone Nigeria?

The research question was answered using the data collected from the colleges of education records as summarised in table 6

Table 6: Mean relationship between female students with pass entry grades in mathematics and their performance in business mathematics

Respondents	N	$\bar{x}$	SD.	Mean Difference
Pass entry grades	41	43.29	2.40	
				(3.1%)
Student performance in business mathematics	41	46.39	16.10	

Source: Field survey, 2016

Table 6, reveals that the overall summary of the analysis for female students had the mean score of 43.29 in credit and above, and students performance in business mathematics while the SD of pass entry grades is 2.40 and their performance of male students in business mathematics had the SD is 16.10, which showed that their performance is averagely related between pass entry grades and that of business mathematics counterparts. The analysis reveals that the preliminary result in Mathematics have improved on the relationship that exists in the performances of male students in Business mathematics, in Colleges of Education in the Northwest zone Nigeria.

4.2 Testing of Null Hypotheses

A number of null hypotheses were raised in the study. The purpose of this study is to determine the relationship between students with credit and above entry grade in mathematics and their performance in Business Mathematics in NCE 1 in federal colleges of education Northwest zone Nigeria. The null hypotheses were tested as follows.

Null Hypothesis One

There is no significant relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE I in Colleges of education in Northwest zone Nigeria

The data collected from the field were summarised in order to test the null hypothesis in table .7

Table 7 PPMC used to test relationship between students admitted with credit and above entry grades in mathematics and their performance in business mathematics

Respondents	N	$\bar{x}$	SD	Df	r-cal.	r-critical	P value
Credit and above	703	55.5	6.11	1404	.140	0.062	0.000
Students` performance in business Maths	703	46.1	17.56				

Source Field survey, 2016

The table 7 reveals that the mean scores for students admitted with credit and above entry was 55.50, standard deviation 6.11 while their mean performance in business mathematics was 46.09 and standard deviation of 17.56, statistical computation indicated the significant relationship between their entry grades and their performance in business mathematics which r=.140 (p>0.01) at df 1404, therefore, the null hypothesis is rejected on the account that the significant relationship exist between credit in the entry grades and their performance in business mathematics

Null Hypothesis Two

There is no significant relationship between students with pass entry grades in mathematics and their performance in business mathematics in colleges of education in northwest zone Nigeria.

The data collected from the field were summarised in order to test the null hypothesis in table 8

Table 8 PPMC used to test the relationship between students with pass entry grades in mathematics and their performance in business mathematics

Respondents	N	$\bar{x}$	SD	Df	r-cal.	r-critical	P value
Pass entry grades	99	42.67	2.50	196	(.083)	0.139	0.00
Students` performance in business Maths	99	47.36	17.36				

Source Field survey, 2016

The table 8 reveals that the mean scores for students admitted with credit and above entry was 42.67 standard deviation, 2.50, while their mean performance in business mathematics was 47.36 and standard deviation of 17.36, statistical computation indicated the significant relationship between their entry grades and their performance in business mathematics which r=.(.083) (p>0.01) at df 196, therefore, the null hypothesis is accepted on the account that the significant relationship does not exist between credit in the entry grades and their performance in business mathematics. There is no significant relationship between the students with pass entry grades and their performance in business mathematics in Colleges of education in Northwest zone Nigeria.

Null Hypothesis Three

There is no significant relationship between credit and above entry grades in mathematics on their performances of male students in business mathematics in colleges of education in northwest zone in Nigeria

The data collected from the field were summarised in order to test the null hypothesis in table 9

Table 9 PPMC used to test the relationship between male students with credit and above entry grades in mathematics and their performance in business mathematics

Respondents	N	$\bar{x}$	SD	Df	r-cal	r-critical	P
Credits and above	474	57.67	8.76	946	.600	0.062	0.00
Students` performance in Business mathematics	474	45.59	18.82				

Source Field survey, 2016.

The table.9 reveals that the mean scores for students admitted with credit and above entry was 57.67 standard deviation 8.76 while their mean performance in business mathematics was 45.59 and standard deviation of 18.82, statistical computation indicated the significant relationship between their entry grades and their performance in business mathematics which r-cal .600 (P>0.01) at df 946, therefore, the null hypothesis is rejected on the account that the significant relationship exists between credit and above in their entry grades and their performance in business mathematics.

Null Hypothesis Four

There is no significant relationship between pass entry in mathematics on their performances female students admitted through Pre NCE in business mathematics in Colleges of Education in Northwest zone Nigeria.

The data collected from the field were summarised in order to test the null hypothesis in table 10

Table 10: PPMC used to test the responses of the relationship between pass entry grades in mathematics and their performance of female students admitted through Pre NCE in business mathematics

Respondents	N	$\bar{x}$	SD	Df	r-cal	r-critical	P
Pass entry grades	41	43.29	2.40	80	0.65	0.220	0.00
Students` performance in Business Maths	41	46.39	16.10				

Source Field study 2016

Table 10 shows that the mean scores for students admitted with credit and above entry was 43.29 standard deviation 2.40 while their mean performance in business mathematics was 46.39 and standard deviation of 16.10, statistical computation indicated the significant relationship between their entry grades and their performance in business mathematics which r-cal 0.65 (P>0.00) at df 80, therefore, the null hypothesis is rejected on the account that the significant relationship exists between pass entry grades and their performance in business mathematics.

4.3 Summary of the Major Findings

The study established the followings findings

1. There is significant relationship between students with credit and above entry grades in Mathematics and their performance in business mathematics at NCE I in Colleges of Education in Northwest zone Nigeria (P= 0.01).
2. There was no significant relationship between students with pass entry grades in mathematics and their performance in business mathematics in Colleges of Education in Northwest zone Nigeria (p=0.01).
3. There is positive relationship between credit and above entry grades in mathematics on the performances of male students in business mathematics in colleges of education in northwest zone in Nigeria (P=0.01).
4. There is positive relationship between pass entry grades 0 level mathematics and the performance of female students admitted through Pre NCE in business mathematics in Colleges of Education in Northwest zone Nigeria (P=0.01).

4.4 Discussion of the Findings

The findings of the research hypothesis one in table 4.5 show that, there is significant relationship between the students with credit and above entry grades in mathematics and their performance in business mathematics at NCE I in federal colleges of education in northwest zone Nigeria. This means that every student performed significantly better in his or her business mathematics in relation to mathematics knowledge they have from the 0-level to that of the colleges of education admitted.

This is in line with Stafford (2009) who opines that the knowledge of the O-level mathematics background enhanced the students' performance in their tertiary level

business mathematics semester examination results significantly. In the same vein, Kajuru, (2009) identified importance of mathematics one of which is that is essential for every life. Essential for understanding concepts life time distance, weight and temperature, mathematics provides knowledge for precise logic and procedure as well as critical evaluation of result and affording the means for checking the results. Similarly, Idahi, (2002) suggested that mathematics knowledge enable student to cope confidently with mathematics needed in their future studies, workplaces or daily life in a technological and information in the society, and thus opined that mathematics curriculum aims at developing in students talent as well as improving their performance in any subject of study such as business mathematics at federal college of education in particular.

The findings of hypothesis two in table 4.6 revealed that, there is no significant relationship between students with passes entry grades in mathematics and their performance in business mathematics in federal colleges of education in northwest zone Nigeria. This means that the r-calculated is less than the r- critical which implies that the null hypothesis is accepted according to the decision rule for parametric statistics. This means that the relationship is negatively related with r calculated is (.083) and justified that there is no significant relationship between the variables under study. The findings are contrary to Gbore (2006) who opined that general knowledge in the same subject matter will facilitate learning of new materials in a similar future learning task, but examination may not always consistently measure present performance or predict future performance since performance is not static but changes as attitude and interest changes with time and new abilities or ideas. This is confirmed by Fennema's and Sherman

(2000) classic research, differences between females' and males' learning of mathematics increased as they moved into adolescence. The gender difference does not exist in the students' performance in learning subject with mathematical application such business mathematics in federal colleges of education in Nigeria.

The findings of the research hypothesis three in table 4.3 and 4.7 indicates that there is positive relationship between the credit and above entry grades in mathematics and their performance of male students in business mathematics in federal colleges of education in northwest zone in Nigeria. This means that male students performed significantly better in their business mathematics examination at the colleges of education as regards to their performance.

Therefore, the null hypothesis is rejected which shows that there is positive relation between the performance of male students in business mathematics and their credit and above entry grades. The findings are in line with Matthews (2000) who found out that, certain myths have become widely accepted as truth. One such myth is that "women are qualitative, men are quantitative." Another myth is the linkage of a math-gene in male. Fennema and Sherman (2000) documented differences for females and males in both achievement and participation in mathematics courses in grades 6 through 12. As example of the attitudes studied, males were found to be more confident in their ability to learn mathematics than females and males perceived mathematics to be more useful to them than females. While exploring the gender differences in mathematics performance,

The findings of the research hypothesis four in table 4.8 justified that there is significant relationship between pass entry in mathematics and their performance of

female students admitted through Pre NCE in business mathematics in federal colleges of education in northwest zone Nigeria. This means that the female students with pass entry grades performed significantly better in relation to their performance of business mathematics after attending one year Pre NCE Programme and the first semester examination in NCE 1 at the federal colleges of education in northwest zone Nigeria. This implies that the female student's performance of business mathematics which means the r-calculated is greater than the r-critical; therefore, the null hypothesis rejected and concluded there is no significant relationship female student in their performance of business mathematics.

The findings are contrary with Fennema and Sherman (2000) documented differences for females and males in both achievement and participation in mathematics courses in grades 6 through 12. As example of the attitudes studied, males were found to be more confident in their ability to learn mathematics than females and males perceived mathematics to be more useful to them than females, while exploring the gender differences in mathematics performance. The findings are consistence with that of Hyde et al (2008) females are sharper in computation than male, while male are having dominance in problem solving. Females feel more comfort is performing better, when they are solving classroom and text problem. In the same vein Ajala, Basir & Barrah (2013), conducted a research on Empirical Analysis on Gender Disparity Towards their Performance in Business Mathematics and concluded that the female students performed better than the male students in most cases which are contrary to most research work.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarised the whole research work, conclusion was drawn, and recommendations were made based on the findings of the study. The chapter has the following subheadings:

5.1 Summary

5.2 Contribution to knowledge

5.3 Conclusion

5.4 Recommendations

5.5 Suggestion for Further Study

5.1 Summary

The study was carried out in order to determine the relationship between entry grades in mathematics and students` performance in business mathematics in colleges of education in north-west geo political zone, Nigeria. In bid to carry out the study, four objectives were raised which include to assess the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in Colleges of education in Northwest zone, Nigeria. In line with the specific objectives, four research questions were asked among which include. What is the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in Colleges of education in Northwest zone Nigeria? Four null hypotheses were postulated and tested which include.

There is no significant relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1in Colleges of Education Northwest zone, Nigeria.

In bid to carry out the study, four objectives were raised which include to assess the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in Colleges of education in Northwest zone, Nigeria. In line with the specific objectives, four research questions were asked among which include. What is the relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1 in Colleges of education in Northwest zone Nigeria? Four null hypotheses were postulated and tested which include. There is no significant relationship between students with credit and above entry grades in mathematics and their performance in business mathematics at NCE 1in Colleges of Education Northwest zone, Nigeria. The research design of this research is an ex-post facto design. The ex-post facto design is a systematic empirical inquiry in which the researcher does not have direct control on independent variable because their manifestations have already occurred.

A total of seven hundred and ninety-nine (799) male and female students of federal colleges of education served as the population of the study. Based on this no sampling sizes were required for the study. The data collected using copies of colleges of education records of students performances were presented in tables and analysed using mean rating, Pearson Products Moment Correlation in order to assess the relationship between null hypotheses at 0.01 level of significance. The results of analysis indicated that:

1. There is positive relationship between the credit and above entry grades and their performance in business mathematics.
2. There was no significant relationship between students with pass entry grades in mathematics and their performance in business mathematics.
3. There is positive relationship between credit and above entry grades in mathematics of male students in business mathematics.
4. There is positive relationship between pass entry grades in mathematics on the performances of female students admitted through in business mathematic.

A total of Seven hundred and ninety nine (799) male and female students of federal colleges of education served as the population of the study.

5.2 Contribution to Knowledge

Based on the findings this research contributed to the followings:

1. The credit and above entry grades in mathematics improve the performance of NCE I students in business mathematics in Business Education Department in federal colleges of education in northwest zone Nigeria (P= 0.00).
2. The Preliminary one year programme improve the performance of students admitted with pass entry grades in mathematics in business mathematics result in first semester examination in Business Education Department in federal colleges of education in Northwest zone Nigeria (P=0.00).
3. The credit and above entry grades in mathematics improve the performances of male students in business mathematics in federal colleges of education in northwest zone in Nigeria (P=0.00).

4. The Preliminary programme improve the performance of female students admitted with pass entry grades 0-level in mathematics in their performance in business mathematics in colleges of education in northwest zone Nigeria (P=0.01).

5.3 Conclusion

Based on the findings discussed in chapter four, this study concludes that good entry grades in mathematics are the appropriate measures that will improve the performance of the students at the tertiary institutions, and the provision of one year Pre NCE Programme for the students with deficiency in Mathematics 0-level entry grades, this will enable the students to perform better at the ends of their semesters` examination.

5.4 Recommendations

Based on the conclusion drawn, the researcher made the following recommendations:

1. Emphasis should be made on credit entry grades in mathematics in studying business mathematics in federal colleges of education.
2. Preliminary programme should be continued in our federal colleges of education since students with pass entry grades in mathematics performed positively in their business mathematics.
3. Emphasis need to be put on credit entry grades in mathematics on male students in studying business education in federal colleges of education.
4. Emphasis need to be put on student with pass entry grade in mathematics to undergo preliminary programme to improve the performance of females student in studying business education in federal colleges of education.

5.5 Suggestion for Further Studies:

A study of this nature wil not serve for the whole nation among this will be considered as suggestion for further study

1. Relationship between entry grades in mathematics and students` performance in business mathematics in universities in north-central geo-political zone, Nigeria.
2. Impact of the relationship between entry grades in mathematics and students performances in business mathematics in universities of education in north-west geo political zone, Nigeria.

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APPENDIX I

DEPARTMENT OF VOCATIONAL & TECHNICAL EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA.
FACULTY OF EDUCATION

VICE CHANCELLOR: Prof. Ibrahim Garba (B.Sc., M.Sc. (A.B.U.); Ph.D. (London) D.I.C.)
HEAD OF DEPARTMENT: Professor A. A. Udoh (B.Ed. (Hons) Nsukka; M. Ed. & Ph.D. Bus Edu. (A.B.U.))
Telephone: 069-51755, 50692

Your Ref: _____ Date: 13th July, 2015

Our Ref: M.Ed/Educ/20084 /2012-2013

Letter of Introduction

MISBAHU YUNUSA – M.ED/EDUC/20084/2012-2013

This is to certify that the above mentioned name is a Postgraduate student (M.Ed Business Education) in the Department of Vocational and Technical Education, Ahmadu Bello University, Zaria carrying out a research topic: ***Relationship Between Entry Grades in Mathematics and Students Performance in Business Mathematics in Colleges of Education North-West Geo-Political Zone, Nigeria.***

Please, kindly give him every assistance he may require.

DEPT. OF VOC. & TECH. EDUC.
A.B.U. ZARIA

Professor A.A. Udoh
HEAD OF DEPARTMENT

APPENDIX II

Students Results in Business mathematics grades for 2013-2014
FCE TECHNICAL BICHI

Session	No of students	A	%	B	%	C	%	D	%	E	%	F	%
2012/2013	350	48	13.7	55	15.5	68	19.4	48	13.7	110	31.4	21	6
2013/2014	374	54	14	61	16	70	20	54	14	102	27	29	9
Total	724	102	27.7	116	31.5	138	39.4	102	27.7	212	58.4	50	15

Source: Examination office of school of Business Education

Students Results in Business mathematics grades for 2013-2014
SHEHU SHAGARI COLLEGE of EDUCATION

Session	No of students	A	%	B	%	C	%	D	%	E	%	F	%
2012/2013	104	5	4.8	27	26	22	21.1	5	4.8	12	11.5	33	31.7
2013/2014	133	4	3	7	5.2	10	7.5	4	3	53	39.8	55	41.3
Total	237	9	7.8	34	31.2	32	28.6	9	4.7.8	65	51.3	88	72.47

Source: Examination office of Business Education Department

Key: A 70 and above

B- 60 -69

C-50-59

D-45-49

E-40-44

APPENDIX III

Grades of business mathematics in federal colleges of education Northwest zone Nigeria

Percentage score %	70 +	60-69	50-59	45-49	40-44	39
Letter grade	A	B	C	D	E	F
Weighting	5	4	3	2	1	0

SOURCE: NCCE MINIMUM STANDARD 2012.

APPENDIX IV
WAEC and NECO GRADING SYSTEM 2000/2012

LETTERS	REMARKS	PERCENTAGE	TO	PERCENTAGE
A1	EXCELLENT	75%		100%
B2	VERY GOOD	70%		74%
B3	GOOD	65%		69%
C4	CREDIT	60%		64%
C5	CREDIT	55%		59%
C6	CREDIT	50%		54%
D7	PASS	45%		49%
E8	PASS	40%		45%
F9	FAIL	0%		39%

SOURCE: RETRIEVED ON 30 MARCH 2016

Appendix V

Pearson Product Moment Correlation Coefficient Critical Values for One and two tailed Probabilities

	0.05	0.025	0.005	0.0005
	Two Tailed of Probabilities			
N	0.1	0.05	0.01	0.001
4	0.900	0.950	0.990	0.999
5	0.805	0.878	0.959	0.991
6	0.729	0.811	0.917	0.974
7	0.669	0.754	0.875	0.951
8	0.621	0.707	0.834	0.925
9	0.582	0.666	0.798	0.898
10	0.549	0.632	0.765	0.872
11	0.521	0.602	0.735	0.847
12	0.497	0.576	0.708	0.823
13	0.476	0.553	0.684	0.801
14	0.458	0.532	0.661	0.780
15	0.441	0514	0.641	0.760
16	0.426	0.497	0.623	0.742
17	0.412	0.482	0.606	0.725
18	0.400	0.486	0.590	0.708
19	0.389	0.456	0.575	0.693
20	0.378	0.444	0.561	0.679
21	0.369	0.433	0.549	0.665
22	0.360	0.423	0.537	0.652
23	0.532	0.413	0.526	0.640
24	0.344	0.404	0.515	0.629
25	0.337	0.396	0.505	0.618
26	0.330	0.388	0.496	0.607
27	0.323	0.381	0.487	0.597
28	0.317	0.374	0.479	0.588
29	0.311	0.367	0.471	0.579
30	0.306	0.361	0.463	0.570
35	0.283	0.334	0.430	0.532
40	0.264	0.312	0.403	0.501
45	0.248	0.294	0.380	0.474
50	0.235	0.279	0.361	0.451
60	0.214	0.254	0.330	0.414
70	0.198	0.235	0.306	0.385
80	0.185	0.220	0.286	0.361
90	0.174	0.207	0.270	0.341
100	0.165	0.197	0.256	0.324
200	0.117	0.139	0.182	0.231
300	0.095	0.113	0.149	0.189

400	0.082	0.098	0.129	0.164
500	0.074	0.088	0.115	0.147
1000	0.052	0.062	0.081	0.104