

THE PREDICTION OF THE ACADEMIC ACHIEVEMENT
OF STUDENTS FROM HIGH SCHOOL GRADE
POINT AVERAGE, ESICE AND SELECTED
APTITUDE TESTS IN THE JUNIOR
COLLEGE OF COMMERCE

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ABSTRACT

The purpose of this study was to identify the relative effectiveness of high school grade point average (HSGPA), Differential Aptitude test (Verbal & Numerical section), and Ethiopian School Leaving Certificate Examination (ESLCE) results as predictors of academic success in the Junior College of Commerce. The sample to which the findings of the study referred were 247 students who were admitted to the Junior College of Commerce in the Academic year 1990/91. Using multiple correlation and regression analyses, the effectiveness of each independent variable was identified. It revealed that both HSGPA and DAT test scores significantly predicted students academic performance in the college. However, the predictive ability of the DAT test scores varied within different fields of studies. Neither ESLCE GPA nor ESLCE Maths results significantly contributed in predicting college performance. However, ESLCE English test result has shown significant correlation coefficient for the total group as well as for the group majoring in Accounting, Purchasing and Supplies Management and Secreterial Science and Office Mangement. The ESLCE-English test score also significantly accounted for the variance in college work for the group majoring in Secreterial Science and Office Management. Finally, suggestions were given concerning the Admission and placement criteria as well as the need for further research in the area.

INTRODUCTION

1.1 Background to the Problem

The Junior College of Commerce, which was formerly known as "Commercial School" is one of the middle level skilled man power training institutions in Ethiopia.

The institution from its inception in 1943 until 1946 ran a one year programme by offering subjects like Amharic, English, Book keeping, Business Training, Commercial Arithmetic, Typewriting, Translations, History and Morale.

To meet the growing demand of the nation for more qualified personnel during the post war period, the one year programme was further expanded to a three years programme in 1946. Under this programme, the new courses that were included (to the previous offerings) were French, Geography, Economics, Short-Hand, Algebra and Penmanship.

The school, being the only one of its kind in the country has gone through a series of changes an attempt to up grade and develop its curriculum to the satisfaction of the ever increasing demand of the nation for more qualified man power.

In order to make the curriculum more diversified and deeper in scope and to enhance the quality of teaching and the learning process in a more meaningful and practical manner, major modifications and reforms were undertaken in the subsequent years, each programme having its own justifications. The major programmes

were: Four year, Three year and two year. The main criterion of admission to the four year programme was obtaining excellent marks in grade 8 National examination. In this programme, the first two years were mainly preparatory aimed at laying strong foundation for the remaining two years of intensive specialized training. Further, after the school, opportunities were provided for practice in skill subjects (Shorthand and Typing) for the purpose of attaining proficiency in speed & accuracy.

The four year programme was replaced by three years in 1965. The minimum requirement for admission to the school was a successful completion of 10th grade and getting a pass mark in English, Amharic and Mathematics subjects. Successful candidates were subsequently interviewed for the final selection. The students in this programme, like those in the 4-years programme, were advised to join Accounting or Secretarial and Office Management fields depending on their performance.

In 1977 a two years post secondary programme was introduced for those who had completed 12th grade and sat for ESICE. In addition to the ESICE result, the admission criteria was based on a written test and interview.

The introduction of a two years post secondary programme in four (now six) major commercial disciplines marked the stage for promoting the institution to the college level. The institution which was run by the Ministry of Education until 1977,

was brought under the jurisdiction of the newly established commission for Higher Education and in 1983 it was named "The Junior College of Commerce."

The Junior College of Commerce presently offers courses in six areas of specializations namely: Accounting, Banking and Finance, Marketing Management, Personnel Management, Secreterial Science and Office Management and Purchasing and Supplies Management. These six areas of specializations are currently organized under four departments. In addition, there are three other courses offering departments namely: Language and Business Communication, Mathematics and Social Science departments that raises the total number of departments to seven.

The name of these departments are:

1. Department of Accounting
2. Department of Banking & Finance
3. Department of Language and Business Communication
4. Department of Mathematics
5. Department of Purchasing and Supplies Management
which includes
 - 5.1 Supplies Management
 - 5.2 Marketing Management
 - 5.3 Personnel Management
6. Department of Secreterial Science & Office Management
and
7. Department of Social Science

Like any other institutions of higher learning in Ethiopia, candidates who are admitted in the College are selected by the Commission for Higher Education on the basis of their performance on the Ethiopian School Leaving Certificate Examination.

1.2 Statement of the Problems

The Ethiopian School Leaving Certificate Examination (ESLCE) has continuously been used over two decades as an admission criterion for most institutions of higher learning in Ethiopia.

Many independent studies have been conducted on ESLCE (Tracy, 1969; King, 1969; King and King, 1970; Lakew, 1972; Mittman, 1972; Melaku, 1975; Mekonnen, et al, 1988). Most of these studies were interested in testing its validity as predictor of college performance. Studies conducted by Tracy (1969) and Langumir and Bower(1967) found the ESLCE to be a weak instrument to be utilized for college admission purposes. Other studies Mittman(1972) Lakew(1972) have indicated that aptitude test results are better predictors of college success than ESLCE result. Some other research findings King and King (1972) have shown that over all ESLCE result is a better predictor of college performance although it is only good in predicting twenty percent of college performance.

As can be seen from the studies cited above many of them found ESLCE to be weak in predicting students' future performance

in colleges and universities. Hence, there is a need for devising other methods for selecting candidates to be admitted to institutions of higher learning. The objective of this study is therefore, to find a better method which could be used for predicting success at the Junior College of Commerce in Addis Ababa.

High school grade point average (HSGPA) and aptitude test scores have been used to predict college success (Thorndike, 1971). Adopting of this method may resolve the problem encountered in the admission and placement of students to different fields of studies at the Junior College of Commerce.

However, apart from pointing out the absence of comparable high school records, the inefficient ways of record keeping system, the suspension of illegitimate use of high school grade point average; few attempts have been made by investigators to test the relevance of high school grade point average as predictor of college performance in Ethiopia. However, in a few instances it has been shown that secondary school and university achievement have a moderate relationship (Tassew, et al March, 1990).

As far as the use of aptitude tests is concerned, such tests that are relevant to Ethiopian situation were hardly available. Being concerned about the importance of aptitude tests, a number of scholars have conducted studies to test the validity of western - oriented psychological tests when

applied on the Addis Ababa University students. The result of these studies have indicated that aptitude tests would improve the prediction of college grades (Bower, 1968; Mittman, 1970; Lakew, 1972). However, these studies were limited only to the Addis Ababa University students. Hence, there is a need to conduct further studies to test the validity of these tests on some other institutions of higher learning. Like the Junior College of Commerce. In addition, the combination of high school grade point average (HSGPA), aptitude tests and ESICE results as predictors of academic success have not been studied adequately in Ethiopia.

1.3 PURPOSE OF THE STUDY

The purpose of this paper is to identify the relative effectiveness of high school grade point average (HSGPA) selected aptitude tests and ESICE results as predictors of academic success in the Junior College of Commerce.

More specifically, the study is designed to:

- a) Assess the predictive validity of Ethiopian School Leaving Certificate Examination (ESLCE) in general, the English Language and Mathematics examinations in particular, and aptitude test results comprising Verbal Reasoning and Numerical Ability subtests of DAT and high school grade point average and;

- D) Determine the predictive validity of each predictor variable with respect to criterion measure (College Grade Point Average).

1.4 Definition of Variables

Differential Aptitude Test (Verbal Reasoning)

and (Numerical Ability) scores only

The Differential Aptitude test consists of eight subtests.

These subtests are:

Verbal Reasoning (VR)

Numerical Ability (NA)

Abstract Reasoning (AR)

Space Relations (SR)

Mechanical Reasoning (MR)

Clerical Speed & Accuracy (SA)

Language usage spelling (Lu:SP)

and

Language usage Grammar (LU: GR)

Of the eight subtests comprising the DAT, the Verbal Reasoning (VR) and the Numerical Ability (NA) subtests were used in the present study since these subtests were found to be more valid than the other six in the Ethiopian context. (Bower, 1968; Lakew, 1972). In addition, the combination of DAT (VR + NA) subtests was found to be a measure of scholastic aptitude (Anastassi 1976).

Academic Achievement

In the present context students academic performance in the Junior College of Commerce as measured by their grade point

a
average in the first semester were used as a measure of academic achievement.

High School Grade Point Average (HSGPA)

This grade refers to the academic performance of students in grades 9, 10, 11 and 12. The four years over all high school performance will be calculated and used for the present study.

ESLCE GPA

ESLCE is a national examination administered to students completing secondary school in Ethiopia. The ESLCE uses a letter grading system as A, B, C, D and F for each subject with a numerical values of 4, 3, 2, 1 and 0 respectively. College admission is determined on the basis of the performance of individuals on five best ESLCE subjects (Including Mathematics and English subjects as compulsory). In calculating the over all GPA letter grades are converted to numerical values and divided by five (best selected subjects). The minimum "cut off" point required for admission to colleges and universities is determined by Higher Education Main Department in the Ministry of Education.

1.5 Significance of the study

Developing appropriate admission method does not only assist for decision making in the selection of candidates to enter institutions of higher learning but also serve as prerequisites to ensure the task of producing properly educated graduates.

Though ESLCE has been found to be a weak predictor of college success, it has been used for the purpose of admission to institutions of higher learning (Mekonnen, et al, 1988).

This entails a pressing need to improve the existing admission criterion by considering relevant factors which would most likely are associated with success of college education.

Moreover, it is well-known that the number of applicants to institutions of higher learning has been increasing every year while the capacity of the existing institutions remained unchanged. This problem has intensified the necessity to select applicants who would most likely succeed at the third level of education. The crucial need is not only to admit promising candidates, but also to make certain that the most talented ones are given the opportunities to have the limited educational facilities that the government can offer (Lakew, 1972).

What makes this study unique is that in addition to testing the significance of the variables under study it makes separate prediction equations for the different departments of the college. This is done with an objective of developing a placement criteria and providing valuable information for guidance and counseling purposes.

CHAPTER II REVIEW OF THE RELATED LITERATURE

2.1 The Issue of Predictive Validity

The validity of an evaluation device is established by the degree to which it measures what it is intended to measure (Thorndike, 1971). In general validity is classified into content validity, concurrent validity, construct validity and predictive validity (Thorndike, 1971). Tests are used for several types of judgement and each judgement requires a somewhat different type of validation evidence.

When test scores are used to predict certain future performance it is called predictive validity. The validities of such tests are typically measured statistically by correlating a groups test scores with measures of the subsequent performance of individuals ~~in~~ in the criterion situation. However this practice entails certain prediction problems.

One major problem is the difficulty to define and describe what is required to succeed in many actual performance situations. According to David (1963) the problem does not only refer to the identification of the factors that go into a criterion variables, but also the importance of the time dimension in thinking about criteria. David(1963) further pointed out that even granting the constancy of individuals innate potential, it should be obvious that with so many additional variables affecting performance considerable variation may be expected over time.

The reliability of the criterion measure also is another problem. In short, the reliability of observation, being influenced by such factors as precisseness of the definition of behavior, the simplicity of behavior, the degree to which the behavior is overt, the amount of aid provided by instrument, and the extent of opportunities for observing the behavior should be of reasonable value to yield the required index of validity(Thorndike, 1949).

David (1963) also mentioned the problem associated with interpreting test scores especially when differential degrees of practice at time of test taking exist. He demonstrated that individual scores may be influenced due to the difficulty

of individuals to match their performance on similar tests rather than lower ability and less intelligence. David (1963) also mentioned the impact of standardized tests on individuals later performance. He explained that the impact is reflected when high score on a test, by itself, may increase one's chance of achieving success in school or on the job, and there by adds to the correlation between test scores and achievements.

In a nut-shell, predictive validation of a test is in effect subjected to a host of intervening variables some of which being related to the criterion; others to the predictor itself which unless carefully checked are likely to reduce the size of the index of correlation to a significant level.

Understanding this problem Glenn(1966) strongly opposed the concept of over all validity. He instead recommended the need to consider the discriminating power of the test for a specified decision problem regarding a specified examine.

Still an opposing issue against the practice of specific validity was raised by Doglas and Samuel (1966). These scholars criticized the above approach due to its main emphasis on the demands of practical economy and efficiency alone.

2.2 SELECTION OF PREDICTION INSTRUMENTS

The question is how to determine the choice of predictive devices. The need to take into account the availability of predictor variables on substantially all members of the group

has been cited by Schrader (1971). The incremental validity of the tests was also mentioned by Sechrest (1963) in which the additional measure is evaluated by its ability to improve the prediction variables. In addition, Thorndike (1971) recommended the need to consider the cost of the selection process in order to determine the net gain in utility. While discussing the selection of prediction instruments, Schardner (1971) has emphasized the need to include some measure of high school record as a predictor, since many studies have shown that this measure consistently made a substantial contribution to predictive effectiveness. Second, he has also mentioned the possibility of administering tests or other instruments at the beginning of the freshman year. In connection, he raised the issue of the possibility of quantifying the admission data by a process of rating or some other procedures so that their contribution to prediction is assessed. Finally, he mentioned the problem related to lack of subjects on one or more relevant predictors. In this regard, he indicated that the loss of subjects not only reduce the size of the group but may seriously reduce its representativeness.

2.2.1 High School Grade Point Average

Several studies have shown that the record of performance in high school is the most single predictor of college performance (Hills, 1964). The justification is that high school

record is a work sample of college performance in a sense, which capitalizes on its being similar in form to the criterion to be predicted. When school grades are used as the index of achievement the problem lies on the means to compare the various grading standards applied by different schools and different instructors. This is because unlike score on a standardized achievement test, the letter grades awarded by different institutions seldom reflect comparable levels of student attainment (Hills, 1964). The concern is not only with the predictive validity of students achievement per se but also with the reliability of the indices with which achievement is being appraised. This difficulty has been widely recognized, and numerous adjustment techniques have been developed. Below are some of the major findings that have been briefly summarized.

Using high school grades as predictors of academic achievement, Bloom and Peters(1961) have developed a scaling technique to adjust high school grades from a given high school on the basis of its performance in colleges. The scaling technique was designed to adjust for grading or curriculum differences among high schools.

Tucker (1963) developed three theoretical models for central prediction. Two of the models used canonical correlations of the main analytical method; the third, which he designated

as the "prediction model" employed multiple regression concepts. Tucker (1963) judged that the predictive model was most promising for practical application. Although his primary effort was directed towards formulating an adequate theoretical structure, he performed some empirical studies as well. Then, Tucker(1963) strongly emphasized the need for further empirical work, especially on the application of the predictive model, and for investigating the stability of parameters estimated from different samples of individuals, schools and colleges.

The most extensive study was conducted by Lindquist(1963). In this study test scores, served in a regression equation to counteract the influence of differential grading standards in the high schools.

However, Lindquist (1963) equated the high school grades from various schools. He concluded that, despite the difficulty in scaling the differential grading standards of various high schools, Internal scaling of high school grades is not a promising way of improving the prediction of college grades. He further demonstrated that the differences in the meaning of grades from high school to high school, so far as college prediction is concerned, may be smaller than it seems to have been generally believed. The reason given by Lindquist is the level and range of intelligence or aptitude of students are probably much the same from community to community and

hence from high school to high school.

Lindquist (1963) continued to say that the differences in grading that most attenuate the correlation between school and college grades are those which exist within the individual schools and colleges, rather than among them. He explained that, the difference in the standards that exist among different instructors in the same departments, or from department to department, in the same high school, or particularly from "track" in "track" in the same high school are perhaps just as large as those from one high school to another.

Finally, Lindquist (1963) explained that the best way of using the test scores (and other observations) is simply to employ them along with the high school grades as independent predictors in multiple regression equations, established for all high schools considered collectively, regardless of the number of students coming from each high school. According to Lindquist, each student test score (or other measures) might be regarded as constituting of a constant "school effect" plus a variable "individual effect". The multiple regression equation will perhaps give closer optimum weights in prediction to the constant school factors as well as to the variable individual factors, with out the need for any isolation or identification of the school factors as such.

2.2.2 The Differential Aptitude Test (DAT)

The Differential Aptitude Test (DAT) is one of the most widely used multiple aptitude batteries (Annastassi; (1976). According to the author the DAT was designed principally for use in the educational and counseling of students of grades 8 to 12. The DAT yields the following eight scores. Verbal Reasoning, Numerical Ability, Abstract Reasoning, Clerical Speed and Accuracy, Mechanical Reasoning, Space Relations, Spelling and Language Usage.

According to Thorndike (1971) the Verbal Reasoning and Numerical Ability subscores are better predictors of high school achievement in both academic and vocational programs. Especially, the combination of verbal Reasoning and Numerical Ability subtests have shown a correlation index of 70 and 80's with composite criteria for academic achievement. As a result, the combination of Verbal Reasoning and Numerical Ability subtests was introduced as index of Scholastic Aptitude (Annastassi 1976).

In the Ethiopian context, evidence pertaining to the predictive validity of the DAT tests was investigated by Bowers (1968). His subjects were 576 students admitted to five colleges (Arts, Business, Education, Engineering, Science). It has been found out that among the 8 subtests of DAT, verbal Reasoning, Numerical Ability and Language usage subtests

were the best predictors of first year achievement with validities ranging mostly from .30 to .40 in each college. Finally Bower (1968) recommended the need to develop efficient, objectively scorable tests in verbal and quantifiable reasoning.

2.3 CRITERIA FOR ADMISSIONS DECISION TO COLLEGES

Traditionally, the criterion which, researchers choose as being the relevant one for educational selection was average grade in subsequent course work (Thorndike, 1971).

When academic average grade point is taken as the criterion, there is the future question of choosing among first term grades, first year grades, lower division commulative average, and various other possible grades.

First term, average is opposed on the grounds that too many students perform erratically during the first term at the other extreme, the four year average, which has the advantage of being based on the students entire undergraduate program, is seldom used. When many students dropout, the four years group may be a seriously biased sample of entering students. Moreover; the four - years criterion data requires a delay of four or five years before making the study and thus may delay unduly the introduction of needed changes.

Because of the Methodological importance of a possible systematic difference in results between four years averages and averages available earlier (Sharder, 1971) compared

results of four years with first years averages, and Olsen and Schardner (1969) compared four years with two years averages. Each study included a number of colleges. No systematic differences in the level of validity coefficients was discernable. Their findings offer definite support for the practice of using first year (or two years) averages as the criterion measure.

In spite of its wide use, the grade point average has been vigorously criticized on a number of grounds. Grades are stated to be a poor representation of educational utility because they are contaminated by irrelevant factors such as diligence (in preparing long papers), hand writing and general ability (Hills, 1964) or a persons attractiveness and skill in interacting with the instructor. Grading differences within departments and among instructors also introduce certain amount of unreliability into the grade point average (Fisherman, 1958; Hills, 1957).

Dissatisfaction with grade point average has lead to the occasional use of other indicators of the utility of an individual or group as institutional out put. An example of a well-conceived effort to develop a broader criterion is the work done by (Sharder , 1971) for use in the development of a biographical inventory. Evidence about each student was computed from faculty ratings, faculty advisors, academic records, etc. This study demonstrated the possibility of

defining meaningful criterion groups to reflect the broader aims of the college use in evaluating the effectiveness of possible predictors.

Another significant effort to broaden the criterion is described by Davis (1965). The study began with the identification of characteristics that faculty members regard as significant and observable. This finding deserves serious consideration in evaluating first year average grades as criteria for validity studies.

Some other attempts were also made by Hills (1964) to predict performance in non academic areas. These accomplishments were found in out side agencies rather than in college faculties. However, how much these achievements express utility for college is still questionable.

To sum up, the usefulness of studies that include both intellectual and non intellectual factors as predictors of college success have been supported, however, if validity studies were to make their full contribution much more studies are needed (Scharder, 1971).

2.4 ESICE VALIDITY STUDIES

Researchers have continuously attempted to find out the validity of ESICE as a predictor of academic success in college and universities. Some of the research findings on ESICE result will be discussed below.

Tracy (1965) examined the validity of ESICE in several faculties. He found a significant relation between the overall ESICE GPA and first year cumulative GPA for 1963 entrants. However, the correlation was lower for individual ESICE subjects and concluded that the ESICE GPA predicted university performance only moderately and with variable prediction in the faculties and colleges. He, therefore, opted for additional criteria.

The weakness of the ESICE when used as an admission criterion was further demonstrated by another scholar (King, 1969) who conducted his study on 528 college students. In this study, the over all ESICE result, ESICE Amharic, English & Math (compulsory subjects at the time) had predictive powers of 22%, 0%, 15% and 12% respectively.

In the study conducted by Bower (1969) the class-room marks earned at Bed Mariam School, the over all result in ESICE and the results in other achievement tests were considered in order to find a better instrument that could be used for recruiting students who would be admitted to college. The study indicated that the predictive power of the class-room marks was 33.6%, that of the ESICE 37.2% and the cases of other tests were much lower.

In another study Mittman (1972) used test results (of 2117 students) which were measures of attitude (prepared at the University Testing Center) and of ESICE Amharic, English and

Mathematics) examinations. Mittman (1972) found that ESICE tests were able to predict only 6% of the cases, while more than 12% of the cases could be predicted by aptitude tests. Although both of these tests were not good predictors the aptitude test seemed a better predictor of college success than the ESICE.

Adapted aptitude tests written in **Amharic** Language, the overall ESICE results, and the Amharic Language and English Language tests in ESICE were employed to predict college success over a period of six semesters (Lakew, 1972). The number of students used in the study ranged from 200 to 400. Over the entire period, the aptitude tests were better predictors of academic performance ranging from 18.5% to 22.5% at the time. Moreover, the same tests showed a predictive power ranging from 18% to 60% from the first two years where the greater percentage (31% to 60%) scored at the end of the first semester. The result of the study seemed to indicate that the aptitude tests were the better predictors of college success.

Melaku (1975) studied the relationship between ESICE results and university performance of only dismissed students. The objective of the study was to examine the relationship between the compulsory subjects (Amharic, English and Mathematics) required for admission to higher education and performance in the university. The sample size was 308 dismissed students. Accordingly, he concluded that neither the ESICE GPA nor the

grades in Amharic, English or Mathematics affected university performance of dismissed students.

Tesfaye Gashaw (1982) attempted to find out, whether the English test result of ESICE has any relationship with freshman English grade. In the study, out of 758 freshman students enrolled for 1981-82 second semester 350 students had been selected for the study. Data was collected for the 1980 ESICE and the 1981 freshman English results using a table of random number. The findings show that the relation between the two examinations is very low.

Mekonnen, et al (1988) evaluated the present condition of the ESICE. The following points have been mentioned on the draw backs of ESICE. Despite the unfamiliarity of test setters about high school teaching learning process, it seems that, they lack experiences to safeguard the quality of the ESICE examination. They further demonstrated that the appearance of ambiguous questions, the incompatibility of the number of questions with time allotted, repetitiveness of many items from year to year, usage of text book language, the difficult nature of items were the major problems reflected in the ESICE examinations.

2.5 SUMMARY

To sum up, if the tests regardless of what they really measure predict performance accurately then they are considered to have high predictive value. However, this practice entails

certain prediction problems. Among others, there is a difficulty to define and describe what is required to succeed in many actual performance situations, considerable. Variations of variable affecting performance, the reliability of criterion measure which is influenced by preciseness of definition of behavior, the simplicity of behavior & the degree to which the behavior is overt.

Regarding the selection of prediction instruments Scharader (1965) suggested the need to take in to account the availability of predictor variables. Sechrest (1963) mentioned the issue of incremental validity, specifically, Scharader(1971) pointed out the need to include some measure of high school record as a predictor, since many studies have shown that this measure consistently made a substantial contribution to predictive effectiveness. However, when school grades are used as the index of academic achievement the problem lies on the means to compare the various grading standards applied by different schools and different instructors. Evidence pertaining to the predictive validity of DAT test to Ethiopian context was investigated by Bower (1968). The researcher recommended the need to develop efficient, objectively scorable tests in Verbal and quantifiable reasoning. Many independent studies have been conducted upon the ESICE to test its strength as predictor of academic performance in colleges/Universities some found ESICE to ve a weak instrument to be utilized for college admission

purpose. Others reported that ESLCE as a predictor of college performance. Taking several studies together no Uniquivocal conclusions can be made. In addition, no adequate research findings have been done to identify the relative effectiveness of HSGPA, aptitude tests and ESLCE result as predictor of academic success which is the under taking of the present research.

CHAPTER III METHODOLOGY

3.1 Sample

The population to which the findings of this study refer to is students who were admitted to the Junior College of Commerce in the academic year 1990/91. About 626 students were admitted to the College in the academic year 1990/91 of which 572 were from Addis Ababa administrative region. The sample was taken from those students who joined the college from the Addis Ababa administrative region for the simple reason that almost 90% of the students came from Addis Ababa administrative region and the accessibility in the collection of high school performance data. The total population was distributed among the six departments. Concerning the sample size, initially a total number of 260 subjects were included in the study. Those subjects(5%) who had a missing data on one or more variables were deliberately omitted from the study. From the figure given above, however, it appeared reasonable to accept that the loose of subjects do not largely reduce the size of the group and its representativeness. As a result the remaining 247 subjects were included in the

present study of which 173 subjects were randomly selected from the four departments(Accounting, Banking and Finance, Secreterial Science and Office Management and Purchasing and Supplies Management). The rest (74) subjects were taken as a whole from the departments of Marketing and Personnel Management, due to the limited number of intake. As a result all students of these departments were included in the study, (Table 1). Note that, since the remaining two departments(Social Science & Mathematics) are offering courses related to the six fields of specialization (cited in Table 1) they are not expected to be included in the study.

Table 1 Sample sizes selected from
each department

Department	Population	Sample
Accounting	198	45
Banking and Finance	64	43
Marketing Management	41	38
Personnel Management	38	36
Secreterial Science & Office Management	149	42
Purchasing & Supplies Management	82	43
Total	572	247

3.2 Predictor & Criterion variables

ESLCE GPA = The Ethiopian School Leaving Certificate Examination Grade Point Average which represents an average score of five subjects including English and Mathematics.

ESLCE English= Ethiopian School Leaving Certificate English Language examination.

ESLCE Maths = Ethiopian School Leaving Certificate Mathematics examination.

DAT VR = Differential Aptitude Test Verbal Reasoning score

DAT NA = Differential Aptitude Test Numerical Ability score

DAT VR + NA = Differential Aptitude Test Verbal Reasoning and Numerical Ability Score.

HSGPA = High School Grade Point Average

CGPA = The first semester grade point average is used as a criterion measure.

3.3 Procedure of Data Collection

The procedure for collection of data for each variable in the study which is cited above is as follows.

The ESLCE test scores (ESLCE GPA, ESLCE Math, ESLCE English) and students academic performance in the college (CGPA) was obtained from the Junior College of Commerce. Students were required to present an official transcript of high school academic record from their respective high schools. At the beginning of the academic year.

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The DAT test (Verbal & Numerical) scores were administered and scored by the Addis Ababa University Testing Center.

3.4 Data Analysis

The Means(M), standard deviations and the product moment correlation coefficients of all predictor variables and criterion variable is determined. Next the results of simple and multiple regression analysis was presented aimed at determining regression and beta coefficients and finally the summary of step wise multiple regression analysis was presented, Such statistical analysis was solved by SAT statistical package of 6.01 version (1988) at the Addis Ababa University Computer Center.

CHAPTER IV Results and Discussion

4.1 Results

In Table 2 the inter correlations among the independent variables and the correlations of independent variables with the criterion variable along with means and standard deviations for the total group (n = 247) are presented. Non-directional t-test of the significance of correlation coefficient with $N-2$ ($t(.05,245) = .124$ indicates that all predictor variables correlated significantly with (CGPA) except ESICE GPA and ESICE Maths result which have shown non-significant relationship with CGPA. Of a particular interest is the high school grade point average (ESGPA) shows the highest correlation with CGPA ($r = .760$). The second highest correlation of test scores with CGPA is for the DATVR + NA ($r = .671$).

Table 2 Inter Correlations among variables along with Means (M) and standard deviation (SD) for total group (n = 247)

VARIABLES	HSGPA	ESICE' GPA	ESICE MATH	ESICE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA	M	SD
HSGPA		0.015	-0.014	0.271*	0.558*	0.631*	0.691*	0.760*	68.517	9.477
ESICE GPA			0.277*	0.289*	0.031	-0.050	-0.017	-0.039	2.833	0.170
ESICE-MATH				-0.104	-0.020	-0.008	-0.016	-0.016	2.085	0.528
ESICE-ENGLISH					0.303*	0.175*	0.256*	0.272*	2.802	0.883
DATVR						0.529*	0.804*	0.548*	14.988	4.473
DATNA							0.930*	0.620*	20.684	7.218
DATVR+NA								0.671*	35.680	10.309
COLLEGE GPA									2.199	0.954

* Significant at .05 level

The inter correlations among predictor variables also indicated that, a substantial relationship exists among HSGPA, DATVR + NA, DATNA, DATVR and ESLCE English results. Specifically, the highest correlation coefficients have been indentified among DAT test scores. In this regard the DATVR + NA has shown correlation coefficient of (r.93) with DATNA. There is also relatively a high relationship between DATVR+NA and DARVR as indicated by correlation coefficient (r = .80)

Like wise, considerable relationship is observed between ESLCE GPA and ESLCE English grade, and between ESLCE GPA and ESLCE Maths. To sum up, the existence of high inter correlations among predictor variables, amont others, may indicate the degree to which the predictor variables carry the same abilities in predicting students performance in the college.

Correlations between independent variables and college grade point average (CGPA) for different fields of studies (separately) have shown the same degree of significance as presented in Table 3,4,5,6,7,8. The test of significance for inter correlations have indicated that there is a positive significant correlation between all predictors and the criterion variable (CGPA) except ESLCE test scores (ESLCE GPA, ESLCE Maths and ESLCE English test scores). However, ESLCE English test result has shown a positive significant relationship with college grade point average for Accounting, Secreterial Science & Office Management and Purchasing & Supplies Management groups (see Tables 3,7 & 8).

As far as the inter correlations among predictor variables is concerned, there is a positive and significant relationship among HSGPA, DATVR+NA, DATVR, DATNA when separate analysis is considered for all fields of studies. However, different results have been identified when reference is made to ESLCE test scores (ESLCE GPA, ESLCE English, ESLCE Maths). For instance, ESLCE English test score has shown a positive significant relationship with HSGPA, DATVE, DATNA, and DATVR+NA for the group majoring in Accounting field (see Table 3) and Purchasing and Supplies Management (see Table 8) and with DATVR for the group Majoring in Secreterial Science and Office Management (see Table 7). The over all ESLCE GPA has shown a negative and significant relationship with DATVR and DATVR+BA HSGPA for Marketing Management group (Table 5).

The test of significance among ESLCE test scores have indicated that the over all ESLCE GPA has positive significant correlation.

Table 3 Inter correlations among variables along with means(M) and standard deviations (SD) for the group majoring in

VARIABLES	Accounting field (n = 45)								M	SD
	HSGPA	ESLCE GPA	ESLCE MATH	ESLCE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA		
HSGPA		-0.086	-0.012	0.323*	0.433*	0.761*	0.762*	0.869*	70.963	10.018
ESLCE GPA			0.179	0.034	-0.084	-0.222	-0.203	-0.025	2.989	0.101
ESLCE-MATH				-0.244	-0.001	0.082	0.660	0.052	2.089	0.468
ESLCE-ENGLISH					0.377*	0.321*	0.409*	0.349*	2.644	0.712
DAT VR						0.361*	0.719*	0.574*	14.778	4.100
DAT NA							0.908*	0.704*	21.644	6.793
DAT VF+NA								0.783*	36.422	9.114
COLLEGE GPA									2.443	1.028

* Significant at .05 level

Table 4 Inter correlations among variables along with means (M) and standard deviations (SD) for the group majoring in Banking & Finance(n = 43)

VARIABLES	HSGPA	ESLCE GPA	ESLCE MATH	ESLCE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA	M	SD
HSGPA		-0.093	-0.177	0.252	0.552*	6.724*	0.736*	0.341*	66.950	10.119
ESLCE GPA			0.270	0.564*	-0.056	-0.203	-0.165	-0.034	2.781	0.275
ESLCE-MATH				0.000	-0.024	-0.093	-0.076	-0.082	2.000	0.577
ESLCE-ENGLISH					0.061	0.022	0.041	0.245	2.767	0.922
DAT VR						0.579*	0.822*	0.622*	13.86	4.512
DAT NA							0.940*	0.752*	19.047	7.640
DAT VR+NA								0.785*	32.907	10.807
COLLEGE GPA									2.084	0.835

* significant at .05 level

Table 5 Inter correlations among variables along with Means(M) and standard deviations (SD) for the group majoring in Marketing Management(n=38)

VARIABLES	HSGPA	ESICE GPA	ESICE MATH	ESICE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA	M	SD
HSGPA		-0.346*	-0.024	0.343*	0.414*	0.439*	0.516*	0.614*	67.987	8.218
ESICE GPA			0.149	0.182	-0.328*	-0.288	-0.356*	0.184	3.011	0.078
ESICE MATH				-2.51	-0.199	-0.269	-0.287	-0.0067	2.447	0.504
ESICE ENGLISH					0.255	0.118	0.217	0.318	3.158	1.000
DAT VR						0.321*	0.720*	0.456*	15.606	4.378
DAT NA							0.887*	0.575*	22.263	6.484
DAT VR+NA								0.636*	37.921	8.906
COLLEGE GPA									2.021	0.853

* Significant at .05 level

Table 6 Inter Correlations among variables along with means (M) and standard deviations (SD) for the group majoring in Personnel Management (n = 36)

VARIABLES	HSGPA	ESICE GPA	ESICE MATH	ESICE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA	M	SD
HSGPA		0.220	0.070	0.172	0.699*	0.616*	0.727*	0.793*	6.868	10.440
ESICE GPA			0.349*	0.436*	0.133	0.037	0.081	0.0688	2.83	0.096
ESICE MATH				0.154	-0.053	0.193	0.116	0.027	1.86	0.487
ESICE ENGLISH					0.275	-0.008	0.108	0.077	2.78	0.723
DAT VR						0.551*	0.804*	0.587*	15.58	4.557
DAT NA							0.939*	0.634*	20.17	7.865
DAT VR+NA								0.694*	35.75	11.049
COLLEGE GPA									2.112	0.998

* Significant at .05 level

Table 8 Inter correlations among variables along with Means(M) and standard deviation(SD) for the group majoring in Purchasing and Supplies Management. (n = 43)

VARIABLES	HGGPA	ESICE GPA	ESICE MATH	ESICE ENGLISH	DAT VR	DAT NA	DAT VR+NA	COLLEGE GPA	M	SD
HGGPA		-0.141	-0.162	0.366*	0.595*	0.557*	0.632*	0.784*	69.453	9.030
ESICE GPA			0.560*	-0.064	-0.056	-0.249	-0.187	0.094	2.916	0.133
ESICE MATH				-0.048	0.033	-0.088	-0.042	-0.104	2.047	0.434
ESICE ENGLISH					0.488*	0.377*	0.467*	0.420*	2.862	0.833
DAT VR						0.630*	0.864*	0.655*	16.023	4.872
DAT NA							0.935*	0.641*	21.558	6.926
DAT VR+NA								0.714*	37.581	10.689
COLLEGE GPA									1.989	1.010

* Significant at .05 level

coefficient with ESICE English test score for the group majoring in Banking and Finance and Personnel Management (see Tables 4 and 6) and ESICE Maths results for the group majoring in Personnel Management and Supplies Management (see Tables 6 & 8). ESICE Math and ESICE English test results have shown a negative significant correlation coefficients for the group majoring in Secreterial Science & Office Management (Table 7).

Results of Simple Regression Analysis

In Tables 9 - 15 the results of simple regression analysis is presented. The analysis indicate, the weighs that are attached to individual variables when each of the independent variables are considered separately to predict college grade poing average.

For the total group (Table 9) the five variables(HSGPA, DAT VR+NA, DATNA, DATVR and ESICE English) significantly predicted college grade point average (CGPA). The highest predictive power(58%) was shown by high school grade point average. The second independent variable withhighest predictive power (43%) is DATVR+NA. Individual DAT test scores(DATVR, DATNA) have also shown considerable predictive powers For instance, the DATNA sub test have shown a predictive power of 38%, while the DATVR 30%. When reference is made to ESICE test scores (ESICE GPA, ESICE English, ESICE Math) the highest predictive power (7%) was indicated by ESICE English test score. The ESICE Math and ESICE GPA have shown a predictive powers of 0.38% and 0.15% respectively. The two variables (ESICE Math and ESICE GPA) do not significantly predict college grade point average (CGPA)

Table 9 Results of simple Regression Analysis for the total group (n = 247)

Variables	mean	SD	Correlation with College GPA	Regression Weight (bi)	Standard Error of bi (sbi)	t
HSGPA	68.517	9.477	.760*	0.077*	0.004	18.303*
ESLCE GPA	2.883	0.170	-0.039	-0.219	0.611	-0.358
ESLCE MATH	2.085	0.528	-0.0615	0.110	0.114	-0.964
ESLCE ENGLISH	2.802	0.883	0.272*	0.294*	0.067	4.420*
DATVR	14.988	4.473	0.548*	0.117*	0.014	10.254*
DATNA	20.684	7.218	0.620*	0.082*	0.006	12.369*
DATVR+NA	35.219	10.309	0.671*	0.062*	0.004	14.165*
College GPA	2.199	0.954				

* = Significant at .05 level

The simple regression analysis was also considered separately for different fields of studies (see Tables 10 - 15).

Table 10 shows, when individual predictor variables used to predict students' academic performance in the college for the group of subjects majoring in Accounting. The HSGPA, DATNA+VR, DAT NA, DAT VR and ESICE English appear to be dependable predictors of CGPA with a corresponding predictive powers of 76%, 61%, 50%, 33%, and 12%. The remaining two independent variables ESICE GPA and ESICE Maths with respective predictive powers of 0.06% and .27% do not significantly predict students' academic performance in the Accounting field of study.

With respect to the group of subjects majoring in Banking and Finance (see Table 11) HSGPA and DAT test scores (DATVR+NA, DATNA, DATVR) have shown significant predictive powers. Detail analysis of the predictive powers of each independent variables have indicated that, the high school grade point average (with 71%) and DATVR+NA (with 62%) appear to be the most important variables in predicting students' academic performance in the college. The individual DAT subtest scores have also predicted students' academic performance in the college. In this regard, the DATNA has shown 57% of predictive power, while the DATVR 39% predictive power. As far as the ESICE test scores are concerned, the English test score has shown relatively small predictive power (.6%) by the ESICE Math 0.67% and ESICE GPA 0.12%. As a whole none of the ESICE test scores (ESICE GPA, ESICE English, and ESICE Maths) significantly predicted students' academic performance in the college for the group of subjects majoring in Banking & Finance.

Table 10 Results of simple Regression Analysis for the group Majoring in Accounting(n = 45)

Variables	Mean	SD	Correlation with college GPA	Regression Weight (bi)	Standard error of bi(sb)	T
HSGPA	70.963	10.018	0.869*	0.089*	0.008	11.517*
ESLCE GPA	2.907	0.101	-0.025	-0.255	1.552	-0.164
ESLCE MATH	2.089	0.468	0.058	0.124	0.374	0.341
ESLCE ENGLISH	2.644	0.712	0.349*	0.504*	0.207	2.44*
DATVR	14.778	4.100	0.574*	0.144*	0.031	4.597*
DATNA	21.644	6.793	0.704*	0.107*	0.016	6.500*
DATVR+NA	36.422	9.114	0.783*	0.088*	0.011	8.256*
College GPA	2.44	1.028				

* = Significant at .05 level

Table 11 Results of Simple Regression Analysis for the group Majoring in
Banking and Finance (n = 43)

Variables	Mean	SD	Correlation with College GPA	Regression Weight (bi)	Standard error of bi(sbi)	t
HSGPA	66.250	10.119	0.841*	0.069*	0.007	9.953*
ESLCE GPA	2.781	0.275	-0.034	-0.103	0.474	-0.218
ESLCE MATH	2.000	0.177	-0.082	-0.119	0.225	-0.527
ESLCE ENGLISH	2.767	0.922	0.246	0.223	0.187	1.625
DATVR	13.860	4.512	0.622*	0.115*	0.024	4.798*
DATNA	19.047	7.540	0.752*	0.083*	0.011	7.305*
DATVR+NA	32.907	10.807	0.785*	0.061*	0.008	8.114*
College GPA	2.084	0.835				

* = Significant at .05 level

When reference is made to the group of subjects majoring in Marketing Management and Personnel Management, the above mentioned (HSGPA, DATVR+NA, DATNA, DATVR) variables are the most dependable variables.

However, in certain respects, the results obtained for the group majoring in Marketing Management is different when compared with Personnel Management and other fields of studies. That is, the combination of DAT test scores has relatively large predictive power (40%) when compared to HSGPA which has a predictive power of (38%). Out of the two individual DAT test scores the DAT NA has a predictive power of (33%) while the DAT VR (21%).

Concerning the subjects majoring in Personnel Management the high school grade point average has shown the largest predictive power (63%). As far as the DATVR+NA, DAT NA and DAT VR are concerned, they have shown 48%, 40%, and 35% of predictive powers respectively .

In both cases (Marketing and Personnel Management) none of the ESICE test scores (ESICE GPA, ESICE MATH, ESICE ENGLISH) significantly predict students' academic performance in the college. The only difference is, in the case of Marketing Management group the ESICE English test result has relatively shown large predictive power (10%) when compared to the ESICE GPA and ESICE Maths which have (3%) and (0.05%) predictive powers respectively. As far as Personnel Management group is concerned, all three independent variables have shown inconsiderable predictive powers as reflected by their respective predictive powers (ESICE GPA .5% ESICE ENGLISH .06% ESICE MATH .07%).

Table 12 Results of Simple Regression Analysis for the group Majoring in Marketing Management (n = 38)

Variables	Mean	SD	Correlation with college GPA	Regression Weight (bi)	Standard error of bi(sbi)	t
HSGPA	67.987	8.218	0.614*	0.064*	0.014	4.667*
ESLCE GPA	3.011	0.078	0.184	2.012	1.790	1.124
ESLCE MATH	2.447	0.504	-0.067	-0.113	0.281	-0.403
ESLCE ENGLISH	1.158	1.000	0.318	0.271	0.135	2.013
DATVR	15.606	4.378	0.456*	0.089*	0.029	3.074*
DATNA	22.263	6.484	0.576*	0.056*	0.018	4.2171
DATVR+NA	37.921	8.906	0.636*	0.061*	0.013	4.812*
College GPA	2.021	0.853				

* = Significant at .05 level

Table 13 Simple Regression Analysis Results for the group Majoring in
Personnel Management (n = 36)

Variables	MEAN	SD	Correlation with College GPA	Regression Weight (bi)	Standard error of bi(sbi)	t
HSGPA	68.680	10.440	0.793*	0.076*	0.010	7.589*
ESLCE GPA	2.830	0.297	-0.069	-0.232	-0.576	-0.402
ESLCE MATH	1.860	0.487	0.027	0.053	0.335	0.158
ESLCE ENGLISH	2.780	0.723	0.077	0.106	0.236	0.450
DATVR	15.580	4.557	0.587*	0.129*	0.030	4.228*
DATNA	20.170	7.865	0.634*	0.080*	0.017	4.781*
DATVR+NA	35.750	11.049	0.694*	0.063*	0.011	5.621*
College GPA	2.112	0.998				

* = Significant at .05 level

There are certain similarities between the results obtained for the group majoring in Secretarial Science and Office Management and Purchasing and Supplies Management. In both cases the HSGPA, DATVR+NA, DATMA, DATVR and ESLCE English have significantly predicted students academic performance in the college. Neither ESLCE Math nor ESLCE GPA significantly predicted students academic performance in both fields of studies.

In addition, when detail analysis is considered for the group of subjects specializing in Secretarial Science and Office Management the HSGPA(with 56%) predictive power and the DATVR+NA with 46% predictive power appear to be the most important variables in predicting CGPA. Like wise the two variables (HSGPA and DATVR+NA) with predictive powers of 62% and 51% respectively appear to be the most dependable variables in predicting CGPA. for the group of subjects majoring in Purchasing and Supplies Management (Table 15). Moreover, considerable predictive power was also obtained from individual DAT test subscores. In this regard, the DATVR substast has shown a predictive power of (43%) while the DATNA 31% predictive power for the group majoring in Purchasing and Supplies Management.

To sum up, the data indicated that the four variables (HSGPA, DATVR+NA, DATMA and DATVR) have shown a significant predictive validity for all fields of studies. Out of these four variables, the high school grade point average has shown relatively the highest predictive power (76%) for the group of subjects majoring in Accounting. The high school grade point average(HSGPA)

Table 14 Simple Regression Analysis Results for the group Majoring in
 Secreterial Science and Office Management (n = 42=

Variables	Mean	SD	Correlation with College GPA	Regression Weight (bi)	Standard error of bi (sbi)	t
HSGPA	66.962	8.713	0.748*	0.077	0.011	7.128*
ESLCE GPA	2.867	0.095	0.169	1.596	1.472	1.084
ESLCE MATH	2.071	0.513	-0.178	-0.311	0.272	4.143
ESLCE ENGLISH	2.643	1.008	0.451*	0.401*	0.128	3.127*
DATVR	14.238	4.253	0.642*	0.135*	0.026	5.296*
DATNA	19.452	7.487	0.614*	0.074*	0.015	4.923*
DATVR+NA	33.691	10.719	0.683*	0.057*	0.096	5.910*
College GPA	2.507	0.897				

* = Significant at .05 level

Table 15 Simple Regression Analysis Results for the group Majoring in Purchasing and Supplies Management (n = 43)

Variables	Mean	SD	Correlation with College GPA	Regression Weight (bi)	Standard error of bi (sbi)	t
HSGPA	69.453	9.030	0.784*	0.088*	0.011	8.087
ESICE GPA	2.916	0.133	-0.094	-0.714	1.181	-0.605
ESICE MATH	2.047	0.434	-0.104	-0.242	0.359	-0.670
ESICE ENGLISH	2.862	0.833	0.420*	0.509*	0.172	2.963*
DATVR	16.023	4.872	0.655*	0.136*	0.023	5.546*
DATNA	21.558	6.926	0.641*	0.094*	0.017	5.348*
DATVR+NA	37.581	10.689	0.714*	0.068*	0.010	6.530*
College GPA	1.989	1.010				

* = Significant at .05 level

has also shown the highest predictive power for all fields of studies except for Marketing Management group.

The second highest predictive power was obtained from the combination of Verbal Reasoning and Numerical Ability subtests. In this regard, the test (DAT VR+NA) has shown the highest predictive power of (61.62%) for the group of subjects majoring in Banking and Finance and relatively lower predictive power(40%) for the group of subjects majoring in Marketing Management.

Relatively large predictive power also was obtained from individual contribution of DAT subtests. For instance, the DATNA subtest score alone has a predictive power of 57% for the group majoring in Banking and Finance. (see table 11).

Regarding the ESICE test scores only the English test sub-score has shown a significant predictive power of (20%, 18% and 12%) for the group of subjects majoring in Secreterial Science and Office Management, Purchasing and Supplies Management and Accounting respectively. The reason is, perhaps, the content of the training program in the Secreterial Science and Office Management, Purchasing & Supplies Management and Accounting may relatively require high English Language ability.

In this study neither the ESICE GPA nor ESICE Math significantly predicted students' performance in the college. Such result might occur due to several factors and it is difficult to pin point the exact reason behind it. However, among several possible explanations, few may be cited. First, the restriction

in range of the ESICE test scores in which the relation they have with college performance may be suppressed. Second, some of the courses taken in the high school may not have any relation with the content of the courses taken in the Junior College of Commerce.

Results of Multiple Regression Analysis

In the following section the result of multiple regression analysis is presented. The results of the analysis involves HSGPA, ESICE GPA, ESICE Math, ESICE English, DATVR and DATNA. However, the DATVR+NA was dropped from the model due to the existence of multi collinearity with its subtests. The result provides information to identify the relative weight of potential predictors when they are used in combination. In this regard, the values of regression coefficients, beta coefficients and the test of significance for each regression coefficients have been summarized. The regression coefficients have been determined with an objective to indicate the unit changes in the dependant variable (CCPA) for the unit changes in each independent variable. The corresponding beta coefficients may be used to provide comparison among regression coefficients. Using Ftest, the significance of the value of each regression coefficients have been determined.

Table 16 shows results of multiple regression analysis for total group (n = 247). The results of the analysis involves HSGPA, ESICE CPA, ESICE Math, ESICE English, DATVR and DATNA.

Table 16 Multiple Regression Analysis Results for the total group (n = 247)

Variable	Regression Weight(bi)	Standard error of bi (sbi)	Beta Coefficients	F
HSGPA	0.0567	0.0056	0.5632	100.41*
ESLCE GPA	-0.4303	0.3100	-0.0765	1.93
ESLCE MATH	0.0713	0.0787	0.0395	0.85
ESLCE ENGLISH	0.0929	0.0492	0.0800	3.56
DAT VR	0.0260	0.0107	0.1221	5.86*
DAT NA	0.0224	0.0072	0.1698	9.71*

$R^2 = .6262^*$ * = Significant at .05 level

F = 66.61

Regression equation CGPA = -1.5818 + 0.0567 HSGPA + -0.4303 ESLCE GPA + 0.0713 ESLCE Math
+0.0929 ESLCE English + 0.0260 DAT VR + 0.0224 DAT NA

The prediction power of the six independent variables is ($R^2 = .63$). The observed F value is 66.61. The table value at .05 level is, $F(6,240) = 2.14$. As the obtained F is greater than the table value, it can be concluded that the regression of CGPA on the above mentioned variables (HSGPA, ESICE GPA, ESICE Math, ESICE English, DATVR and DATNA) is statistically significant. In addition, the result indicated that HSGPA, DATNA and DATVR are relatively more important than other independent variables in predicting students academic performance in the college than any other independent variables.

The results of multiple regression analysis was also considered differentially for each field of study. Table 17 shows the results obtained for the group of subjects specializing in Accounting. The prediction power of the six independent variables (HSGPA, ESICE GPA, ESICE Maths, ESICE English, DATVR and DATNA) is ($R^2 .83$). When the observed F value (29.29) is compared with the table value (at .05 level) $F(6,38) = 2.32$. It has been found that, the regression of CGPA on six independent variables is statistically significant at .05 level. Moreover, looking at beta coefficients, it is evident that the HSGPA and the DATVR subtests are more important than other variables in predicting students academic performance in the Accounting field of study.

The results obtained for the group majoring in Banking and Finance is presented in Table 18. The same (HSGPA, ESICE GPA, ESICE Maths, ESICE English, DATVR and DATNA) variables

Table 17 Multiple Regression Analysis Results for the group Majoring in Accounting (n=45)

Variables	Regression Weight	Standard error of bi (sbi)	Beta Coefficients	F
HSGPA	0.0760	0.0117	0.745	42.03*
ESICE GPA	0.4541	0.7536	0.0446	0.36
ESICE MATH	0.2761	0.1687	0.1257	2.68
ESICE ENGLISH	0.0564	0.1154	0.0391	0.24
DAT VR	0.0565	0.0199	0.2254	8.074
DAT NA	0.0069	0.0175	0.0111	0.16

$R^2 = .825$

$T = 29.92$

* = Significant at .05 level

Regression equation CGPA = -5.9885 + 0.0760 HSGPA + 0.4541 ESICE GPA + 0.2761 ESICE MATH + ESICE English + 0.0565 DATVR + 0.0069 DAT NA

have shown the predictive power of ($R^2 = .78$). When the college grade point average (CGPA) predicted from the above six independent variables, the observed F value is 20.99. The critical value at .05 level is $F(6,36) = 2.36$. As a result, the observed value is greater than the critical value. Hence, it is reasonable to conclude that the regression of CGPA on the above mentioned variables is statistically significant at the .05 level. In addition, the findings indicated that the HSGPA and DATNA are more effective in predicting CGPA than other independent variables.

Concerning the groups majoring in Marketing and Personnel Management (see Tables 19,20), the six independent variables (HSGPA, ESLCE GPA, ESLCE Maths, ESLCE English, DATVR and DATNA) have shown the prediction power of ($R^2 = .59$ and $.68$ for Marketing and Personnel Management groups respectively). The observed F value (for Marketing Management group) is 6.07. While the critical value at .05 level is, $F(6,31) = 2.41$. Similarly the observed F value for the department of Personnel Management is 10.40 while the table value at .05 level is, $F(6,29) = 2.43$. As a result, the above six independent variable are statistically significant at .05 level in predicting students academic performance for both fields of studies (Marketing and Personnel Management). In addition, the result indicated that DATNA subtest is relatively more important than other variable for marketing group, while the HSGPA is more

Table 18 Multiple Regression Analysis Results for the group Majoring in
Banking and Finance (n = 43)

Variables	Regression Weight	Standard error of bi (sbi)	Beta Coefficient	F
HSGPA	0.0448	0.0105	0.5438	18.14*
ESICE GPA	0.0739	0.3179	0.0244	0.05
ESICE MATH	0.0542	0.1215	0.0375	0.20
ESICE ENGLISH	0.0721	0.0949	0.0796	0.58
DAT VR	0.0299	0.0185	0.1620	2.64
DAT NA	0.0300	0.0137	0.3891	4.82*

$$R^2 = .7776$$

$$F = 20.99$$

* = Significant at .05 level

Regression equation CGPA = -2.4220 + 0.0448 HSGPA + 0.0739 ESICE GPA + 0.0542 ESICE Math
+ 0.0721 ESICE English + 0.0299 DATVR + 0.0300 DATNA

Table 19 Multiple Regression Analysis Results for the group Majoring in
Marketing Management (n = 38)

Variables	Regression Weight	Standard Error of bi(sbi)	Beta Coefficient	F
HSGPA	0.0295	0.0167	0.2852	3.14
ESLCE GPA	1.6070	1.5865	0.1470	1.03
ESLCE MATH	0.2791	0.2312	0.1649	1.46
ESLCE ENGLISH	0.1374	0.1253	0.1612	1.20
DAT VR	0.0329	0.0262	0.1689	1.58
DAT NA	0.046	0.0178	0.3542	6.88*

$R^2 = .581$

* = Significant at .05 level

F = 6.07

Regression equation CGPA = -7.881 + 0.295 HSGPA + 1.6070 ESLCE GPA + 0.2791 ESLCE MATH
+0.1374 ESLCE English +0.0329 DATVR +0.0466 DATNA

Table 20 Multiple Regression Analysis Results for the group Majoring in
Personnel Management (n = 36)

Variable	Regression Weight	Standard error of bi (shi)	Beta Coefficient	F
HSGPA	0.0691	0.0146	0.7231	22.35*
ESICE GPA	-0.5813	0.3982	0.1093	2.13
ESICE MATH	0.0412	0.2280	0.0201	0.03
ESICE ENGLISH	0.1031	0.1599	0.0747	0.42
DAT VR	-0.0028	0.0330	0.0130	0.01
DAT NA	0.0258	0.0174	0.2032	2.20

$$R^2 = .657$$

$$F = 10.40^*$$

* = Significant at .05 level

Regression equation CGPA = -1.830 + 0.0691 HSGPA + -0.5813 ESICE GPA + 0.0412 ESICE Math
0.1031 ESICE English + -0.0028 DAT VR + 0.0258 DAT NA

important than other variable for the group majoring in personnel Management. The reason is, among others, considerable reduction in the sample size of the group of subjects majoring in Marketing Management may result in having low relationship between the criterion and predictor variable. The differential grading standards of instructors with in different fields should also be taken into consideration. The other possible explanation is that, the content of the training program in Marketing Management may be better explained by DATVR+NA than HSGPA.

The multiple regression analysis results for the group of subjects majoring in Secretarial and Office Management (Table 21) Purchasing & Supplies Management (see Table 22) have indicated that HSGPA, ESICE, GPA, ESICE Math, ESICE English, DATVR and DATNA explain 65% and 70% of the variance in the college performance for the two groups of subjects respectively. The observed F value for the department of Secretarial Science and Office Management is 10.91. This value (10.91) is statistically significant when compared to the critical value at .05 level $F(6.35) = 2.37$. Like wise when observed F value (13.46) is compared to the tabled value of $F(6.36) = 2.36$ for the group majoring in Purchasing and Supplies Management, the six independent variables are statistically significant at the .05 level. Thus, we can conclude that the multiple regression of the independent variables on CGPA (for both fields of studies) is significant at the .05 level. Looking

Table 21 Multiple Regression Analysis Results for the group Majoring in
 Secreterial Science and Office Management (n = 42)

Variables	Regression Weight	Standard error of bi	Beta Coefficient	F
HSGPA	0.0544	0.0172	0.5284	10.03*
ESICE GPA	-0.2851	1.0334	0.0301	0.08
ESICE MATH	0.1702	0.2102	0.0974	0.66
ESICE ENGLISH	0.2687	0.1178	0.3019	5.20*
DAT VR	0.0246	0.0322	0.1166	0.58
DAT NA	0.0131	0.0185	0.1996	0.50

$$R^2 = 0.652$$

$$F = 10.91^*$$

* = Significant at .05 level

Regression equation CGPA = $-1.994 + 0.0545 \text{ HSGPA} + -0.2850 \text{ ESICE GPA} + 0.1702 \text{ ESICE MATH}$
 $+ 0.2687 \text{ ESICE English} + 0.0246 \text{ DAT VR} + 0.0131 \text{ DAT NA}$

Table 22 Multiple Regression Analysis Results for the group Majoring in
Purchasing and Supplies Management (n = 43)

Variables	Regression Weight	Standard error of bi	Beta Coefficient	F
HSGPA	0.0605	0.0136	0.5410	19.78*
ESICE GPA	0.5078	0.8936	0.0068	0.32
ESICE MATH	-0.0872	0.2671	0.0375	0.11
ESICE ENGLISH	0.0547	0.1308	0.0452	0.18
DAT VR	0.0360	0.0281	0.2469	1.64
DAT NA	0.0329	0.0187	0.3295	3.10

$$R^2 = .6993$$

$$F = 13.96^*$$

* = Significant at .05 level

Regression equation CGPA = -4.96 + 0.0605 HSGPA + 0.5078 ESICE GPA + -0.0872 ESICE MATH
+0.0547 ESICE ENGLISH + 0.0360 DAT VR + 0.0329 DAT NA

at the beta coefficients the HSGPA and ESLCE English results are more important in predicting students' academic performance for the group of subjects majoring in Secretarial Science and Office Management. On the other hand, the HSGPA appears to be more important than any other variables in predicting students academic performance for Purchasing and Supplies Management group.

Generally, the six independent variables largely explained the variance in CGPA when differential prediction is considered for the group of subjects majoring in Accounting ($R^* .83$) and Banking and Finance ($R^* .78$). In addition, when comparison is made among the independent variables, it appears reasonable to accept that the HSGPA is more effective in predicting students academic performance for the total group as well as for all fields of studies except for Marketing Management group. Individual DAT subtest scores have also shown relatively strong predictive evidence for some fields of studies. In this regard, the DATMA subtest is more important in predicting CGPA for the total group and for the group of subjects specializing in Banking and Finance (see table 18) and Marketing Management (see table 19). On the other hand, the DATVR subtest is more important in predicting CGPA for the total group as well as for Accounting field of study.

Results of step wise Multiple Regression Analysis

Finally the results of step wise multiple regression analysis are presented. The criterion for adding or deleting an independent variable is stated equivalently in terms of error sum of squares reduction, coefficient of partial correlation, of F statistic. The analysis provides the maximum R^2 improvement in the criterion variables and there by assist in the selection of the best predictor variables that could be utilized in the admission and placement of students.

When analysis of the step wise multiple regression analysis is considered for the total group (Table 23) the variance accounted for CGPA (College Grade Point Average) by all variables were about 62.63%.

The most favourable weighted combination of HSGPA, and DATVR + NA for predicting college GPA (CGPA) yielded a significant multiple correlation of $R = 0.7914$ ($p .05$). This multiple correlation corresponds to 61.58% of the variance accounted for in the variance of CGPA. The HSGPA accounted for about 57.71% of the variance in the criterion variable. The combination of DATVR+NA improved the prediction by 3.87% of the variance in the criterion variable. Separate analysis of the summary of step wise multiple Regression analysis have been given for each field of study (see, Tables 24 - 29). In Table 24 the summary of step wise multiple regression analysis is presented for the group majoring in Accounting. The amount of

Table 23 Summary of step wise multiple Regression analysis for the total group (n = 247)

Step No	Number of variables entered	Multiple correlation and related Values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in multiple R ²	F	Variables entered	Coefficients		F	Constant	Simple correlation with CGPA
							Regression coefficient (bi)	Beta coefficient (B)			
1	1	0.7597	0.5771	0.5771	334.32	HSGPA	0.0572	0.568	105.31*	-2.6284	0.7597
2	2	0.7847	0.6158	0.0387	24.60	DATVR+NA	0.0254	0.275	24.60*		0.6788
All variables included in the model		0.7914	0.6262								

* = Significant at .05 level

Regression equation

$$CGPA = -2.6284 + 0.05781 HSGPA + 0.0254 DATVR + NA$$

Table 24 Summary of step wise multiple Regression analysis for the group majoring in Accounting (n = 45)

Step No	Number of variables entered	Multiple correlation and related values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in multiple R ²	F	Variables entered	Coefficients		F	Constant	Simple correlation with CGPA
							Regression coefficient (bi)	Beta Coefficient (B)			
1	1	0.0699	0.7564	0.7564	11.999	HSGPA	0.0802	0.7816	112.42*	-4.7262	0.869
2	2	0.8967	0.8042	0.0478	3.597	DATVR	0.0591	0.2357	10.34		0.544
3	3	0.9063	0.8214	0.0178	1.855	ESICE MATH	0.2899	0.11320	3.95		0.052
All variables included		0.9085	0.8253								

Regression equation

$$CGPA = -4.7262 + 0.0802 \text{ HSGPA} + 0.0591 \text{ DATVR} + 0.2899 \text{ ESICE Math}$$

* = Significant at .05 level

variance in college grade point average that is explained by HSGPA alone is about 75.64%. When the combination of DAT tests (DAT VR + NA) entered in the second step, the prediction of college grade point average further improved by 4.78%. The search for possible predictors terminates when ESICE Maths result is chosen at the third step. The ESICE Maths result explains only about 2% of the performance in the college. However, the test of significance for the final step indicates that the contribution of ESICE Maths, which has already entered in the model is not significant $F(1,241) 3.95$. As a result one would conclude that, if only two variables could be used for admission purpose in Accounting field, the HSGPA and the DATVR would be the best independent variables because the summary of step wise multiple regression analysis has indicated that these two variables were the most significant variables in predicting students' performance in Accounting.

In the case of the subjects specializing in the field of Banking and Finance (see, Table 25) the combination of HSGPA and DATVR+NA yield a significant multiple of 0.873 which explains 76.71% of the variance of college performance. The largest contribution was made by HSGPA which accounted for 70.68% of the variance in predicting CGPA.

The same variables (HSGPA, DATVR+NA) also significantly accounted for the variance in the college grade point average for the group majoring in Purchasing and Supplies Management

Table 25 Summary of step wise multiple Regression analysis for the group majoring in Banking & Finance (n = 43)

Step No	Number of variables entered	Multiple correlation and related Values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in multiple R ²	F	Variables entered	Coefficients		F	Constant	simple correlation with CGPA
							Regression Coefficient (bi)	Beta Coefficient (B)			
1	1	0.8407	0.7068	0.7068	98.83	HSGPA	0.0436	0.5284	23.89*	-2.009	0.785
2	2	0.8724	0.7671	0.0603	10.35	DATVR+NA	0.02804	0.2629	10.35*		0.785
All variables being included		0.8819	0.7776								

* = Significant at .05 lev

Regression equation

$$CGPA = -2.009 + 0.0436 HSGPA + 0.02804 DATVR+NA$$

Table 26 Summary of step wise multiple Regression Analysis for the grouped majoring in Purchasing and Supplies Management (n = 43)

Step No	Number of variables entered	Multiple correlation and related values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in Multiple R ²	F	Variable entered	Coefficients		F	Constant	Simple correlation with CGPA
							Regression coefficients (bi)	Beta coefficient (B)			
1	1	0.7836	0.6140	0.6140	65.228	HSGPA	0.0619	0.5534	24.04*	-3.6034	0.784
2	2	0.8329	0.6936	0.0796	10.392	DATVR+NA	0.0344	0.3641	10.39*		6.714
All variables being included		0.8363	0.6993								

* = Significant at .05 level

Regression equation

$$CGPA = -3.6034 + 0.0619 HSGPA + 0.0344 DATVR+NA$$

(see Table 26). The two test scores (HSGPA, DATVR+NA) explain 69.36% of the variance in predicting CGPA. The high school grade point average alone accounted for 61.40% of the variance in predicting CGPA. When the DATVR+NA was added it improved the prediction by 7.96%. Therefore, the result of the study would suggest the need to consider the two variables (HSGPA and DATVR+NA) more importantly for admission purpose for the group of subject specializing in Banking and Finance and Purchasing and Supplies Management.

The result obtained for the group majoring in Marketing Management is different when compared with other fields of studies. In all fields of studies, it appeared that the HSGPA made the largest contribution for the variance in the college GPA. However, in the case of the subjects specializing in Marketing Management the combination of DAT VR+NA accounted more importantly than HSGPA. The amount of variance in college grade point average that explained by DATVR+NA alone is 40.45%. When HSGPA is used in combination it raised the prediction by 11.09%. The implication is both DATVR+NA and HSGPA are the most useful variables for admission purpose (for Marketing Management group).

As far as the department of Personnel Management is concerned, (see Table 28) the best possible combination of all six predictors would yield a multiple correlation of .8106 which accounted for 65.72% of the variance in college performance. However, it was found that the use of additional variables

Table 27 Summary of step wise multiple Regression Analysis for the group majoring in Marketing Management (n = 38)

Step No	Number of variables entered	Multiple correlation and related values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in multiple R ²	F	Variables entered	Coefficients		F	Constant	Simple correlation with CGPA
							Regression coefficient	Beta coefficient			
1	1	0.6360	0.4045	0.4045	24.66	DATVR+NA	0.0417	0.4353	10.05*	-2.3048	0.636
2	2	0.7179	0.5154	0.1109	8.01	HSGPA	0.0404	0.3892	8.01*		0.614
All variables being included		0.7655	0.5810								

* = Significant at .05 level

Regression equation

$$CGPA = -2.3048 + 0.0417 \text{ DATVR+NA} + 0.0404 \text{ HSGPA}$$

Table 28 Summary of step wise multiple Regression Analysis for the group majoring in Personnel Management (n = 36)

Step No	Number of variables entered	Multiple correlation and values				Values in the final analysis					
		Multiple R	Multiple R ²	Changes in multiple R ²	F	Variables entered	Coefficients		F	Constant	Simple correlation with CGPA
							Regression Coefficient (bi)	Beta Coefficient (B)			
1	1	0.7928	0.6286	0.6286	57.554	HSGPA	0.0691	0.7228	34.12*	-3.133	0.7928
2	2	0.8077	0.6525	0.0239	2.6	DATNA	0.0251	0.1978	2.69		0.634
All variables being included		0.8106	0.6572								

* = Significant at .05 level

Regression equation

$$CGPA = -3.133 + 0.0691 HSGPA + 0.0251 DATNA$$

beyond HSGPA do not explain significantly to the prediction of college performance. Even the contribution of DATNA score (which has already been included in the model) is not statistically significant at .05 level ($F (1.29 - 2.69 p .05)$). The conclusion is, the only significant variable that could be utilized for the admission purpose (for personnel Management group) is HSGPA.

In this study, neither ESLCE GPA nor ESLCE Maths results significantly explain the variance in college performance in any one field of study. In the case of the subjects specializing in Secreterial Science and Office Management (see Table 29) the combination of the ESLCE English test score with HSGPA accounted for 62.25% of the variance in predicting CGPA. In this regard, the HSGPA explained about 55.89% of the variance in predicting VGPA. The ESLCE English test score improved the prediction by 6.35%. As a result, these two variables (HSGPA and ESLCE English) appear to be the most important one to be considered for admission purpose for the group specializing in Secreterial Science and Office Management.

The conclusion to be drawn from the summary of step wise multiple regression analysis is that, generally, the high school grade point average is useful in predicting students academic performance for all fields of studies. However, the predictive ability of DAT and ESLCE English test scores varies among different fields of studies. In this regard, the combination of HSGPA and DATVR+NA better predicts CGPA for the groups

Table 29 Summary step wise multiple Regression analysis for the group majoring in
 Secreterial Science and Office Management (n = 42)

Step No	Number of variables entered	Multiple correlation and related values				Values in the final analysis					
		Multiple R	Multiple R ²	changes in Multiple R ²	F	Variables	Coefficients		F	Constant	Simple correlation with CGPA
							Regression Coefficient (bi)	Beta Coefficient (B)			
1	1	0.7476	0.5589	0.5589	50.687	HSGPA	0.0694	0.6741	43.27*	-2.7593	0.748
2	2	0.7889	0.6525	0.635	6.564	EOLCE English	0.2338	0.2677	6.57*		0.642
All variables being included		0.8076	0.6515								

* = Significant at .05 level

Regression equation

$$CGPA = -2.7593 + 0.0694 HSGPA + 0.2338 EOLCE English$$

specializing in Banking and Finance, Marketing Management and purchasing and Supplies Management. The combination of HSGPA with DATVR also significantly predicted students' academic performance in Accounting. Out of the three ESLCE test scores (ESLCE GPA, ESLCE English and ESLCE Maths) only ESLCE English test score predicts better students' academic performance when used in combination with HSGPA for the group specializing in Secretarial Science and Office Management. As far as Personnel Management group is concerned none of the variables significantly accounted for the variance in CGPA except HSGPA.

Generally, the out come of this study suggests the need to take into consideration different variables for admission and placement of students' to different fields of studies. However, as a whole, it is useful to consider HSGPA for admission and placement of students.

4.2 Discussion

Before discussing the findings it is desirable to explain some statistical problems associated with the interpretation of the results obtained from regression weights and beta coefficients.

As Neter and Wasserman (1974) pointed out the usual interpretation of a multiple regression equation depends implicitly on the assumption that the regressor variables are not strongly correlated with each other. The scholars indicated that when the regressor variables are strongly intercorrelated, several difficulties occur in interpreting and evaluating the regression equations. Among others, only imprecise information may be

available about the true individual regression coefficients and indeed, each of the estimated regression coefficients individually may be statistically not significant even though a definite statistical relation exists between the dependent variable and the set of independent variables (Neter and Wasserman, 1974), closely related problem is associated with the interpretation of the results obtained on beta coefficients. Beta coefficients may be used to facilitate comparisons between regression coefficients. Ordinarily, it is difficult to compare regression coefficients because of differences in the units involved (Neter and Wasserman, 1974). The authors noted that changing the other independent variables in the model will usually change the standardized regression coefficients when the independent variables correlate among themselves. Finally (Neter and Wasserman, 1974) have remarked that it may be desirable to drop one or several independent variables in the presence of multi colinearity even when concerns with inference about the response or predictions of new observations, so as to increase the accuracy of the calculations, Such statistical limitation is solved using the stepwise multiple regression analysis. With the above limitations in mind, the results obtained in this study warrants the following interpretations.

As it has been indicated in the result section, the HSGPA correlated significantly with college grade point average (CGPA)(within specific fields of studies as well as for the total group) at the .05 level. However, with respect to the subjects majoring in Marketing Management the combination of DATVR+NA weighted more highly than HSGPA for predicting CGPA.

It appears that, on the whole, the HSGPA measure is the most valid indicator of academic success.

The outcome of this study support the previous research findings which describe the record of performance in high school as the most single predictor of college performance (Hills,1971). More specifically this study is in line methodologically with the previous researches conducted by Mikim and Price (1974), and Passons (1962).

Mikim and Price (1974) attempted to identify some of the variables associated with performance of under graduate business students with the possibilities to identify the results that may be used to establish some quantifiable data for admissions and counseling purposes. Their subjects were 93 students who joined Fort Mays Kansas State College. It revealed that High school grades were associated with college performance. Passons (1962) conducted a study to determine the predictive validities of ACT, SAT and High school grades for first semester CGPA and Freshman courses. The subjects were 882 students admitted to Franso state College (FSC). He found that high school grade point average (HSGPA) yielded the highest predictive validity for the first semester college grade point average, but test scores had slightly higher varidities for predicting grades in courses.

Results reported on the DAT test scores have indicated that, there is a significant positive correlation among DAT test scores (DATVR, DATNA, DATVR+NA) and the criterion variable (CGPA) for all fields of studies as well as for combined group.

Particularly, the combination of DATVR+NA is strongly correlated with the criterion variable, the lowest correlation coefficient being $r = .636$ (for the subjects majoring in Marketing Management) and the highest $r = .78$ (for the subjects majoring in Banking and Finance field of study).

The predictive ability of the DAT test scores have shown that, the best combination of DATVR+NA has yielded higher validities than the use of individual predictors for the total group as well as for the subjects majoring in three fields of studies (Marketing Management, Banking and Finance, and Supplies Management). Out of the two DAT subtests (DATVR, NA) only DATVR subscore significantly predict students success in college when separate analysis is considered for the subjects majoring in Accounting field of study. However, none of DAT test scores significantly contribute in predicting students success for the groups majoring in Personnel Management and Secretarial Science and Office Management. With respect to the subjects majoring in Secretarial Science and Office Management (see Table 29) the HSGPA and the ESICE English test score yielded significant increase in multiple correlation values which suggests that these two variables were statistically the most significant in predicting college grade point average. In the case of the students specializing in Personnel Management, none of the independent variables significantly accounted for the variance in the college grade point average except HSGPA

(see Table 28). The findings of this study indicate that first year grade point average can be predicted by the verbal Reasoning and Numerical ability of the Differential aptitude test score. As a result the evidence obtained on DAT test scores confirm the previous research findings by (Lakew, 1972) Bower, 1968; Mittman, 1972). However, the predictive ability of each subtest score and the combination of the two subtest scores varied among different fields of studies. Among others, such variability might have occurred due to the differential grading standards of instructors and their interaction (Fisherman, 1958; Hills, 1971). Perhaps, as Goldman & Widawski (1976) reported students in different major fields have been found to differ in personality traits as well as in abilities. In addition, separate prediction studies within specific field of studies has reduced the sample size that must be included in the study. As a result, this practice might have contributed substantially to the outcome of a relatively low relationship between the criterion and the predictor variables. Particularly the problem associated with the reduction of sample size should be viewed very cautiously because of the considerable reduction in the sample size for the group majoring in Personnel Management (n = 36) and Marketing Management (n = 38). As far as the predictive validity of ESICE test scores is concerned, it has been found out that the ESICE GPA and ESICE Math test results have shown a relationship that was not significant with college grade point average (CGPA).

The summary of step wise multiple regression analysis has also indicated that none of these test scores (ESICE GPA and ESICE Mathematics test scores) have significantly accounted for the variance in the criterion variable (CGPA). As a result, this research finding has supported the previous researches conducted by Tracy (1969) Langumer and Bower (1967) who stated that ESICE is a weak instrument to be utilized for college admission purposes. On the otherhand the non significant relationship might be explained due to several factors. First of all, the courses given in the Junior College of Commerce may have little or nothing to do with ESICE test score, Secondly, high inter correlations among some independent variables may produce some peculiar results in multiple regression analysis Hikim and Price (1976). Accordingly, in multiple regression analysis the Negative effect of one independent variable on the dependent variable is due to inter correlations between other independent variables and with the dependent variable (Hikim and Price, 1976). Third the restriction in range of ESICE test scores operates to suppress relations with the criterion variable.

That is, the minimum ESICE GPA that the candidate qualify for admission is 2.60 while the maximum value is 3.0 which indicates a range of 0.4 CGPA. As a result such values amounts to restrict the range of variability in the predictor which operates to suppress relationship with the criterion variable (CGPA). However, the ESICE English test scores relatively

showed significant relationship with college grade point for three separate fields of studies (Accounting $r = .35$), Purchasing and Supplies Management, ($r = .420$) and Secretarial Science & Office Management ($r = .45$), Specifically, the ESLCE English test score significantly contributed in predicting CGPA when separate analysis is considered for the group majoring in Secretarial Science and Office Management. As Tracy (1969) pointed out this finding indicated that the individual ESLCE subjects had different predictive value. In addition, King and King (1970) have reported that since the language of instruction at the university is English, ESLCE English test score better predict students' performance in the college. In this regard Millman (1972) also added that the verbal skills in English are valid predictors of academic success at HSIU and measures in these areas should be under constant review. The other possible explanation is that, the content and the nature of training programme in the secretarial field requires relatively high English Language ability.

CHAPTER V Conclusion and Recommendations

5.1 Conclusion

This study has not included a wide range of variables such as sex, socio economic level, and high school academic streams, which are also likely to be associated with college performance. Particularly the interpretation of the results are limited due to the following factors. First, the restriction

in range of predictor variables (mainly ESICE test results) suppress the relations with the criterion variables. Second it was recognized that the grade point average for a single semester especially the first semester of the freshman year is likely to be unstable, in the sense that its correlation with the grade point average for another semester may not be high (Bower, 1967). Finally, results that reported for various fields of studies are based on small sample size so that the regression equation for various fields of studies may be poorly determined. Yet, the results obtained in this study warrant the following general observations.

1. Both high school grades and DAT test scores are significant predictors of college performance. However, it is reasonable to believe that the High school grade point average is more significant and important in predicting a students' ability to perform in the Junior College of Commerce than DAT test scores.

2. The High school grade point average significantly predicted students performance for the combined group as well as within separate fields of studies. However, the predictive ability of DAT test scores varied among students' majoring in different fields of studies. In this regard, the combination of DAT (DATVR+NA) subtest scores yielded higher validities for the group majoring in Marketing Management, Banking and Finance and Supplies Management.

On one hand, only DATVR subscore significantly predicted students success in college when differential prediction is considered for the group of subjects majoring in Accounting field of study. On the otherhand, none of the DAT test scores (DATVR+NA, DATVR, DATNA) significantly contribute in predicting students success for the groups majoring in personnel Management and Secreterial Science and Office Management. Hence, there is a need to consider different variables for admission and placement of students into different fields of studies.

3. Neither ESICE GPA nor ESICE Math test results significantly predicted students performance in the Junior College of Commerce. However, ESICE English test result significantly predicted students performance in the Secreterial Science and Office Management.

5.2 Recommendations

In view of the results identified in this study, the following recommandations are given.

1. This study would suggest the need to consider HSGPA and DAT test scores for admission and placement of students.

However, such practical step further requires the need to:

2. Conduct additional research using the same predictors in order to ascertain the predictive validity of the variables under study. In this regard, similar study has to be conducted by including other institutions of higher learning so that the results of the study could be generalized to larger population of institutions of higher learning.

3. The predictive validity of DAT test scores should be reviewed constantly and the test should be adapted to Ethiopian context.

4. Step should be taken to improve the ESICE test as predictors of academic achievement in colleges.

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APPENDICES

FROM A

ETHIOPIAN SCHOOL LEAVING CERTIFICATE

EXAMINATION SCORE / ESLCE

CODE NO _____

NAME _____

SEC. _____

YEAR _____

SEM. _____

ESLCE SUBJECTS

GRADES

ESLCE SUBJECTS	GRADES
1. AMHARIC	_____
2. ENGLISH LANGUAGE	_____
3. MATHEMATICS	_____
4. PHYSICS	_____
5. CHEMISTRY	_____
6. GENERAL SCIENCE	_____
7. BIOLOGY	_____
8. GEOGRAPHY	_____
9. HISTORY	_____
10. ECONOMICS	_____
11. BOOK KEEPING	_____
12. GEEZ	_____
13. FRENCH	_____

TOTAL ESLCE GPA _____

* If there are two or more grades for one subject they must be recorded in their chronological order, the first grade for course being taken in the first trial.

JUNIOR COLLEGE OF COMMERCE
DEPARTMENT OF ACCOUNTING
ADDIS ABABA

GRADE ACCUMULATION FORM (REGULAR)

NAME _____ I.D.NO. _____ YEAR OF ADM. _____

1-1

1-2

Course No.	Cr. Hrs	Grade	G.Pts
LBC 101	3		
LBC 121	1		
ACCT 121	4		
MATH 101	3		
PSM 101	3		
SSC 101	2		
SSC 121	2		
SSOM 141	P/F		
SSOM 151	P/F		
SSC 131	P/F		
TOTAL	18		

Course No.	Cr.Hrs	Grade	G.pts
LBC 102	3		
LBC 122	1		
ACCT 122	4		
MATH 112	3		
SSC 102	2		
PSM 111	3		
SSC 111	2		
SSOM 142	P/F		
SSOM 152	P/F		
SSC 132	P/F		
TOTAL	18		

Cr.Hrs G.pts. GPA

Sem. _____

Cr.Hrs. G.Pts. GPA

Prev. _____

Sem. _____

Cum. _____

2-1

2-2

Course No.	Cr.Hrs	Grade	G.pts
LBC 201	3		
ACCT 211	4		
ACCT 221	3		
ACCT 231	4		
SSC 201	2		
MATH 221	3		
SSC 200	2		
TOTAL	21		

Course No.	Cr.Hrs	Grade	G.pts
LBC 212	3		
ACCT 212	4		
ACCT 222	3		
ACCT 232	3		
PSM 261	2		
BF 211	2		
SSC 202	2		
TOTAL	19		

Cr.Hrs. G.pts. GPA

Prev. _____

Sem. _____


Cum. _____

Cr.Hrs. G.pts. GPA

Prev. _____

Sem. _____

Cum. _____

FORM  STUDENTS PERFORMANCE IN THE COLLEGE
 JUNIOR COLLEGE OF COMMERCE
 ADDIS ABABA
BAKING & FINANCE STUDENTS' GRADE RECORD

YEAR 1

NAME _____

FIRST SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 121	1		
LBC 101	3		
MATH 101	3		
SSC 101	2		
SSOM 141	P/F		
SSC 101	2		
DF 121	3		
BF 121	3		
SSC 131	P/F		
SSC 121	2		
TOTAL	19		

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 122	1		
LBC 102	3		
ACCT 121	4		
SSOM 142	P/F		
SSC 102	2		
MATH 101	3		
DF 122	3		
PSM 101	3		
PHED 132	P/F		
TOTAL	19		

CR.HR. GPT GPA

Sem. _____
 Cum. _____
 Major _____

CR.HR. GPT GPA

Prev. _____
 Sem. _____
 Cum. _____
 Major _____

YEAR 2

FIRST SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 201	3		
ACCT 122	4		
MATH 221	3		
SSOM 151	P/F		
BF 201	3		
SSC 201	2		
PSM 101	3		
TOTAL	18		

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 212	3		
BF 212	3		
SSOM 152	P/F		
SSC 202	2		
PSM 261	3		
BF 222	3		
SSC 200	2		
BF 211			
TOTAL	18		

CR.HR. GPT GPA

Prev. _____
 Sem. _____
 Cum. _____
 Major _____

CR.HR. GPT GPA

Prev. _____
 Sem. _____
 Cum. _____
 Major _____

**FORM D STUDENTS PERFORMANCE IN THE COLLEGE
JUNIOR COLLEGE OF COMMERCE**

ADDIS ABABA

DEPARTMENT OF MARKETING MANAGEMENT

Name _____ Sect. _____ Year of Adm. _____

1st year

FIRST SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 101	3		
PSM 101	3		
ACCT 121	4		
SSC 101	2		
SSC 111	2		
SSC 121	2		
MATH 101	3		
SSOM 151	P/F		
SSC 131	P/F		
TOTAL	19		

CR.HR GPT GPA

Sem. _____

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 121	1		
LBC 102	3		
MGT 102	3		
MRM 112	3		
SSC 102	2		
ACCT 122	2		
CL 201	2		
MATH 112	3		
SSC 132	P/F		
SSOM 152	P/F		
TOTAL	19		

CR.HR GPT GPA

Prev. _____

Sem. _____

Cum. _____

2nd Year

FIRST SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
SSC 201	2		
LBC 122	1		
LBC 212	3		
112	3		
MRM 231	3		
MRM 221	3		
MATH 231	3		
SSOM 141	P/F		
TOTAL	19		

CR.HR GPT GPA

Prev. _____

Sem. _____

Cum. _____

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
SSOM 142	P/F		
SSC 202	2		
SSC 200	2		
MRM 242	2		
PSM 261	3		
MRM 252	3		
MRM 262	3		
MRM 272	3		
TOTAL	19		

CR.HR GPT GPA

Prev. _____

Sem. _____

Cum. _____

Major _____

JUNIOR COLLEGE OF COMMERCE
ADDIS ABABA
DEPARTMENT OF PERSONNEL MANAGEMENT

Ist YEAR

NAME _____

SECTION _____

YEAR OF ADM. _____

FIRST SEMESTER

SECOND SEMESTER

COURSE NO	COURSE TITLE	CR HR	GRADE	GRADE POINT
LBC 121	Res. & Rep. Writing I	1		
LBC 101	Freshman English I	3		
SSC 101	Fund. of M-L. Phil. I	2		
SSC 111	Int. to Eth. Geography	2		
SSC 121	Int. to Eth. History	2		
PSM 101	Int. to Business	3		
MATH 101	Basic Mathematics	3		
SSOM 111	Int. to Eng. TY. Wri.	P/F		
SSC 131	Physical Education I	P/F		
SSOM 101	Int. to Amh. Typ. Wri.	P/F		
	Total	15		

COURSE NO	COURSE TITLE	CR HR	GRADE	GRADE POINT
LBC 122	Res. & Rep. Wri. II	1		
LBC 102	Freshman Eng. II	3		
SSC 121	Fund. of M-L. Phi. II	2		
MATH 112	Basic Statistics	3		
SSOM 112	Prin. of Eng. T.W.	P/F		
SSOM 102	Prin. of Amh. T.W.	P/F		
PRM 112	Personnel Mgmt.	4		
PRM 102	Org. Psychology	3		
PSM 102	Int. to Management	3		
SSC 132	Phy. Education II	P/F		
	Total	19		

SEMESTER	CR.HR.	GPT	GPA	Prev.Total	CR.HR.	GPT	GPA

Remark _____

Remark _____

FORM  STUDENTS PERFORMANCE IN THE COLLEGE

JUNIOR COLLEGE OF COMMERCE

ADDIS ADABA

FIRST YEAR STUDENTS' GRADE RECORD

NAME _____

MAJOR _____

YEAR _____

FIRST SEMESTER

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
SET 111	3		
SAT 101	3		
SGSH 131	3		
LENG 101	3		
LARR 171	1		
ACCT 121	P/F		
PHIL 102	2		
ETH.ST101	1		
PHED 101	P/F		
TOTAL			

Course No.	Cr.Hrs	Grade	G.Pts
SET 112	3		
SAT 102	3		
SSPD 132	3		
LENG 102	3		
PHIL 102	2		
LARR 172	1		
ETH.ST 102	1		
PHED	P/F		
TOTAL			

CR.HR. GPT GPA

Sem. _____

Cum. _____

Major _____

CR.HR. GPT GPA

Prev. _____

Sem. _____

Cum. _____

Major _____

2nd Year

FIRST SEMESTER

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
SET 211	3		
SAT 211	3		
SASH 231	3		
SACM 142	3		3
LENG 211	3		
MATH 101	P/F		
P.Eco. 101	2		
TOTAL			

Course No.	Cr.Hrs	Grade	G.Pts
SET 222	3		
SAT 212	3		
SADT 232	3		
SABC 241	3		
LENG 232	3		
P.Eco.102	2		
ADSC 101	2		
TOTAL			

CR.HR. GPT GPA

Sem. _____

Cum. _____

Major _____

CR.HR. GPT GPA

Prev. _____

Sem. _____

Cum. _____

Major _____

JUNIOR COLLEGE OF COMMERCE
ADDIS ABABA

DEPARTMENT OF PURCHASING AND SUPPLIES MANAGEMENT

1st year

Name _____ Year of Adm. _____

FIRST SEMESTER

Course No	Cr.Hrs	Grade	G.Pts
LBC 121	1		
LBC 101	3		
PSM 101	3		
SSC 101	2		
ACCT 121	4		
MATH 101	3		
PSM 111	3		
SSC 131	P/F		
SSOM 151	P/F		
TOTAL	19		

CR.HR GPT GPA

SEMESTER _____

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 122	1		
LBC 102	3		
SSC 102	2		
SSC 121	2		
PSM 122	3		
MATH 112	3		
SSC 111	2		
PSM 132	3		
SSC 132	P/F		
SSOM 152	P/F		
TOTAL	19		

CR.HR GPT GPA

PRE. TOTAL _____

SEMESTER _____

CUM. _____

2nd Year

FIRST SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
PSM 221	3		
LBC 201	3		
SSC 201	2		
PSM 261	3		
ACCT 122	4		
SSC 200	2		
BF 211	2		
SSOM 141	P/F		
TOTAL	19		

CR.HR GPT GPA

PRE. _____

SEM. _____

CUM. _____

SECOND SEMESTER

Course No.	Cr.Hrs	Grade	G.Pts
LBC 212	3		
SSC 202	2		
PSM 272	3		
PSM 252	3		
PSM 282	3		
SSOM 142	P/F		
MATH 231	3		
TOTAL	17		

CR.HR GPT GPA

PREV. _____

SEM. _____

CUM. _____

MAJOR _____

THE PEOPLE'S DEMOCRATIC REPUBLIC
OF ETHIOPIA MINISTRY OF EDUCATION
ADDIS ABABA
STUDENT'S TRANSCRIPT

Name of Student _____ Age _____ Sex _____
Entrance Date _____ Leaving Date _____

GRADE	7	8	9	10	11	12
YEAR						
SEMESTER						
SUBJECTS						
AMHARIC						
ENGLISH						
MATHEMATICS						
GEOGRAPHY						
HISTORY						
PURE BIOLOGY						
PURE PHYSICS						
BI SCIENCE						
PHY. SCIENCE						
H. ECONOMICS						
AGRICULTURE						
PHY. TRAINING						
POL. ECONOMY						
BOOKKEEPING						
POL. EDUCATION						
GEEZ						
ISREA						
GPA TOTAL						
AVERAGE						
RANK						

No

Note: This transcript is invalid if not Bear the school seal, signature and the bearers photo. I am shure the information that I have provided is correct & exact .

Signature.

DECLARATION

The thesis is my original work, has not been presented for degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Name: Kegebe Aderra

Signature: 

Place: Addis Ababa

Date of Submission: June 24, 1991.