

## REGIONAL DIFFERENCES EFFECT ON THE PERFORMANCE OF FRESHMAN STUDENTS IN ADDIS ABABA UNIVERSITY, SIDIST KILO

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**ABSTRACT:** *The utmost desire of any student is a good performance. But there are different hindrances that students in universities and colleges face to perform as they wish. One amongst these is the effect of the region to which one belong to. To study this effect, University students are classified as Addis Ababa and Out-of-Addis Ababa region. This article uses a suitable statistical method to investigate the effect of a regional factor on the overall performance of students. It also investigates the performance difference between the two groups in the English language. The MANOVA results in a significant regional difference effect in the performance of the two groups. Especially in the English language, the difference persisted until the second semester. To minimize this gap, some recommendations are given at the end of the paper.*

### 1. Introduction

Higher Education is very important for a country's economic, social and political development. This development comes into effect by those who pass through higher learning. To this effect, the problems which affect students' performance of higher learning should be studied and appropriate solutions sought. Several related studies have been done on students' academic performance at A.A.U. [ see Mekonen( ), Habte (1988) ]. However, their focus was mainly on the effectiveness of the ESLCE ( Ethiopian School Leaving Certificate Examination) results though there are a few on some other related factors (see literature). Some of the related literature reviewed are as follows:

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Forester's (1959) finding indicated that students from urban schools that did better at university than those from rural schools. Another study recognizes students from rural schools to be vulnerable (Miller, 1970). Dale and Miller (1972) found that students from city schools make the best progress in their first university year and those from large towns do worst on the average, while those from schools in smaller towns and villages fall between the two.

A study by King and King (1970) examined the relation between first semester university performance and language background, educational background and scores of some achievement and aptitude tests using correlation analysis. The study was done using data collected from 1213 freshmen of 1968 entry. The study found that ESLCE GPA and English language to be valid predictors of students' first year academic performance in the HSIU (now AAU).

Mittman (1972) attempted a multivariate predictive study on academic performance at HSIU. He considered an aptitude verbal test score, aptitude number series test score, ESLCE English, Mathematics and Amharic grades as explanatory variables against First Year GPA to fit a multiple regression equation. He concluded that English skills are valid predictors of success at university, though quantitative skills also mildly enhance prediction.

Habte (1988) studied the effect of ESLCE GPA and some other selected factors on 150 freshman science students' academic performance using regression methods. He found the logarithmic transformations of ESLCE GPA and freshman GPA to be highly linearly related. Moreover dormitory facilities were found to have positive effect on students performance. However, sex, age upon admission, marital status, school type and type of admission were found to have a negligible effect. And finally the study showed a performance difference between students of Addis Ababa and other regions. Mohammed (1989) who studied the academic profiles of the 1987 Statistics Graduates who came from Addis Ababa and other regions of the country, however, found the performance trends of both, Addis Ababa and other-region students to be similar.

The study by Fentaw (1991) provides the most recent and comprehensive study on factors affecting students' performance in Addis Ababa University. He studied 120 prospective graduates of the 1990/91 academic year, who joined the university from high schools in Ethiopia and had never been to any other university. The study,

which separately studied the College of Social Sciences (CSS) and Faculty of Science (FSC) students, found that in the CSS, high school rank, degree of support, sex and type of school to be important predictors of academic performance. While in the FSC, English grade, length of study time and location of high school attended were large contributors to the difference in performance of good and poor performing students.

To conclude, we have revised some of the related literature available on university students' academic performance around the world and especially at Addis Ababa University. However, the effort that has been made to determine the effect of regional differences on predicting students' academic performance had not been satisfactorily established. Hence, this article, with some limitations, tries to discuss the problem of regional differences and the adaptation problem of freshman students to campus life on their academic performance.

### **1.1 Significance and Limitations of the Study**

The main concern of this paper is to discuss whether or not regional differences contribute to differences in academic performance. And to do this, students are classified as Addis Ababa and Out-of-Addis Ababa region. The classification might have been more than this, but the data (secondary data from the records office of the College of Social Sciences) was suitable only for this type of classification. Indeed, in relation to the problem under investigation, the relevance of classifying students to the two regions is more than satisfactory. The hypothesis here is that, those of out-of-Addis Ababa region are at odds. The study, moreover tries to show the adaptation problem (that is, those students coming from Outside Addis Ababa face a new environment, and are less oriented to campus life as compared to those of Addis Ababa region students) of freshman students of the Out of Addis Ababa region students on their academic performance. Since the focus of the study is on the 1992-1993 regular freshman students of the College of Social Science of Addis Ababa University, every conclusion in this paper is ultimately concerned with those freshman students of the 1992-1993 academic year. The study excludes students who were non 92/93 entry and who did not sit for Second Semester Final Examination.

To study the problem, student performances in English and Quantitative Methods (Mathematics) were compared. The choice of these subjects for this study is considered appropriate because both are compulsory subjects, besides the former is the medium of instruction in the teaching-learning process.

Even though consideration of other courses which are given at the freshman level is important for the complete understanding of the competence in the two region students, the study uses only English and Quantitative Methods (Mathematics) scores in order to avoid complications in understanding.

Such a study is the main concern of educational researchers as assessment of students performance in the two subjects gives a general overview of the learning atmosphere of an academic institution. Unfortunately at Addis Ababa University, and in particular at Sidist Kilo, no detailed study has been done on this issue. Hence, this paper will focus on this issue.

## 2. The Data

The data is collected from the Freshman Program Coordinator Office of the College of Social Sciences. Taking each Freshman student of the 1992-1993 as a sampling unit, random sampling is used as a sampling technique.

Clearly, too large a sample implies a waste of resources and too small a sample diminishes the utility of the results. So we have tried to be cautious in specifying an appropriate sample size with the minimum error that we can tolerate. To do this, the sampling is designed to minimize variation by fixing the cost, as sampling from the given population involves no cost at all.

Past studies reveal the estimate of variation,  $S^2$ , to be 0.09 (Salie and Awoke, 93). With a confidence limit and tolerance limit of 95% and 5% respectively and population sizes 276 (for Addis Ababa) and 476 (for Out of Addis Ababa), sampling theory leads to a sample size of 92 for the former and 107 for the latter. However, due to reasons of withdrawal and course exemption some of the students in the sample are removed. Hence the sample size is reduced to 85 and 102 for Addis Ababa and Out of Addis Ababa regions respectively. Finally the sample selection is

done by using one of the most convenient methods, the table of random numbers (see Cochran, 1977).

### 3. Method

Let the response variate  $X_1$  and  $X_2$  stand for the performance of English and Quantitative Methods and be distributed according to the bivariate normal law with mean vectors  $\mu_1$  and full rank covariance matrix  $\Sigma_i$ ,  $I=1,2$ . Since all elements of  $\Sigma_i$  are unknown to test the hypothesis  $H_0 = \mu_1 - \mu_2 = 0$  against the alternative hypothesis  $H_1 = \text{not } H_0$ , two independent observation vectors of size  $n_1$  and  $n_2$  are taken on  $X_1$  and  $X_2$ . From these the usual estimates  $\bar{X}_1$  and  $\bar{X}_2$  and  $S_1$  and  $S_2$  of the population values  $\mu_1$  and  $\Sigma_i$ ,  $I=1,2$  are computed. The computed estimates lay out is put as follows:

$$\begin{aligned} \bar{X}_1 &= \begin{bmatrix} x_{11} \\ x_{12} \end{bmatrix} & \bar{X}_2 &= \begin{bmatrix} x_{21} \\ x_{22} \end{bmatrix} \\ S_1 &= \begin{bmatrix} s_{11} & s_{12} \\ s_{21} & s_{22} \end{bmatrix} & S_2 &= \begin{bmatrix} s_{11} & s_{21} \\ s_{12} & s_{22} \end{bmatrix} \end{aligned}$$

- Where  $S_1$  . covariance matrix obtained from sample 1
- $S_2$  . covariance matrix obtained from sample 2
- $\bar{X}_1$  . vector of means obtained from sample 1
- $\bar{X}_2$  . vector of means obtained from sample 2

As suggested by Winer (1971) and Morrison (1976) an appropriate test statistic is Hotelling's T square, i.e.

$$T^2 = \frac{n_1 n_2}{n_1 + n_2} (\bar{X}_1 - \bar{X}_2)^T S^{-1} (\bar{X}_1 - \bar{X}_2)$$

Where,  $S = [(n_1 - 1) S_1 + (n_2 - 1) S_2] / (n_1 + n_2 - 2)$  is the pooled covariance matrix.

When the null hypothesis  $H_0$  is true, for the p variate hypothesis, the statistic

$$F = \frac{n_1 + n_2 - p - 1}{(n_1 + n_2 - 2)p} T^2$$

is distributed as the F distribution with  $p$  and  $n_1 + n_2 - p - 1$  degrees of freedom. A decision rule with level of significance  $\alpha$  is : Do not reject  $H_0$ , if the computed  $T^2$  value, say  $t^2$ , satisfies

$$t^2 \leq \frac{(n_1 + n_2 - 2)p}{(n_1 + n_2 - p - 1)} F_{\alpha}; p, n_1 + n_2 - p - 1$$

and otherwise reject  $H_0$ .

#### 4. Result

The descriptive summary of the data collected is presented in Table 1.

Table 1: Point estimates of mean and variance.

Region	Addis Ababa region				Out-of-Addis Ababa region			
	First		Second		First		-Second	
Subject	Eng.	QuMt	Eng.	QuMt	Eng.	QuMt	Eng.	QuMt
No. of Students	85	85	85	85	102	102	102	102
Mean	2.74	2.49	2.55	2.37	1.98	2.2	1.84	2.24
Variance	0.844	0.607	0.742	1.05	0.377	0.642	0.66	1.09

Eng., English; QuMt, Quantitative Methods

Except for the Quantitative Methods of the out-of-Addis Ababa region students, the point estimates revealed a decrease in the average performance from the first semester to second semester. Moreover significant variation in performance was seen in Addis students, though the peak point of variation was observed in the second semester QuMt result.

Eventhough, it demands further study, the author's reasoning on the observed high variation among Addis students is: the courses in the second semester are new that

they do not get ample time as in the first semester, which they had in the summer, as a result of this they vary in their performance extremely. However, the out-of-Addis students perform a similar result as they are experiencing the same environment.

In the Multivariate Analysis, for English:

$$\bar{X}_1 = \begin{bmatrix} 2.74 \\ 2.55 \end{bmatrix}$$

$$\bar{X}_2 = \begin{bmatrix} 1.98 \\ 1.84 \end{bmatrix}$$

$$S_1 = \begin{bmatrix} 0.844 & 0.525 \\ 0.525 & 0.742 \end{bmatrix}$$

$$S_2 = \begin{bmatrix} 0.377 & 0.321 \\ 0.321 & 0.660 \end{bmatrix}$$

the Hotelling's  $T^2$ ,  $t^2$ , is found to be 222.851. This is by far in excess of the tabulated  $T^2$  value at  $\alpha=0.05$ , 6.153.

Similarly, for Quantitative Methods, the calculated Hotelling's  $T^2$ ,  $t^2$ , is found to be 13.190 which is also greater than the tabulated value 6.153. Hence, in both subjects, we reject  $H_0$  at 5% level of significance.

In the two subjects, therefore, we conclude that there is a significant difference in the performance of the two region students.

From the above test, it is clear that the performance difference is significant. It is, therefore, necessary to investigate whether the significance of  $T^2$  is from the First, Second or both semester results. It would be very appropriate to use the 95% Roy-Bose simultaneous confidence interval to provide a solution to this problem. Roy-Bose simultaneous interval is given by:

$$(\bar{X}_1 - \bar{X}_2) \pm \sqrt{\frac{a^T \cdot S \cdot a \cdot (n_1 + n_2)}{n_1 n_2}} T_{\alpha; p, n_1 + n_2 - p - 1}$$

Where  $a^T = (0.1)$

The Roy-Bose simultaneous confidence interval shows that, the First and Second Semester English performances have equal contribution to the significance of the



difference. This shows that students from Addis Ababa were relatively better in their English performance. But in the case of the Quantitative Methods, only the first semester result is the cause of the difference. This is a clear indication of the problem of adaptation for the Out of Addis Ababa region students as they coped up with the difference in a semester.

The other point included here is the test for the overall comparison of English performance on the two region students. The observed students t-test value, 6.123 (Mulugeta, 1994) is significantly more than the tabulated value, 1.96, at  $\alpha=0.05$  and adjusted degree of freedom 200. This reveals the relative English performance superiority of the Addis Ababa region students over the Out-of-Addis Ababa region students.

There can be different reasons for the relative superiority of the Addis Ababa region students. However, the belief of this author is that the Addis Ababa region students have been privileged with better library facilities, better teachers, better school furniture and etc since their high school time. And this is as a matter of fact a difference which exists because one is from Addis Ababa and the other is from the other regions.

## V. Conclusion

The data source is secondary data which was originally collected by the Freshman Coordinator Office in the College of Social Sciences. A total of 187 students are included in the study; of which 85 are Addis Ababa region students and 102 are students from Out-of-Addis Ababa region. To avoid bias, sample selection is done using scientific techniques of probability sampling.

The final analysis indicates that the general performance difference is significant. However, the performance difference in Quantitative Methods can be overcome by a semester. This indicates the significant effect of adaptation and orientation on the performance of the Out-of-Addis Ababa region students.

The author's interpretation of the observed performance difference in English are (Mulugeta, 1994):

- a. The presence of standardized English oriented private schools in Addis Ababa;
- b. The accessibility to better libraries and related facilities in Addis Ababa;
- c. The good exposure to English lingual films, videos, etc., that Addis Ababa region students have;
- d. The proximity to universities and colleges that Addis Ababa region students have.

The following recommendations are made to minimize the differences.

- i. Minimize the gap in performance in pre university and university education by providing more services such as libraries to schools out of Addis Ababa;
- ii. Schools out of Addis Ababa should create awareness in their students of the importance of the mass media (especially English programs) on their aptitude;
- iii. Policies that encourage equity in the distribution of colleges and universities should be developed and practiced to eliminate the adaptation problem that students from Out of Addis Ababa have been facing;
- iv. Promoting investment in private schools could also create a conducive environment for students from Out side Addis Ababa to compete equally with their partners.
- v. Further studies should be done, especially in relation to the competitive placement policy of the Ministry of Education which gives equal weight to students who are more likely to score higher grades in the ESLCE and others who are not, which might have its own contribution to performance differences.