

Preparatory Class Average Score and University Entrance Exam Result as Predictors of College Performance: The Case of 2011/2012 Kotebe University College Degree Program Students

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Abstract: The prime purpose of this study is to assess the degree to which preparatory class average score and university entrance exam result predict first year college performance. From a total of 497 regular degree program students who joined Kotebe University College (KUC) in 2011/12 academic year, 484 (171 males and 313 females) participated in the study. University entrance exam results, preparatory class average scores and first year college result, Cumulative Grade Point Average (CGPA) of these students were collected from the documents of the Office of the Registrar of KUC. Correlation and regression analyses were conducted. The results indicated that preparatory class average score and university entrance exam result in order appeared to be valid predictors of first year college CGPA and jointly accounted for 33.70 percent of the variation in college performance. On the basis of their predictive ability, preparatory class average score was found to be more important than university entrance exam result in general and for social science and natural science fields of study as well. Based on these findings, the practical implications of the study to the university admission criteria were discussed, and recommendations were forwarded.

Keywords: College Performance, Predictive Validity, Preparatory Class Average Score, University Entrance Exam Result

Introduction

Selection of the most promising students for admission to higher learning institution has been a focus of concern for many years. Many universities and colleges select prospective students based on a set of their own admission requirements. The selection criteria usually considered include the candidates' potentials to succeed in their studies, the economic need of the society, the spaces available in the program offering institutions and the like (Evans, 2012; Zwick, 2007). In other words, the main goal of the admission criteria is to identify

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candidates who can successfully complete the study program to address the needs of the society in their future careers as professionals. Thus, the value of selection criteria can be assessed by the degree to which such objectives are fulfilled. In fact, such an assessment should not be expected to be done at once, but rather as a continuing and systematic evaluation of the selection techniques (Cronbach, 1990; Eggen & Kauchak, 2001).

Candidates for university or college admission should be typically selected based on several variables, which are used as predictors of their potential to perform successfully in training program (Anastasi and Urbina, 2003). This is to reveal that when certain variables are used as predictors in selection process, a significant relationship should be made between those predictor variables and the criterion variable, which measure the training performance. Accordingly, questions about the adequacy of predictor variables for the purpose they serve are answerable on scientific grounds by evaluating psychometric evidence (Cohen, Manion & Morrison, 2007; Hurlburt, 2003). Most of the predictor variables in the selection of students for higher institutions are based on cognitive variables such as standardized test scores, high school average scores, entrance examination and the like. First year college Grade Point Average (GPA) is the most frequently used indicator of college success, since that measure tends to be more readily available than other outcome measures.

Predictive validity studies have been conducted on some of these selection criteria. It is found that high school average scores and standardized test scores are the most important predictors of college performance (e.g. Burton & Ramist, 2001; Kobrin, Patterson, Shaw, Mattern & Barbuti, 2008; Zwick, 2007). Besides, the combination of high school average score and standardized test scores yields somewhat better prediction than either taken alone (Evan, 2012; Geiser & Santelices, 2007; Noble & Sawyer, 2002). More specifically, according to Morgan (as cited in Geiser & Santelices, 2007) predictive validity studies undertaken at a broad range of colleges and universities show that high

school average score is consistently the best predictor of first year grade point average (GPA). Besides, standardized test scores manifest a statistically significant increment to the prediction; so, the combination of high school average scores and standardized test scores predict better than high school average score alone.

In Ethiopia, the Ethiopian School Leaving Certificate Examination (ESLCE) had long been the sole requirement a high school graduate had to pass to join higher learning institutions until the country made a reform on its education system. High school graduating students were required to pass at least five subjects in ESLCE, including Math and English, in order to join college or university. A number of studies have been conducted on the predictive ability of ESLCE results. The researchers studied the predictive validity of ESLCE GPA in relation with first year college or university performance. The findings of the studies are non-conclusive - some showed a strong correlation between the two variables while the others indicated a weak correlation between them. For example, studies conducted by Mohammed (2004), Shenkute (1991) and Tamiru (1992) found out that students' ESLCE GPA efficiently predicted their first year university results; whereas, other studies (e.g., Fantu, Zelalem & Belay, 1996; Kassim, 1999; Kebede, 1991) reported that students' ESLCE GPA was found to be a weak predictor of their university performance.

In the year 1994, the Transitional Government of Ethiopia formulated and implemented a new Education and Training Policy (MoE, 1994) and ESLCE was replaced by other examinations on the basis of the new curriculum designed by the Ministry of Education (MoE). According to this policy, national examinations would be administered at grades 10 and 12. These examinations are known as the Ethiopian General Secondary Education Certificate Examination (EGSECE) and the Ethiopian Higher Education Entrance Qualification Examination (EHEEQE). The EGSECE is administered at the completion of grade 10 while EHEEQE is administered at the completion of grade 12.

The purpose of EGSECE is to certify the completion of general secondary education and to select students who qualify for the next level of education. These students then attend a two-year university preparatory class. Upon the completion of their preparatory class, they take the EHEEQE, which serves as an instrument for the selection and placement of students for university education in the country (MoE, 2011). EHEEQE has been in use since the 2002/03 academic year after it replaced the ESLCE. It includes five subjects: English, Math, Civics and Ethical Education, Aptitude and General Science (for natural science students) and Social Science (for social science students). Each subject is marked out of 100, adding the overall grade point of five subjects to 500. Students' scores in this exam are used to assign students to different fields in higher education. Besides, students' preferences are used as complementary to the exam scores achieved for placement. There are few research conducted on the predictive validity of EHEEQE (e.g., Aboma, 2009; Desalegn, Girma & Wanna, 2009; Legesse, 2006).

Legesse (2006) conducted a study on assessing the predictive validity of Ethiopian higher education entrance examination at Addis Ababa University involving 988 first year university students. He reported a significant but low correlation between the EHEEQE results and first year CGPA. Besides, the stepwise regression analysis showed that the EHEEQE results explained only 2.1 percent of the variation in CGPA and the rest of the variation was explained by other factors, not considered in his study.

On the other hand, Aboma (2009) conducted a study on predicting first year university students' academic success that involves 3301 students from Adama University. In this study, preparatory class average score, EHEEQE results and aptitude scores were used as predictors of university first semester GPA. The result revealed that the three variables in combination accounted for 17 percent of the variance in students' university first semester GPA. Furthermore, preparatory class average score was found to be the only significant predictor of university first semester GPA and it explains 16 percent of the variance in students' university first semester GPA.

A comprehensive study was conducted by Desalegn, Girma and Wanna (2009) on the predictive validity of the Ethiopian higher education institutions entrance examination. The subjects of the study were a sample of 1501 first year students from Addis Ababa, Bahir Dar, Hawassa, Jimma, and Mekelle universities. Their study revealed that 23 percent of the variance in first year CGPA was accounted for by the combination of the four predictor variables (i.e., preparatory average score, EHEEQE results, mathematics scores, and aptitude scores). In addition, the stepwise regression analysis indicated that preparatory average score was the best predictor of first year CGPA accounting for 19 percent of the explained variance in first year CGPA. The second best predictor was EHEEQE results accounting for 2 percent of additional variance explained in first year university CGPA increasing the variance accounted for by the combination of the two best predictors in the first year CGPA to 21 percent.

The results of the aforementioned studies revealed significant relationship between predictor variables (i.e., preparatory class average score and EHEEQE results) and criterion measure (i.e., first year university GPA). Besides, preparatory class average scores did a better job in predicting first year students' performance than EHEEQE results.

EHEEQE, after serving as an instrument of selection and placement for seven years (2003-2009), was replaced by UEE. The new national University Entrance Examination (UEE) consists of seven subjects: English, Math, Civics and Ethical Education, Aptitude for all students including Biology, Chemistry and Physics (for natural science students), and Geography, History, and Economics (for social science students). Each subject is marked out of 100, taking the overall grade point of a total of seven subjects to 700.

So far, no study has been made regarding the degree of relationships between preparatory class average score and university entrance exam results with first year college academic performance in KUC. This study aims to address this.

Statement of the Problem

In the selection and admission process, the criteria used should be valid; that is, whether the criteria used help to admit those with the best chances of success, and whether the criteria enable to eliminate those with the poorest chances of success (Evans, 2012; Zwick, 2007). Similarly, it is essential to validate the selection criterion (i.e., University Entrance Examination Result) used by the Ministry of Education. Yet, no attempt has been done concerning the predictive validity of PCAS and University Entrance Examination Result (UEER) of degree program in KUC. This may help the MoE to know the impact of each predictor variable used in this study and to make the necessary arrangements in the weights of the admission variables when the need arises.

The prime purpose of this study, therefore, is to assess the degree to which preparatory class average score and university entrance exam result predict success in college academic performance. Based on this purpose, an attempt is made to address the following basic issues:

- Whether there is a statistically significant relationship between university entrance exam result, preparatory class average score and first year CGPA in college study;
- Whether the university entrance exam results and preparatory class average scores collectively have significant contribution to the prediction of first year college performance;
- The most important predictor variable that explains the variation in first year CGPA in college study;
- Whether the predictor variables have different predictive values for social science and natural science fields of study.

The study is constrained by some factors. First, as the study was confined to one college, the results may not necessarily apply to students in other colleges and universities. Second, this study focused on some potential student variables affecting performance at college. Non-

cognitive, institutional and environmental variables that play important roles in the prediction of college success (e.g., Aboma, 2009; Daniel, 1998; Ebel & Frisbie, 1991; Eggen & Kauchak, 2001) were not considered. Third, it is known that correlation coefficient is based on the reliability and validity of scores on predictor and criterion variables (Cohen, Manion & Morrison, 2007; Linn & Gronlund, 2000). However, there are some defects on the psychometric quality of the tests used by colleges and universities. This study like other predictive validity studies, shares these problems. Hence, to interpret validity data correctly, it is necessary to be aware of these problems.

Definition of Terms

- *Criterion measure* refers to a student's first year cumulative grade point average (CGPA) in the college examinations, the grades varied on a scale from 0(or F) to 4(or A). The maximum possible CGPA is 4.00.
- *University entrance examination result* refers to the total scores of seven subjects and the maximum possible score is 700 since each subject is scored out of 100. UEE consists of seven subjects: English, Math, Civics and Ethical Education, Aptitude, Biology, Chemistry and Physics for Natural Science students while English, Math, Civics and Ethical Education, Aptitude, Geography, History, and Economics for Social Science students.
- *Preparatory class average score* refers to the overall average score of the averages of each of grades 11 and 12 scores and the maximum possible average score is 100.
- *Predictive validity* refers to the extent of relationship between the predictor variables (i.e., preparatory class average score and university entrance examination result) and criterion measure (i.e., first year college CGPA).

Methods

The study area of this research is Kotebe University College found in the capital city, Addis Ababa, of the Federal Democratic Republic of Ethiopia. This research employed a correlation study design to explore the relationship between university entrance exam results, preparatory class average scores and first year college CGPA.

Participants

The participants of this study are degree regular program students admitted to the Kotebe University College in 2011/12 academic year. From a total 497 entrants of that academic year, 484 students (i.e., 97.38%) were included in the study. Only 13 students (i.e., 2.62%) were excluded from the study due to incomplete information. Hence, the total subjects of the study were 484 students (171 males and 313 females). Among these students 321 of them were assigned in natural science field while 163 of them were assigned in social science field. Even though the college has been offering degree program since 2007/08, due to time constraint, the present study does not consider regular program students who joined the college from 2007/08 - 2010/11. Besides, the study does not consider summer and evening program students of the college since selection criteria for these programs are different.

Variables

The variables included in this study are predictor (or independent) variables and criterion measure (or dependent variable). The predictor variables are university entrance exam results and preparatory class average scores of 2011/12 regular degree program entrants of KUC. For statistical purposes, the independent variables are identified by the following symbols: X_1 = University Entrance Exam Result and X_2 = Preparatory Class Average Score. The criterion measure used is student's first year cumulative grade point average in the college examinations. Thus, the dependent variable is a two semester CGPA at KUC in the 2011/12 academic year.

Procedures

Permission to have access to the academic performance records of students admitted in 2011/12 was obtained from the college authorities. The researcher collected students' university entrance exam results, preparatory class average scores and first year academic performance in the college (i.e., CGPA) from the Registrar Office of KUC.

Data Analysis

Means and standard deviations were computed to describe the average score and variability of scores. Correlation coefficients were computed to see the relationships among variables. In addition, multiple regression analyses were conducted to see the contribution of predictor variables for the variations on the criterion measure. Stepwise regression analyses were employed to identify and select the predictor variables that best explain the variation in the criterion variable. The above analyses were carried out using SPSS software version 20. The level of significance was set at 0.05 for all statistical tests. Before conducting the multiple regression analysis on the data, its assumptions were checked by using the appropriate testing procedures.

Results

This part of the study presents the results of the statistical findings that provide evidence to answer the basic research questions raised in the previous section of the study.

Descriptive Statistics and Intercorrelation Matrix

The first research question was concerned with assessing the extent of relationships between university entrance exam result and preparatory class average score to first year CGPA in college study. Accordingly, the results of the study in this regard are summarized in the following table.

Table 1: Mean, SD and Intercorrelations Matrix among Variables (N=484)

Variables*	Mean	SD	X1	X2	Y
University Entrance Exam Result(X1)	314.24	26.55	1.000	0.129**	0.214**
Preparatory Class Average Score(X2)	66.97	6.23		1.000	0.563**
College CGPA(Y)	2.36	0.55			1.000

* * P < 0.01 [Correlation is significant at 0.01 level (2-tailed)]

*The maximum possible results in X1, X2, and Y are 700, 100, and 4.00 respectively.

Table 1 presents means, standard deviations and correlation coefficients of university entrance exam result, preparatory class average score and college first year CGPA. The means of university entrance exam result, preparatory class average score and college CGPA are 314.24, 66.97, and 2.36; their standard deviations are 26.55, 6.25, and 0.55 respectively. This indicates that the mean of students UEER (X_1) is below average while the means of their Preparatory Class Average Score (PCAS) (X_2) and college CGPA (Y) are above average.

Besides, Table 1 presents the correlation of predictor variables (university entrance exam result and preparatory class average score) with the criterion variable (college CGPA). Higher correlation coefficient was observed between preparatory class average score and college CGPA, $r = 0.563$, $p < 0.01$, which is statistically significant at 0.01 level while statistically significant correlation coefficient was observed between university entrance exam result and college CGPA (i.e., $r = 0.214$, $p < 0.01$). On the other hand, the correlation between the predictor variables (i.e., university entrance exam result and preparatory class average score) was $r = 0.129$ which is statistically significant at 0.01 level. This

indicates that there is some overlap between the predictor variables. The inspection of the results of intercorrelations among the variables in Table 1 also shows that the directions of the relationships are all positive.

Multiple Regression Analysis

The second research question was concerned with determining the combined contribution of the predictor variables together to the prediction of first year CGPA. For this purpose, a multiple regression analysis was carried out. The results are presented in Table 2.

Table 2: Summary of Multiple Regression Analysis (N = 484)

Variables*	B	Beta	t	R	R ²	F
Constant	-1.792	-	-5.826**	0.581	0.337	122.313**
X1	0.003	0.144	3.838**			
X2	0.048	0.554	14.540**			

** $p < 0.01$

*Dependent variable = College CGPA

From Table 2 above, it can be seen that the multiple correlation coefficient (R) obtained is 0.581, which describes the extent to which first year college CGPA is related to university entrance exam result and preparatory class average score. The coefficient of determination (R²) is 0.337, which means the variance accounted for by the predictor variables jointly (or together) is 33.70 percent, $R^2 = 0.337$, $F(2,481) = 122.313$, $p < 0.01$. In other words, when 33.70 percent of the variance in first year college CGPA is explained by the two-predictor variables, the remaining 66.30 percent of the variance in the criterion measure is left unexplained.

Stepwise Regression Analysis

The third research question was concerned with identifying the predictor variable that was more important in explaining the variation in first year CGPA in college study. In order to answer this question, a stepwise regression analysis was employed. The results are presented in Table 3 below.

Table 3: Summary of Stepwise Regression Analysis (N = 484)

Step	Variables	Beta	R	R ²	R ² change	F	F change
Entered							
1	X ₂	.563	.5	.317	.317	223.525**	223.525**
2	X ₂	.544	.5	.337	.020	122.313**	14.733**
	X ₁	.144	.81				

** $p < 0.01$

*Dependent variable = College CGPA

As it is indicated in Table 3, preparatory class average score (X₂) and university entrance exam result (X₁) were entered into the regression model but in different steps. Preparatory class average score was entered into the regression model in the first step. Accordingly, as shown in Table 3, it accounts for 31.70 percent of the variation in first year college CGPA. Thus, preparatory class average score can be said more important predictor variable in explaining the variation, $R^2 = 0.317$, $F(1, 482) = 223.525$, $p < 0.01$, in first year college CGPA than university entrance exam result. When university entrance exam result was entered into the regression model in the second step, as it can be seen in Table 3, the prediction of college first year CGPA has improved by 2.0 percent, change in $R^2 = 0.020$, $F(1, 481) = 14.733$, $p < 0.01$.

Multiple Regression Analyses for Social and Natural Sciences

The fourth research question was concerned with comparing the predictive values of the predictor variables for social science and natural science fields of study. For this purpose, multiple regression analyses were employed. The results are shown in the following table.

Table 4: Summary of Multiple Regression Analyses for Social and Natural Sciences

Field of Study	Variables*	B	Beta	t	R	R ²	F
Social Science (N=163)	Constant	-1.395	-	-2.881**	0.582	0.338	40.876**
	X1	0.002	0.098	1.467			
	X2	0.048	0.547	8.189**			
Natural Science (N=321)	Constant	-2.020	-	-4.894**	0.578	0.334	79.659**
	X1	0.004	0.158	3.448**			
	X2	0.048	0.552	12.061**			

** $p < 0.01$

*Dependent variable = College CGPA

The result in Table 4, for social science field of study, indicates that the proportion of explained variance of the criterion measure (first year college CGPA) accounted for by the linear combination of two predictor variables (preparatory class average score and university entrance exam result) is 33.80 percent. The F-value, $R^2 = 0.338$, $F(2, 160) = 40.876$, $p < 0.01$, shows that the two predictor variables combined together makes a statistically significant contribution to the prediction of college performance. In terms of the magnitude of beta weight of each predictor variable to the prediction of criterion measure in descending order are

preparatory class average score (X2) and university entrance exam result (X1). As the t-value indicates preparatory class average score (X2) makes a statistically significant contribution at the 0.01 level of significance. But university entrance exam result (X1) does not contribute significantly at 0.05 level, $t_{161} = 1.467$, $p > 0.05$.

On the other hand, the result indicated in Table 4, for natural science field of study, shows that the proportion of explained variance of first year college CGPA accounted for by the two predictor variables (preparatory class average score and university entrance exam result) altogether is 33.40 percent. The F-value, $R^2 = 0.334$, $F(2, 318) = 79.659$, $p < 0.01$, shows that the relationship between the criterion variable and the two predictor variables is statistically significant at the 0.01 level of significance. In order of the size of beta, the important variables are preparatory class average score (X2) and university entrance exam result (X1). The calculated t-values indicate that both preparatory class average score (X2) and university entrance exam result (X1) contribute significantly at the 0.01 level of significance to the prediction of first year college CGPA.

Stepwise Regression Analyses for Social and Natural Sciences

The stepwise multiple regression analyses were employed to identify and select the predictor variable that explains more variation in the criterion measure for social and natural sciences. The results are presented in Table 5.

Table 5: Summary of Stepwise Regression Analyses for Social and Natural Sciences

Field of Study	Step	Variables* Entered	Beta	R	R ²	R ² change	F	F change
Social Science (N= 163)	1	X2	.574	.574	.329	.329	79.035**	79.035**
Natural Science (N=321)	1	X2	.556	.556	.309	.309	142.562**	142.562**
	2	X2 X1 R ²	.552 .158	.578	.334	.025	79.659**	11.890**

** $p < 0.01$

*Dependent variable = College CGPA

As shown in Table 5, preparatory class average score entered the regression model in the first step explained 32.90 percent of the variation in first year college performance for social science. On the other hand, university entrance exam result was not included in the regression model. Thus, preparatory class average score was more important predictor variable in explaining the variation in college CGPA than university entrance exam results, $R^2 = 0.329$, $F(1, 161) = 79.035$, $p < 0.01$.

On the other hand, it can be seen from Table 5 that preparatory class average score (X_2) and university entrance exam result (X_1) were the two-predictor variables that entered to the regression model but in different steps for natural science. That is, preparatory class average score entered the regression model in the first step which explained 30.90 percent of the variation in first year college performance. Thus, preparatory class average score was more important predictor variable in explaining the variation in college CGPA than university entrance exam result, $R^2 = 0.309$, $F(1, 319) = 142.562$, $p < 0.01$. University entrance exam result was entered the regression model in the second

step. When university entrance exam result was entered, the prediction of college CGPA improved by 2.50 percent, change in $R^2 = 0.025$, $F(1, 318) = 11.890$, $p < 0.01$.

From Table 5, it is observed that preparatory class average score (X_2) was found out to be important predictor variable in explaining the variation in college CGPA for both social and natural sciences.

Discussion

This section of the study presents the discussion of the findings. Concerning the first two research questions, the findings showed significant relationships between the predictor variables and the first year college students' CGPA. As the computation of intercorrelations among variables showed (Table 1), the predictor variables (university entrance exam result and preparatory class average score) are significantly related to the first year college academic performance (CGPA) independently.

Besides the correlation analysis, multiple regression analysis (Table 2) was worked out and it revealed that the predictor variables together made a significant contribution in the prediction of first year college CGPA, $R = 0.581$, $R^2 = 0.337$, $F(2, 481) = 122.313$, $p < 0.01$. The study indicates that university entrance exam result and preparatory class average score appeared to be important and significant variables in predicting college academic performance. Thus, the selection criterion (i.e., UEE), which was used for university admission in 20011/12 academic year by MoE, along with PCAS were found to be significant predictors of first year academic performance so far as students who joined KUC in that academic year were concerned.

In fact, this study is not the first of its kind since there are some studies that reported similar findings. For example, Aboma (2009) reported that preparatory school average score, EHEEQE result and aptitude scores appeared to be statistically significant predictors of first semester GPA of the students at Adama University. Aboma (2009)

revealed that the three variables in combination accounted for 17 percent of the variance in students' university first semester GPA. Similarly, Desalegn, Girma and Wanna (2009) reported that preparatory school average scores, EHEEQE results, mathematics scores, aptitude scores appeared to be statistically significant predictors of first year university CGPA. Their study revealed that the four variables in combination accounted for 23 percent of the variation in students' university first year CGPA.

This study revealed that 33.70 percent of the variance in college first year academic performance was accounted for by variation in university entrance exam result and preparatory class average score. In other words, about two-thirds of variance, 66.30 percent, remains unexplained.

The possible explanations for such large unexplained variance in first year CGPA may be due to other factors such as achievement motivation, study habit and specific content background that affect performance in college (Eggen and Kauchak, 2001). Besides, researchers (e.g., Daniel, 1998; Ebel and Frisbie, 1991) indicate that non cognitive variables such as these play an important role in determining students' success in educational activities. Similarly, Geiser and Santelices (2007) state that there are many other factors that affect students' undergraduate experience after admission, such as financial aid, social support and academic engagement in college.

As stated in the previous section, the third research question addressed in this study was identifying the predictor variable that is more important in explaining the variation in first year CGPA in college study. In order to answer this question, stepwise regression analysis was computed. The results of the stepwise regression analysis (Table 3) revealed that preparatory class average score was found to be more important variable in explaining the variation in college performance. Preparatory class average score alone accounted for 31.70 percent of the variance on the first year CGPA, $R^2 = 0.317$, $F(1, 482) = 223.525$, $p < 0.01$.

This means that students who performed better during the preparatory class also performed better in college. Probably these students had the potential to cope with the academic atmosphere in college more easily than others. This may also imply the relevance of the content being taught in preparatory schools in preparing students for university.

The result that preparatory class average score is the most important variable in explaining the variation in college performance goes along with the results of the previous studies (e.g., Aboma, 2009; Desalegn, Girma, and Wanna, 2009; Fantu, Zelalem, and Belay, 1996; Wosen, 2006; Yoseph, 2010), which suggest that high school result (preparatory class average score) is more important and significant variable in predicting students' ability to succeed in higher learning institutions than other variables. According to Burton and Ramist (2001) and Noble and Sawyer (2002), there are frequent cases in which high school achievement predicted first year grades better than scholastic achievement or aptitude tests. This would not be surprising because high school performance is a work sample of college performance (Wiersma and Jurs, 1990). Furthermore, high school average scores are rather based on performance over a period of time rather than on one-shot evaluation.

The second variable that entered the regression model was university entrance exam result, $R^2 = 0.337$, $F(2, 481) = 122.313$, $p < 0.01$. This means when university entrance exam result was added, R^2 increased to 0.337. The change in R^2 due to university entrance exam result is significant, change in $R^2 = 0.020$, $F(1, 481) = 14.733$, $p < 0.01$. When university entrance exam result was entered, the prediction of college CGPA improved by 2.0 percent.

This finding is consistent with the results reported by Geiser and Santelices (2007) and Legesse (2006). Geiser and Santelices (2007) stated that significant correlations were observed between college GPA with high school GPA ($r = 0.31$, $p < 0.01$), Scholastic Aptitude Test (SAT) II ($r = 0.14$, $p < 0.01$), and SAT I ($r = 0.07$, $p < 0.01$). Similarly, Legesse

(2006) reported that the stepwise regression analysis showed that the Ethiopian higher education entrance certificate examination results explained only 2.1 percent of the variation in CGPA of the students at Addis Ababa University. The possible explanation why university entrance exam result contributed less to the prediction of college CGPA could be that this exam is a one shot examination. It is administered every year at one specific moment. Apparently, such examination is susceptible to factors that can distort students' true score. Among others, cheating and examination anxiety during the conduct of the examination could be mentioned.

As indicated above, it is not the university entrance exam result, but preparatory class average score that accounts for the lion's share of the explained variance in college CGPA. According to Geiser and Santelices (2007), one hypothesis that may account for the preparatory class average scores to predict college CGPA may be "method covariance," or the methodological similarity in the way these academic indicators are constructed. That is, both preparatory class average score and college CGPA reflect student performance in a large number of courses taken over a period of time. Both measures are based on similar kinds of academic experiences - term papers, quizzes, labs, end-of-course examinations; so, it should not be surprising that prior performance on these kinds of academic tasks tends to be predictive of later performance.

The fourth research question addressed was comparing the predictive values of the predictor variables for social science and natural science fields of study. The inspection of results in Table 4 and Table 5 indicate that the amount of variance accounted for by the linear combination of two predictor variables (preparatory class average score and university entrance exam result) for social science and natural science fields of study are 33.80 percent and 33.40 percent respectively. This shows that there is no difference in the proportion of explained variance of the criterion measure accounted for by the linear combination of the two predictor variables for social science and natural science fields of study.

With respect to the predictive ability of each predictor variable to the prediction of college performance in social science and natural science fields of study in descending order are preparatory class average score and university entrance exam results.

This finding is consistent with the finding of Geiser and Santelices (2007). Their study revealed that high school GPA stands out as the strongest predictor of college performance in all major academic fields of the study (i.e., Social Science, Natural Science, Medicine, and Engineering).

Summary, Conclusions and Recommendations

To summarize, the prime purpose of this study was to assess the degree to which preparatory class average score and university entrance exam result predict success in college academic performance. The data collected were analyzed using correlation, multiple regression and stepwise regression analyses. Consequently, the following results are noted:

- The intercorrelation matrix indicates statistically significant relationships between the predictor variables and the criterion measure.
- The result of multiple regression analysis reveals that 33.70 of the variance in first year CGPA was explained by the predictor variables.
- The F-test shows that the predictor variables contribute significantly to the prediction of the criterion measure.
- The summary of stepwise regression analysis reveals that preparatory class average score is the better predictor variable which accounts 31.70 percent of the explained variance. University entrance exam result accounts 2.00 percent of the variance in first year college CGPA.

- The results of multiple regression analyses show that the proportion of explained variance of first year college CGPA accounted for by the two predictor variables altogether are 33.80 percent and 33.40 percent for social science and natural science fields of study respectively.
- The summary of stepwise regression analyses shows that preparatory class average score is the important predictor variable in explaining the variation in college CGPA for both social and natural sciences.

From the results, it may be possible to arrive at the following conclusions:

- Preparatory class average score and university entrance exam result independently appear to be valid predictors of first year college CGPA.
- The combination of the two variables is found to be statistically significant to predict the academic performance of college students.
- Preparatory class average score is found to be a more valid predictor of first year college CGPA than university entrance exam result.
- There is negligible difference in the proportion of explained variance of the criterion measure accounted for by the linear combination of the two predictor variables for social science and natural science fields of study.

The results of this study seem to have some practical implications to the selection criteria of higher learning institutions of the country and future direction of research.

- Preparatory class average score was found to be more influential in predicting first year college academic performance than university entrance exam result. Thus, it would be better to consider preparatory class average score as a selection criterion along university entrance exam result on the basis of their importance during admission process.
- It would be better to arrange special educational support programs for students with low preparatory class average score and university entrance exam result. Possible assistances such as tutorial classes, guidance on study skills, note taking skills and other basic academic skills can be organized.
- Finally, it would also be useful to conduct further study to examine the predictive power of preparatory class average score and university entrance exam result in predicting college academic performance in other universities in Ethiopia along with non-cognitive variables such as academic self-efficacy and achievement motivation. Further research on this issue will help in explaining the variation in college first year performance.

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