



## Original Research

## Relationship between University Entrance Exam Result and Cumulative Grade Point Average at Graduation of Undergraduate Degree Students in Wollega University

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## Abstract

*The purpose of this study was to see if there is a statistically significant relationship between Ethiopian university entrance examination results (UEE) and cumulative grade point average (CGPA) at graduation for three-year programs. A correlation study design was employed, and a simple random sampling technique was used to select 23 programmes, which consisted of 570 male and 345 female students out of the 43 three-year programmes with a total of 628 male and 448 female students. The results of the study indicated that even though there was a positive relationship between UEE and CGPA, it was found that the relationship between the two variables was non-linear, and thus UEE alone was statistically insignificant to predict CGPA. It was also identified that UEE, together with the gender and field of study (programme) variables, has a statistically significant relationship with CGPA. Thus, it has been concluded that using UEE as the only variable for predicting students' success in CGPA is misleading; as such achievements could be affected by a number of other variables.*

## Article Information

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## INTRODUCTION

As secondary education completers vary in their capacities, motivation, and readiness for university education, selecting and admitting the most capable and promising ones to higher education institutions is one of the complex and challenging issues for admission officials.

These days, students entering in to higher education institutions possess wide and diverse characteristics and abilities with

respect to educational background, social status, skills, and academic potential, just to mention a few (Danilowicz-Gosele, Meya, Schwager, & Suntheim, 2014). Given an increase in such a range of diversities in the student population, factors used for predicting students' academic performance and their preparedness for postsecondary education success in achievement and graduation have

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become a subject of concern for educational institutions and professionals in the system. Among other things, having precise information about factors affecting students' academic success is so important for universities when selecting the most promising students (Danilowicz-Gosele, Meya, Schwager, & Suntheim, 2014).

Analysing factors that determine university cumulative grade point average (CGPA) is so important in that such achievement results signal the acquisition and development of human capital that will be deployed in the labour market and contribute to economic activities as well as the earning of the graduates (Betts & Morrel, 1999). The capacity of students entering universities can also be considered as one of the factors that determine the quality of education in universities. According to Kuh (2007), success in university education is strongly related to the pre-university academic preparation and achievement of students.

Several studies conducted so far reveal empirical evidence to support the role of cognitive ability as a valid predictor of college performance (Komarraju, Ramsey, & Rinella, 2012). Betts and Morrel (1999); Bridgeman, Pollack, and Burton (2008) showed that both high school grade point average (HGPA) and standardised test scores were found to be significant predictors of students' success during their undergraduate studies. With this understanding, different countries across the globe provide different types of tests to secondary school graduates and use the results of these tests as a screening tool to admit capable and competent students to universities and colleges. For instance, universities in

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China use the Chinese national college entrance examination (CEE; gaokao) as the sole determinant of college admission (Bai & Chi, 2011). In the United States of America, higher education institutions for undergraduate studies admit students based on Scholastic Aptitude Test (SAT) and American College Test (ACT) results (Burton & Ramist, 2001; McDonald, Newton, Whetton, & Benefield, n.d.). Universities in Britain and Singapore largely depend on A-Level to provide admission to students, whereas universities in Israel use the Psychometric Entrance Test (PET) to give admission to their students (McDonald et al., n.d.). Universities in Canada are much more dependent on student characteristics, including the student's high school grades, in making admission decisions (Cyrenne & Chan, 2010).

Prior to the 2003–04 academic years, public universities in Ethiopia used to admit students primarily based on the Ethiopian School Leaving Certificate Examination (ESLCE) scores. These scores were used to be calculated on a 4.00-point scale. Based on the available spaces in the universities, every year the Ministry of Education sets a cutoff point for admission and assigns those who qualify to the different universities under its jurisdiction. However, in line with the implementation of the 1994 New Education and Training Policy, the structure of the education system was changed to eight years of primary, two years of general secondary, and two years of preparatory education. The University Entrance Examination (UEE), which is offered at the end of the two years of preparatory education since 2003/4, has been in use for the selection and admission of

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students into higher education institutions. The results of this examination are calculated in numerical numbers. From 2003/4 up to 2009/10, it was calculated out of 500, whereas since 2010/11 it has been out of 700. Each year, the Ministry of Education, through the National Educational Assessment and Examinations Agency (NEAEA) admission office, sets the cutoff point for placement and assigns students to the different public universities as per the capacity they have to accommodate them. The cutoff point actually differs between natural science and social sciences, male and female, students from pastoralist and emerging regions, and students with hearing and visual impairments. Since its implementation, the cutoff point has shown some increment year over year for each category of students mentioned above.

### **Statement of the Problem**

Among the many different factors that determine quality education in higher education institutions, the academic potential and preparedness of students joining them can be considered one. To this end, employing reliable screening tools for selecting and admitting the most capable and promising students is vital. As a result, identifying factors that predict the success of students in achieving such goals deserves due attention.

At Wollega University, there are complaints from teachers about the poor academic potential and preparedness of students joining the university. Such perceptions and realities could lead either to the attrition of students or to the production of incapable and incompetent graduates. Even though admission is based on their score in the university entrance exam result, it is fair to see

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if there is any relationship between this score and their university GPA at graduation.

So far, few local studies have been conducted on this issue. For example, research done by Zebdewos, Nasser, and Fisseha (2015) reported that the correlation between UEE score and first-year first-semester GPA was positive but low for first-year students at Wolaita Sodo University in Ethiopia during the academic year 2013/14. Yoseph (2014) also conducted a study to assess the degree to which university entrance exam result (UEER) and preparatory class average score (PCAS) predict success in college academic performance at Kotebe University College and found out that both UEER and PCAS scores appeared to be important and significant variables in predicting students' first-year college academic performance. This study is different in that it tried to see if UEE alone has some degree of association with CGPA at the completion of three years of university education. It also tried to see if UEE, in conjunction with students' gender variables and their field of study, has any significance in predicting their CGPA. Accordingly, the study attempted to answer the following basic questions:

### **Basic Research Questions**

1. Is there a statistically significant relationship between university entrance exam results and CGPA at graduation from the university?
2. Is there a statistically significant difference in their CGPA among students at different colleges and programmes at the university?
3. Is there a statistically significant difference between the CGPA achieved by males and females?

## METHODOLOGY

The study employed a correlation study design so as to see if there is any possible relationship between UEE and CGPA, as well as if UEE can predict students' academic achievement and CGPA at graduation after three years of study.

### Population and Sampling

Populations of this study were all regular undergraduate degree students at Wollega University who were enrolled in three-year programmes during the academic year 2015/16 and graduated in the academic were 2017/18. There were five colleges in the university, namely: Other Agriculture, Faculty of Business and Economics (FBE), College of Natural and Computational Sciences (NCS), Other Social Sciences, and Computer Science, which offer programmes of three years duration. In these five colleges, there were 43 three-year programmes with a total of 1074 (M = 628; F = 448) students. Simple random sampling was used to select the programmes, and all the students in the selected programmes were included in the study. Accordingly, 23 programmes with a total of 570: M 345 (60.5%) and F = 225 (39.5%) students were selected as a sample for this study.

## Results

**Table 1**

*Correlation between UEE and CGPA*

### Correlations

		CGPA	UEE
CGPA	Pearson Correlation	1	.014
	Sig. (2-tailed)		.732
	N	570	570
UEE	Pearson Correlation	.014	1
	Sig. (2-tailed)	.732	
	N	570	570

## Data and Collection Procedure

The two major sources of data for this study were the National Educational Assessment and Examinations Agency's (NEAEA) office for students' admission and the registrar office of Wollega University. The data obtained from NEAEA was the students' UEE score. The data accessed from the university's registrar office held such information as students' personal characteristics like gender, their CGPA at graduation, and the college and department (programme) from which the students have graduated.

### Data analysis techniques

To see if there is any statistically significant relationship between the UEE result and CGPA at graduation, the data were analysed using the Pearson Product Moment Correlation coefficient. As the data was found to be not normally distributed, Spearman rank regression was conducted to see whether or not UEE alone, UEE in conjunction with sex, and colleges/programmes predict students' success in getting a better CGPA. SPSS version 20 was used. An alpha value of 0.05 was used (Table 1).

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Table 1 depicts the Pearson correlation coefficient result between UEE and CGPA of students at graduation after three years of university education. The result shows that there is a strong and positive relationship between the two variables ( $r = 0.732$ ). This result is consistent with Kwon's (2015) finding that there was a positive correlation between ACT scores and final college GPAs ( $r = .383$ ,

*Sci. Technol. Arts Res. J., Apr.-June 2019, 8(2), 51-58*  $p = .000$ ) upon graduation. In that study, the author argued that higher ACT scores were correlated with increases in higher final college GPAs (Kwon, 2015). Further analysis of the data, however, showed that the relationship between these two variables was found to be nonlinear and thus statistically insignificant.

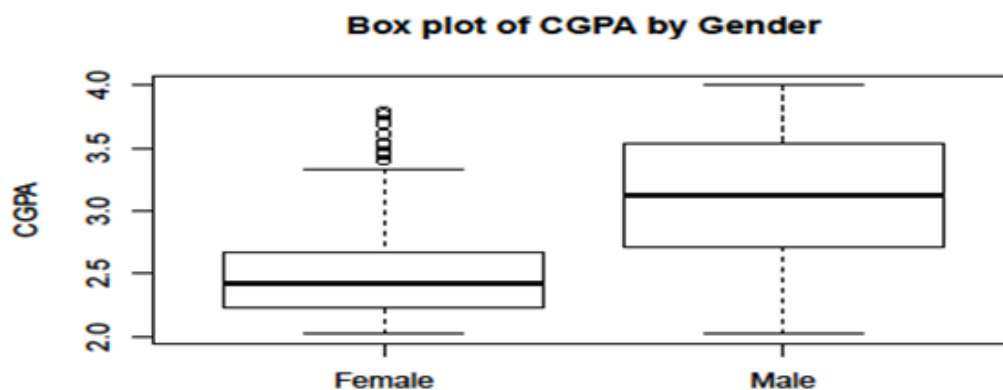
**Table 2**

*Predictors: (Constant), UEE*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.014 <sup>a</sup>	.000	-.002	.54539

Both the scatter plot diagram and the regression analysis in Table 2 ( $R^2 = .000$ ) indicated that UEE was found to be statistically insignificant in predicting CGPA at graduation. This result contradicts Bai and Chi's (2011) finding, in which they reported that the CEE scores predicted undergraduate GPAs for all four years of study at Tsinghua University, China.

Overall, UEE alone was found to be statistically insignificant in predicting CGPA at graduation ( $r = .14$ ;  $R^2 = .000$ ). It has been observed that students who scored less in UEE were even found to have a better CGPA. This indicates that UEE alone may not be sufficient in predicting the likelihood of achievement of a CGPA in universities unless it is supplemented by other variables.



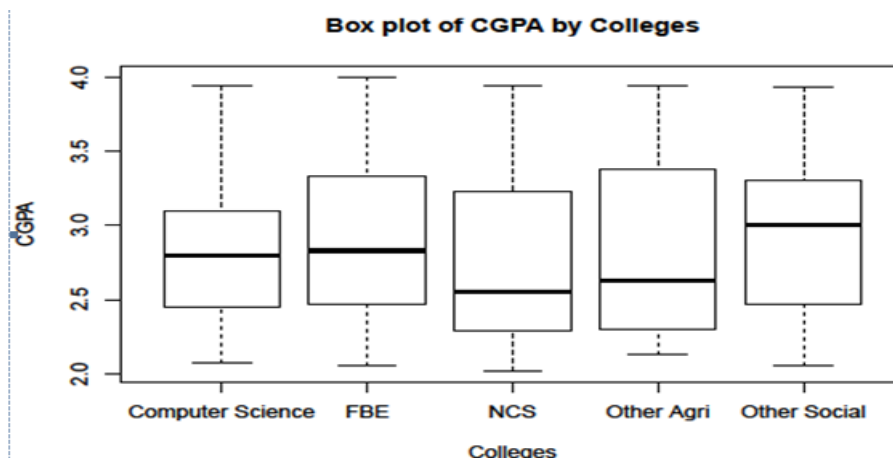
**Figure 1: Box Plot of CGPA by Gender**

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As can be observed from Figure 1, the median score for male students was 3.12, while that of females was 2.42. This shows that more than fifty percent of male students scored a CGPA greater than 3.12, while more than fifty percent of their female counterparts scored less than 2.42. This depicts that there was a great discrepancy between male and female students in their achievement scores in CGPA. Overall, the data shows that there was a statistically significant difference between male and female students in their CGPA. On average, it has been found that the overall

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CGPA of male students is greater by 0.6285 points than that of their female counterparts. From this, it can be argued that UEE has a statistically significant relationship with that of CGPA when it is associated with being male or female. This result is consistent with a study conducted by Bai, Chi, and Xiaoye (2013), in which they indicated that gender is significantly correlated with college grades. However, the finding was that females had higher undergraduate GPAs than males throughout the 4 years of study.



**Figure 2: Box Plot of CGPA by College**

With regard to students' achievement of CGPA across the different colleges and their respective programmes, Figure 2 reveals that the median score of students in the 'other social sciences' was found to be 3.00, followed by those in FBE, who scored 2.83. The median score of students in the college at NCS was found to be the lowest, with a 2.55 median score. Overall, the Kruskal-Wallis chi-square result showed that there is a statistically significant difference between the CGPA scores of students in the different

colleges studied at the university ( $p = 0.006$ ). Likewise, the p-value for the departments ( $p$ -value = 0.0001) also showed that there is a statistically significant difference between students' CGPA achievement across the departments sampled in this study. This result is in agreement with Belfield and Crosta's (2012) finding that "placement test scores are positively related to college credits accumulated" (p. 15). From this, it can be deduced that the UEE predictive value for CGPA has a relationship with the college and

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the department to which the student has been assigned.

## CONCLUSIONS

Predicting the academic potential and learning preparedness of students for university education is one of the complex and challenging decisions made by admission authorities. Different tools used as a means of prediction showed varying results, and no single tool could be used as a determining factor. In this study, the UEE, which all public universities in Ethiopia use as the main criteria to identify students' academic capability and learning readiness so as to offer them admission, was found to show a very weak association with CGPA. In conjunction with the gender variable and field of study, it showed a positive and significant relationship with CGPA. From this, it can be argued that using UEE as the only variable for predicting students' success in CGPA is misleading; as such achievements could be affected by a number of other variables.

## Policy Implication

For students with diverse academic potential and special talents completing preparatory education in Ethiopia, admission authorities and universities may consider additional factors as determinants of students' academic potential and preparedness for university education.

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