



Original Article

The Relationship between Entry Grades of Students Admitted to Public Universities in Uganda under Direct Entry Schemes and Their Academic Performance: Implications for Admission Policies

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Although studies on relationships between entry qualification and academic performance show that students who excelled academically in entry qualification often perform better than those with low entry qualification in subsequent examinations, this argument has been questioned. This study explored the relationship between entry grades of undergraduate students and academic performance in public universities in Uganda in the first and final years of their studies. A retrospective cohort analysis of data for undergraduate students of Gulu and Makerere Universities using a sample of 2825 academic records from 2013-2016 was conducted. Descriptive statistics and Pearson correlation analysis were used for analysis. Results revealed a significant relationship between entry scores and students' academic performance for those admitted on national merit, district quota, affirmative action schemes and private sponsorship schemes in four university programs. However, there was no significant correlation between entry scores and students' academic performance in the Bachelor of Medicine and Bachelor of Surgery programs. Although male students joined with lower grades than females, their performance in the final year was better than their female counterparts. Therefore, this study confirms that the entry qualification score predicts academic outcomes in the early and exit stages of the university. These findings support the current Government entry criteria for public universities, provide important information for the admission committee decisions, and may have implications for admission policies. However, the lack of a significant correlation between entry qualification scores and students' academic performance in Bachelor of Medicine and Bachelor of Surgery could indicate the need to revisit admissions criteria for this program. Future studies should go beyond the commonly used GPA to measure academic performance by including non-cognitive factors such as practical skills, clinical skills, and professionalism. Furthermore, the role of background and sociodemographic factors in influencing

academic performance at public universities should be considered alongside the pre-entry qualification score.

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INTRODUCTION

Globally, entry to universities or higher education is predominantly based on prior attainment of the highest grades in advanced courses. This is because learning is a cumulative process (Mlambo, 2011). Thus, a student recruited with higher entry grades will be better prepared for a course material compared to a student admitted with lower grades. A previous study by Sandow et al. (2002) showed that admission scores are strong determinants of undergraduate academic performance. Across the United States of America (USA), universities continue to study admission criteria to improve selection processes and support students toward academic success (Stuenkel, 2006). According to Bush (2012), a study of students from United Kingdom (UK) higher education institutions indicated that prior achievements at the Advanced (A) Level were among the most important predictors of university academic performance. However, universities' use of A-level performance as the primary criterion for admission to

undergraduate degree programs has been subject to criticism. For example, a recent review by Aciro, Onen, Malinga, Ezati, and Openjuru (2021) identified positive, negative, and mixed correlations between entry grades and university students' exit academic performance.

According to Uganda's Universities and Other Tertiary Institutions Act (Government of Uganda, 2001), the term university means a public or private institution of higher learning established to provide post-secondary education programs of study leading to the award of certificates, diplomas, degrees, and conducting research. The Ministry of Education and Sports (MoES) established public universities in Uganda with the parliament's approval under section 22. Universities are predominantly funded and maintained by public funds through the National Budget (The Act, 2001, 28). By 2016, Uganda had nine public universities that were established over time following the emerging needs of the people of Uganda, including Makerere University, Mbarara University of Science and

Technology, Kyambogo University, Gulu University, Busitema University, Muni University, Soroti University of Science and Technology, Lira University and Kabale University. In this study, public universities were selected because they are the only universities that admit students under government sponsorship; through various schemes, while the direct entry scheme was chosen because it provides the majority of students admitted to public universities (Kwesiga & Ahikire, 2006; Onsongo, 2009).

For this study, academic performance was defined as the ability of students to meet an academic goal based on a particular learning objective. It is, therefore, the degree to which a student accomplishes academic tasks (Ogbebor, 2012). Similarly, Rulinda, Role, and Makewa (2013) state that academic performance comes from teaching and learning, followed by assessing the content covered within a given time (Wafubwa, 2021). Thus, such a performance can test mastery and practical skills stipulated in a particular curriculum and examine continuous assessments and final examinations (Mlambo, 2011; Ofor-Douglas, 2022). According to Rulinda et al. (2013), determining a student's performance involves setting examinations, marking, ranking, and grading. At universities and tertiary institutions, academic performance is measured using Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) (Dyer & Breja, 1999). In this study, students' performances were calculated from the very first semester in the university using GPA up to the end of the training period according to the specific program by computing CGPA. Richardson, Abraham, and Bond (2012) stress that GPA strongly predicts students' intellectual ability despite differences in course content and grading criteria. Successful students are then graded as First Class, Second Class (Upper and Lower), and Third-Class degrees or diplomas. This study examined the association between entry qualification (Uganda Advanced Certificate of Education (UACE) scores achieved) and subsequent academic performance in

degree programs in Uganda's public universities to guide policymakers in improving the country's admission policies.

REVIEW OF LITERATURE

Mlambo (2011) asserts that learning is a cumulative process; thus, a student admitted with higher entry grades would be better prepared for a course material than a student admitted with lower grades (Wekesa, 2022). On the contrary, Long (2005) investigated the relationship between entry requirements and the academic performance of students in universities and found no significant relationship between admission grades and academic performance. Such contradiction meant no conclusive position existed on the relationship between university graduates' entry and exit academic performance. This called for an investigation in the context of public universities in Uganda. In this research, entry grades were the performances through which students gained admission to universities, and they were weighted scores of students' advanced-level performances. Public universities in Uganda calculate entry grades by computing both O' and A' Level performance of candidates. Students admitted to universities must have met the minimum weighted scores for specific programs (Universities and Other Tertiary Institutions Act, 2001).

This study focused on a direct entry scheme where the government-sponsored students are admitted through National Merit and Affirmative Action Schemes; which is again subdivided into three schemes; district quota, talented sportspersons, and disability schemes (Universities and Other Tertiary Institutions Act, 2001). Besides, in 1990 the government of Uganda introduced an affirmative action admission policy of 1.5 extra points for all female students to reduce gender disparities in admission to higher education institutions. Thus, the thin slots for students who wish to join public universities under government sponsorship initiate high competition, leading to high cut-off points. Many students join universities under private

sponsorship with relatively lower cut-off points. The private students' scheme was also introduced in 1990 to open doors to more students to join Makerere University under private sponsorship (Mayanja, 2001). Today every public university in Uganda has privately sponsored students alongside government-sponsored students. The Public Universities Admissions Committee admits students under government sponsorship, while privately sponsored students are admitted by each University's Admissions Board/Committee. All the above admission policies consider candidates who meet the minimum qualification for admissions, as the candidate who obtains the Uganda Certificate of Education (UCE) with a minimum of five passes and two principal passes at the Uganda Advanced Certificate of Education (UACE) (Wamala, 2013). According to the UACE scores, the best-ranked candidates are admitted into public universities. All these strategies concentrate on the admissions of students to public universities without analyzing the respective students' early career and exit academic performances.

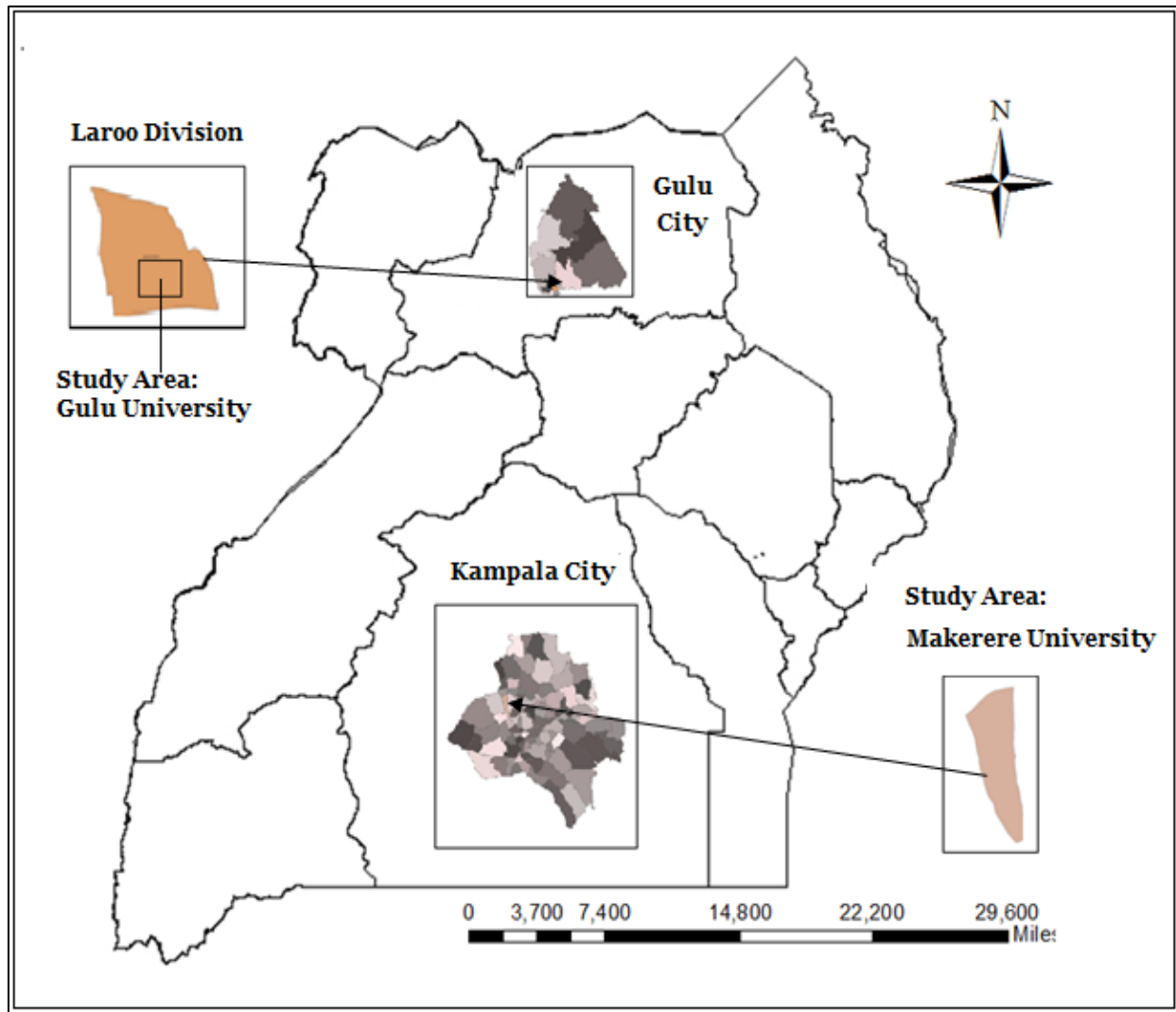
In recent years, Uganda's admission strategies have also changed due to an increase in the number of students and the trend of academic performance at universities. Although a previous study by Adegoke and Noronha (2002) and Alfian and Othman (2005) both state that students who excelled academically in the past were regarded as having a greater chance of performing successfully in subsequent examinations. This argument has been questioned concerning admission to the Bachelor of Laws at the School of Law at Makerere University in Uganda. Since the 2012/2013 academic year (Wamala, 2016). Besides UACE results, candidates who wish to be admitted to the Bachelor of Laws are being subjected to pre-entry examinations as prerequisites

for the program (Wamala, 2013). This shows that the strength of A' Level results in determining the quality of students was being questioned. The relationship between entry grades and the academic performance of students admitted to public universities was a great concern in this study. Nevertheless, few studies have evaluated the association between pre-entry qualifications in public universities and students' performance (Wamala, 2013; Kurlaender, Kramer & Jackson, 2018; Abdullah & Mirza, 2018). This study assessed whether there was a relationship between the A' Level entry grades of students admitted under the direct entry scheme and the undergraduate students' performance in public universities in the first and final years.

MATERIALS AND METHODS

Study Area and Academic Programmes

The study was conducted at Makerere and Gulu universities (*Figure 1*). The study sites were purposively selected. Makerere University was sampled because it was the first public university in Uganda, while Gulu University represented the regional public universities and was the first non-residential public university in Uganda. To ascertain the relationship between entry grades and academic performance, we sampled similar programs from each university. This included two science programs; a Bachelor of Medicine and Bachelor of Surgery, a Bachelor of Science in Agriculture, and two humanities programs; a Bachelor of Business Administration and a Bachelor of Development Studies. We assessed the performance of the various programs according to Aleca and Mihai (2016). For each course, we selected four graduations from 2013 to 2016 in the two universities.

Figure 1: Location of Gulu and Makerere Universities in Uganda

Source: Map was created by the authors using ArcGIS (10.5.2.)

Design and Setting of the Study

This retrospective quantitative study analyzed data for 2825 students registered for four courses at Makerere and Gulu Universities over four years (2013 to 2016), obtained from the academic registrar's office and the respective faculties/colleges. Through this design, the researcher obtained secondary data on entry grades and academic performance of students admitted under direct entry in public universities in Uganda.

Population, Sample Size and Sampling Procedure

The study population was students from the faculties/colleges of Medicine, Agriculture and environment, and Business and development studies at Makerere University and Gulu University. The study sample size was 2825 records of students' entry grades and academic performance in the year one and final year of their studies. The study determined the sample size using Krecjie and Morgan's (1970) sampling procedure. This study used a multi-stage sampling procedure (Bennett & Iyanagec, 1988); the first stage involved a

purposive selection of two Universities, i.e., Makerere and Gulu Universities. Makerere University was chosen because it is the country's first and largest university, while Gulu University was chosen because it is one of the country's youngest and first none residential universities. The second stage involved stratified sampling of four programs of study, i.e., Bachelor of Agriculture, Bachelor of Medicine and Bachelor of Surgery, Bachelor of business administration, and Bachelor of development studies. The programs were chosen because these are popular and traditional programs offered by the two universities. The third stage involved random sampling of records of students' entry grades and their academic performance in the year one and final years of their studies from 2013 to 2016.

Data Collection Methods and Instruments

Data was collected using documentary analysis guides. Information on entry grades was taken from files of students who have graduated and from the offices of Academic Registrars of Makerere University and Gulu University, while data on students' academic performance was extracted from individual students' degree transcripts from the offices of Academic Registrars of both universities.

Data Analyses

Data on records of students' entry grades and their academic performance in the year one and final year of their studies were analyzed using descriptive statistics, including the mean, minimum, maximum, and standard deviation. Pearson's correlation coefficients were used to determine the relationship between (i) entry grades and academic performance of students by a program in the first year and end of the study period, (ii) entry grades and academic performance by entry scheme (national merit, district quota, private sponsorship scheme) and by gender. $P < 0.05$ was taken as a cut-off value for significance.

RESULTS

Students' Academic Performance at Makerere and Gulu Universities by Gender

Findings on entry grades of students admitted to Gulu and Makerere Universities and their academic performance based on gender in semesters one and two of the first year and final academic performance at the end of the study period are illustrated in *Table 1*. In both universities, the minimum entry grade was 11.7 for males and 11.8 for females. The maximum entry grade was 55.0 for males and 56.5 for females. In terms of students' performance at different stages of study, the minimum and maximum performance (CGPA) for the male students in semester one, year one, was 2.00 and 5.00, respectively and in semester two, year two, it was 2.00 and 4.91, respectively. While the female students' minimum and maximum performance in semesters one and two, year one was similar, i.e., 2.00 and 4.75, respectively. When it came to final academic performance at the end of the study period, the minimum and maximum performance of the male students was 2.12 and 4.97, respectively, while the minimum and maximum performance of the female students was 2.05 and 4.57, respectively. These statistics imply that male students joined public universities with lower grades than their female counterparts. However, when performing at the end of the study period, the male students performed better than the female students.

Furthermore, the average weighted score for male students was 39.9, while for females was 39.8. The results on entry grades revealed that the highest number of students had a weighted score of 41 and above, followed by those with a weighted score of 31 to 40. Science programs attracted students with higher grades as compared to programs in humanities.

Table 1: Entry grades of students admitted to public universities and their academic performance at different stages of study by gender

Gender	Characteristic	N	Min	Max	Mean	Std Dev
Male	Entry grade/Weight for joining University	1459	11.7	55.0	39.947	8.441
	Academic performance (GPA) in semester 1, year I	1462	2.00	5.00	3.4559	.5864
	Academic performance (CGPA) in semester 2, year I	1461	2.00	4.91	3.4899	.5148
	Final academic performance (CGPA) at the end of the study	1467	2.12	4.97	3.5373	.4422
Female	Entry grade/Weight for joining University	1196	11.8	56.5	39.821	8.351
	Academic performance (GPA) in Semester 1, year II	1195	2.00	4.75	3.3280	.5489
	Academic performance (CGPA) at semester 2- year I	1188	2.00	4.75	3.3712	.4984
	Final academic performance (CGPA) at the end of the study	1200	2.05	4.57	3.4868	.4210

Entry Grades of Students’ and Academic Performance by Programme at Gulu University

The results of the relationship between the entry grades of students and their academic performance in the program at Gulu University are summarized in *Table 2*. There was a weak significant positive correlation (0.213, 0.271, 0.366 and 0.131) between entry grades and academic performance for students doing Bachelor of science agriculture (Coefficient,

$r = 0.213$, $p = 0.04$), Bachelor of Business Administration ($r = 0.271$, $p = 0.000$) and Development Studies ($r = 0.366$, $p = 0.000$), respectively at Gulu University, except for those doing Bachelor of Medicine and Bachelor of Surgery ($r = 0.131$, $p = 0.081$, *Table 2*), which was weaker than the other programs. This points to the fact that for most of the academic programs offered at the university, students’ performance is closely related to their entry grades.

Table 2: Relationship between entry grades and academic performance for students of agriculture, business administration, and development studies at Gulu University

Variable	Performance of Students per Program			
	Agriculture	Business Administration	Development Studies	Medicine
Entry grades for students in agriculture	Pearson Correlation	0.213**	.	.
	Sig. (2-tailed)	0.004	.	.
Entry grades for students in business administration	Pearson Correlation	.	0.271**	.
	Sig. (2-tailed)	.	0.000	.
Entry grades for students in development studies	Pearson Correlation	.	.	0.366**
	Sig. (2-tailed)	.	.	0.000
Entry grades for students in medicine	Pearson correlation	.	.	0.131
	Sig. (2-tailed)	.	.	0.081

***. Correlation is significant at the 0.01 level (2-tailed).*

a. Cannot be computed because at least one of the variables is constant

Entry Grades of Students’ and Academic Performance by Program at Makerere University

Findings on the relationship between entry grades of students and academic performance (*Table 3*) revealed a weak positive correlation (0.211, 0.210, 0.130) between entry grades for students doing agriculture, business administration, and development studies, respectively, at Makerere

University and their academic performance. However, the relationship was significant ($P = .005$, $P = 0.000$, and $P = .001$). This shows that for many academic programs offered at Makerere University, students’ performance is related to their entry grades. Though the relationship was significant, it was noted to be weaker than the correlation between students’ entry grades to the respective Gulu University programs and academic performance.

Table 3: Relationship between entry grades and exit academic performance for agriculture, business administration, and development studies at Makerere University

Variable	Performance of Students per Program		
	Agriculture	Business Administration	Development Studies
Entry grades for students in agriculture	Pearson Correlation 0.211** Sig. (2-tailed) 0.005		
Entry grades for students in business administration		Pearson Correlation 0.210** Sig. (2-tailed) 0.000	
Entry grades for students in development studies			Pearson Correlation 0.130** Sig. (2-tailed) 0.001

Entry Grades of Students at all Stages of Academic Performance for Students Admitted on National Merit in Gulu and Makerere Universities

The finding of the relationship between entry grade and academic performance for students admitted on

national merit (*Table 4*) shows a significant positive relationship ($p < 0.001$). Students with higher entry grades generally perform better than those with lower entry grades. This indicates that students with higher entry grades generally perform better than those with lower grades.

Table 4: The relationship between entry grade and academic performance for students admitted on national merit in Gulu and Makerere Universities

Variable	Early academic performance (GPA) at the end of Year I Semester I	Early academic performance (CGPA) at the end of Year I	Final academic performance (CGPA) at the end of the study	Entry grade/Weight for joining university
Early academic performance (GPA) at the end of Year I Semester I	1	0.840(**)	0.729(**)	0.163(**)
Sig. (2-tailed)		0.000	0.000	0.000
Early academic performance (CGPA) at the end of Year 1	0.840(**)	1	0.783(**)	.0188(**)
Sig. (2-tailed)	0.000		0.000	0.000
Final academic performance (CGPA) at the end of the study	0.729(**)	0.783(**)	1	0.186(**)
Sig. (2-tailed)	0.000	0.000		0.000
Entry grade/Weight for joining University	0.163(**)	0.188(**)	0.186(**)	1
Sig. (2-tailed)	0.000	0.000	0.000	

***Correlation is significant at the 0.01 level (2-tailed).*

Entry Grades of Students' and Academic Performance for Students Admitted on District Quota in Gulu and Makerere Universities

The relationship between entry grades and the academic performance of students admitted on district quota at Gulu and Makerere Universities (Table 5) revealed a weak and significant positive relationship between entry grades and the academic performance of students admitted on district quota. The performance at the end of Year 1 Semester 1 (r

$= 0.529, p = 0.000$), at the end of Year 1 ($r = 0.268, p = 0.000$) and at the end of study ($r = 0.193, p = 0.009$). This indicates that students with higher entry grades generally perform better than those with lower entry grades. However, the relationship, which was strong at the end of semester one of year 1, weakens during the end of year one and declines further at the end of the study. This could imply that district quota students begin their university education with zeal but begin to relax from the second semester onwards.

Table 5: The relationship between entry grade and academic performance of students admitted on district quota in Gulu and Makerere Universities

Variable	Early academic performance (GPA) in Year 1 Semester I	Early academic performance (CGPA) in Year 1 Semester 2	Final academic performance (CGPA) at the end of the study	Entry grade/Weight for joining university
Early academic performance (GPA) in Year 1, Semester I	1	0.762(**)	0.532(**)	0.529(**)
Sig. (2-tailed)		0.000	0.000	0.000
Early academic performance (CGPA) in Year 1 Semester 2	0.762(**)	1	0.740(**)	0.268(**)
Sig. (2-tailed)	0.000		0.000	0.000
Final academic performance (CGPA) at the end of the study	0.532(**)	0.740(**)	1	0.193(**)
Sig. (2-tailed)	0.000	0.000		0.009
Entry grade/Weight for joining University	0.529(**)	0.268(**)	0.193(**)	1
Sig. (2-tailed)	0.000	0.000	0.009	

****Correlation is significant at the 0.01 level (2-tailed).**

Entry Grades of Students' and Academic Performance for Students Admitted on Private Sponsorship Scheme in Gulu and Makerere Universities

The relationship between entry grades and the academic performance of students admitted to private sponsorship schemes at Gulu and Makerere Universities (Table 6) indicated a weak and significant positive relationship between entry grades and the academic performance of students admitted on private sponsorship at the end of Year

1 Semester 1 ($r = 0.307, p = 0.000$), end of Year 1 ($r = 0.247, p = 0.000$) and at the end of study ($r = 0.338, p = 0.000$). This implies that students with higher entry grades generally perform better than those with lower entry grades. Here, the correlation weakens during the end of year 1, although not so much as for the district quota students. It is then restored by the end of the study. This finding indicates that the correlation between entry grades and the performance of privately sponsored students is stronger than for the national merit students.

Table 6: The relationship between entry grade and academic performance at all stages for students admitted on private sponsorship in Gulu and Makerere universities

Variable	Early academic performance (GPA) in Year 1 Semester I	Early academic performance (CGPA) year one semester 2	Final academic performance (CGPA) at the end of the study	Entry grade/Weight for joining university
Early academic performance (GPA) in Year 1 Semester I	1	0.764(**)	0.656(**)	0.307(**)
Sig. (2-tailed)		0.000	0.000	0.000
Early academic performance (CGPA) in Year 1 Semester 2	0.764(**)	1	0.776(**)	0.247(**)
Sig. (2-tailed)	0.000		0.000	0.000
Final academic performance (CGPA) at the end of the study	0.656(**)	0.776(**)	1	0.338(**)
Sig. (2-tailed)	0.000	0.000		0.000
Entry grade/Weight for joining University	0.307(**)	0.247(**)	0.338(**)	1
Sig. (2-tailed)	0.000	0.000	0.000	

****Correlation is significant at the 0.01 level (2-tailed).**

Entry Grades of Students' and Academic Performance of Female Students Admitted in Gulu and Makerere Universities

The relationship between entry grades of female students and their academic performance at Gulu and Makerere Universities is presented in *Table 7*. Findings revealed a weak significant positive relationship between entry grades and female students admitted to Gulu and Makerere

universities' academic performance. The performance at the end of Year 1 Semester 1 ($r = 0.333$, $p = 0.000$), end of Year 1 ($r = 0.266$, $p = 0.000$) and at the end of study ($r = 0.339$, $p = 0.000$). The significant positive relationship between entry grades and the academic performance of female students in Gulu and Makerere Universities implies that students with higher entry grades generally perform better than those with lower entry grades.

Table 7: The relationship between entry grade and academic performance of female students in Gulu and Makerere universities

Variable	Early academic performance (GPA) in Year 1 Semester I	Early academic performance (CGPA) in Year 1 Semester 1	Final academic performance (CGPA) at the end of the study	Entry grade/Weight for joining university
Early academic performance (GPA) in the Year 1 Semester I	0.682(**)	0.333(**)		
Sig. (2-tailed)		0.000	0.000	0.000
Early academic performance (CGPA) in Year 1 Semester 2	0	1	0.798(**)	0.266(**)
Sig. (2-tailed)	0.000		0.000	0.000
Final academic performance (CGPA) at the end of the study	0.682(**)	0.798(**)	1	0.339(**)
Sig. (2-tailed)	0.000	0.000		0.000
Entry grade/Weight for joining University	0.333(**)	0.266(**)	0.339(**)	1
Sig. (2-tailed)	0.000	0.000	0.000	

***Correlation is significant at the 0.01 level (2-tailed)*

DISCUSSION

The study findings revealed a relationship between the entry grades and students' academic performance in the year one and final years for those students admitted on national merit, district quota, affirmative action schemes and private sponsorship schemes in the four programs in both universities. Performance in the first year correlated with performance in the final year papers. This finding aligns with the study conducted by Sulphey, Al-Kahtani, and Syed (2018), which indicated that admissions grades predict and influence university academic performances positively. These findings support the current Government entry criteria for public universities and provide important information for the admission committees. Nevertheless, the relationship between entry qualification and academic achievement at the university remains controversial and debated in

several universities worldwide. Many studies have reported contrary results to the results of this study. However, the non-conclusive and conflicting findings between the entry qualification scores and the student's university performance in Saudi Arabia (Sulphey, Al-Kahtani, & Syed, 2018) called for further studies on this subject.

Furthermore, the findings indicated that although male students joined public universities with lower grades than their female counterparts, they performed better than their female counterparts at the end of the study period. This discrepancy could be because weaker female students are given additional 1.5 points to their original grades during admission to public universities. This is an affirmative action policy in Uganda to promote gender balance at university admission (Odaga, 2020).

Finally, the observed lack of correlation between entry qualification scores and the student's academic performance in the Bachelor of Medicine and Bachelor of Surgery could indicate the need to revisit the admission criteria for this program. This could suggest a need to develop admission criteria for medical students covering cognitive and non-cognitive factors to identify the best applicants to become good doctors. Like applicants for the Bachelor of Law, the introduction of the pre-entry examination could help in selecting the best candidates for admission to the Bachelor of Medicine and Bachelor of Surgery. However, previous studies such as Gutman and Schoon (2013) and Garcia, E. (2016) generally agree that apart from cognitive abilities, non-cognitive abilities are essential contributors to the ability of students to become competent physicians. Hence, our results suggest that it is not sufficient to admit medical students solely based on academic achievement at an advanced level. Therefore, medical programs must develop and employ an additional assessment tool to predict the candidates' non-cognitive qualities.

CONCLUSION AND RECOMMENDATIONS

This study confirms that the entry qualification score generally predicts academic outcomes in the early stages and at the exit of university education. These findings support the current Government entry criteria for public universities and provide important information for the admission committees. Finally, the observed lack of correlation between entry qualification scores and the student's academic performance in the Bachelor of Medicine and Bachelor of Surgery could indicate the need to revisit the admission criteria for this program. We suggest that medical students' admission requirements include cognitive and non-cognitive factors to identify qualified students to become medical doctors. Furthermore, the role of background and sociodemographic factors in influencing academic performance at public universities should be considered alongside the pre-

entry qualification score. Future studies should also focus on students' performance at the university vis-à-vis performance at their workplaces after university. Finally, although male students joined public universities with lower grades than their female counterparts, their performance at the end of the study period was better than their female students. Our findings highlight a need for more affirmative action by the government and universities to enhance the performance of female students at the university to reduce the gender disparity further.

Ethical Clearance

The study received approval from the Gulu University Research and Ethical Committee (GUREC) and the Uganda National Council of Science and Technology (UNCST), Ref: SS 4544. Individual student consent was not obtained as this was a retrospective analysis of an anonymized database.

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