



International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 4 Number 12 (December-2016) pp. 44-53

Journal home page: <http://www.ijcrar.com>

doi: <http://dx.doi.org/10.20546/ijcrar.2016.412.004>



Factors Affecting Student's Academic Performance: A Case of UDS-Navrongo Campus

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KEYWORDS

Academic performance;
Navrongo campus;
Socio-economic status;
School climate;
Guidance and counselling.

A B S T R A C T

This study was designed to investigate the factors that affect the academic performance of undergraduate students from the Navrongo Campus of the University for Development Studies (UDS). Questionnaires were used to solicit information from the students and other data taken from the Faculty office of the Navrongo campus. Statistics from the Faculty office reveal that there are 2,778 students; 300 students were selected from these number. The stratified sampling technique were employed in the study. The Analysis were done using Spearman Rank Correlation and Factor Analysis. The spearman correlation reveal that there are weak relationship between Students' performance and factors such as school climate, guidance and counselling, socio-economic status, ethnicity and Age. Among the variables study, family background of students, guidance and counselling, monthly income of students and school climate affects undergraduate students' academic performance at the Navrongo campus of the University for Development Studies. When these factors are favourable, academic performance of students may improved.

Introduction

Students' academic performance is measured as they progress through various levels or classes of the educational ladder. The performance is rated on a scale; most commonly, a student performance is said to be bad or good base on the scale. Kenteyky Adult Education (KYAE) report on Managed Application Fiscal Year (MAFY,

2009- 10) defines academic performance as "a process where a student's success in school is measured to determine how she/he stand up to others in the same area".

The student's academic performance (academic achievement) informs society about the student's standard or position as

compared to his/her colleagues. The higher the student is placed, the more likely for such a student to get job or advance in further academic study as compared to holders of the same qualifications ranked below him/her.

Parents, guardians, educational institutions and governments are all interested in the students' academic performance. These people or institutions tried to do their bits to ensure students achieve desired results. Anything that affects students' academic performance becomes a concern and a worry among parents, guardians, educational institutions themselves and governments. It will interest these stakeholders who invest in students education to know if there are some factors that affect students' performance in school and if possible, the ways to tackle the situation.

Students themselves recognised that certain factors contributes or affects their study by attributing their success to such factors as hard work, good luck and natural talent. They also talk about a course been difficult to understand among other issues.

The paper considers some factors such as age, socio-economic status of parent, guidance and counselling, geographical location, and school climatic conditions, ethnicity of students to have some relation or affect Students' academic performance.

Authors such as Combs (1985), Jeynes (2002), McMillan and Western (2002), Hansen and Mastekaasa (2006), Eamon (2005) and Pedrosa *et al.*, (2006) considered Socio – economic status and academic performance in different perspectives. They tried to understand how economic status affect students' performance in different areas. In the literature, socio- economic status has been taken as the combination of

parents educational level, occupational status and income level.

Bhantnagar and Gupta (1999), Okobiah and Okorodudu (2004), and Gururani (2006) explains the terms guidance and counselling. According to Okobiah and Okorodudu (2004) guidance and counselling is a programme of activities which provides the students with the gateway to exits his/her numerous problems. It gives relief after one has express his/her feeling out to somebody. According to Abiri (1996) if society want to avoid having disgruntled, frustrated and unrealistic individuals then it is desirable to have adequate guidance and counselling programmes and made available career choice information in school and society.

Felder (1994), Tremblay (2001), Considine and Zappala (2002) and Kolcic (2006) consider geographical location of students when they compared students' performance of urban settings to rural settings. The findings of Lee and McIntire (2001) when compared with works such as Kolcic (2002) and Considine and Zappala (2002) reveals some contradictions.

There are two schools of thoughts on the variable climatic condition. One school had it that climate is a property of the school; implying that all members of the school (staff and students) experience a similar climate through their share contact with the same environment (James, 1982; Van Horn, 2003) whiles the other school had it that climate is a subjective psychological property of each individual member of the school; implying that each member of the school perceives a unique climate based on their personal characteristics and experiences (Miller and Fredericks, 1990). We would consider climate as property of the school in this study.

The paper uses Grade Point Average (GPA) as a measure of the students' academic performance. The GPA is a system used by the University for Development Studies to evaluate their student's performance. Other researchers such as Augus and Makhbul (2002), Nonis and Wright (2003), and Darling (2005) also uses GPA to evaluate students' academic performance. The paper seek to consider the following propositions with respect to aforementioned factors which may affect students' academic performance at the Navrongo Campus of the University for Development Studies in the Upper East Region of Ghana.

Proposition I: Students' Grade Point Average (GPA) correlate with: socio-economic status of students' parents, guidance and counselling, school climatic condition, age of students, and ethincity of students.

Proposition II: Factors such as age of students, guidance and counselling, geographical location, Social economic status of parent, monthly income of students, working alongside schooling, parent educational status and climatic condition affects students' Grade Point Average (GPA).

Methodology

The study took a cross section of students from the Navrongo Campus of the University for Development Studies. The levels or year groups of the students served as strata; that is, level 100s, level 200s, level 300s and level 400s served as the strata representing first year, second years, third years and final years.

The total number of students in the campus as at the time of the study was two thousand, seven hundred and seventy-eight (2,778). Assuming that the study covers 70 percent

of the students with a margin of error of 0.05, the sample size, n is calculated as follows:

$$n = \frac{Z_{\alpha}^2 P(1 - P)}{c^2} = \frac{1.96^2 \times 0.7 \times 0.3}{0.05^2} = 322.6944 \quad [1]$$

$$n_{adj} = \frac{n}{1 + \frac{n-1}{N}} = \frac{322.6944}{1 + \frac{322.6944 - 1}{2778}} = 289.204 \quad [2]$$

Where

n = sample size

n_{adj} = required sample size

N = given population

c = marginal error of degree of accuracy set at 0.05

P = Population proportion; assumed to e 0.7,

Z_{α} = Table value of the normal distribution

A = 5% level of confidence

A sample size of 300 students was therefore taken. A proportionate allocation of the students to their levels or year groups were done using stratified sampling techniques as in the Table 1 below

Questionnaires were administered to the appropriate number of students in the stratum to obtain relevant information. The paper employed the spearman rank correlation coefficient and factor analysis to determine which variable (s) influence students' academic performance at the Navrongo campus of the University for Development Studies, Navrongo, in the Upper East Region of Ghana.

Results and Discussion

Proposition I

The results of the Spearman rank correlation displayed in Table 2 below indicates that there are weak relationships between GPA and the variables under study.

Factors such as socio-economic status of parent, ethnicity of students and age of students are negatively related to GPA. As these variables increase, GPA tend to decrease, thus, as the students advance in age their GPA tend to fall; when a student embracing ethnicity and think his/her ethnicity background make him/ her superior or inferior, his / her performance tends to fall; when a student parent becomes economically sound, his / her GPA also tends to fall. However, these variables are not significant except age of the students.

Also, school climatic condition and, guidance and counselling, are positively related to GPA. As these variables increases GPA tend to increase also. When a student goes to have guidance and counselling most the time his/ her GPA tends to increases; when a student embraces school climatic conditions, he/ she quickly adjust himself/ herself and the GPA increase as a result. However these variables tend not to be significant at the 5 percent level.

Proposition II

Kaiser Meyer Olkin (KMO) is used to check whether our sample is adequate for factor analysis. The result as shown in Table 3 has KMO of 0.623 which by the Kaiser (1974) criterion indicates that the patterns of correlations are relatively compact and so factor analysis would yield distinct and reliable factors. This is supported by the

Bartlett’s test in the same Table. The Bartlett’s test is signifcant and indicates that the original correlation matrix is not an identity matrix, therefore they is some relationships between the variables as required by factor analysis.

A correlation matrix is run for the proposed variables: Working Alongside Schooling (WAS), Geographical Location (GL), Age of Students (Age), Family background (FB), Parent Educational Status (PES), Guidance and Counselling (GC), Monthly Income of Students (MIS), and school Climatic Conditions (CC) as shown in Table 4. The correlation matrix in the Table 4 shows that the variables under study correlate fairly well since they are all less than 0.7. Its determinant of 0.145, which is far greater than 0.00001, indicates that there is no multicollinearity or singularity among the factors. This is ideal for factor analysis.

From Table 5, the Anti-image diagonals for Working alongside school (WAS), Family Background (FB), Guidance and counselling (GC), Monthly income of students (MIS) and climatic conditions (CC) are more than 0.5 implying further analysis can be perform with these variables. The remaining variables: Geographical Location (GL), the age of students (AGE) and Parent Educational Status (PES) are excluded from further analysis.

Table.1 Sampling determination

| Strata label | Strata size | Sample size of each stratum |
|--------------|-------------|-----------------------------|
| Level 100 | 625 | $625 \times 0.108 = 67$ |
| Level 200 | 830 | $830 \times 0.108 = 90$ |
| Level 300 | 784 | $784 \times 0.108 = 85$ |
| Level 400 | 539 | $539 \times 0.108 = 58$ |
| Totals | 2,778 | 300 |

Source: Navrongo campus, Faculty office.

Table.2 Spearman rank correlation

| Factors | GPA | | |
|-------------|-------------------------|----------------|-----|
| | Correlation Coefficient | Sig.(2-tailed) | N |
| Climate | 0.047 | 0.433 | 284 |
| Socio-econs | -0.027 | 0.655 | 270 |
| Ethnicity | -0.087 | 0.145 | 285 |
| Guidance | 0.062 | 0.301 | 280 |
| Age | -0.175 | 0.002 | 300 |

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

Source: Field survey, June 2016

Table.3 KMO and Bartlett's Test

| KMO and Bartlett's Test | | |
|--|--------------------|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .623 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 315.209 |
| | Df | 28 |
| | Sig. | .000 |

Table.4 Correlation Matrix

| | | WAS | GL | AGE | FB | PES | GC | MIS | CC |
|----------------|-----|-------|--------|--------|--------|--------|--------|--------|-------|
| Correlation | WAS | 1 | -0.03 | 0.211 | 0.209 | 0.198 | 0.118 | 0.087 | 0.172 |
| | GL | -0.03 | 1 | 0.13 | -0.022 | -0.094 | 0.152 | 0.146 | 0.141 |
| | AGE | 0.211 | 0.13 | 1 | 0.184 | 0.673 | -0.011 | -0.038 | 0.012 |
| | FB | 0.209 | -0.022 | 0.184 | 1 | 0.303 | 0.388 | 0.293 | 0.315 |
| | PES | 0.198 | -0.094 | 0.673 | 0.303 | 1 | 0.024 | -0.05 | -0.12 |
| | GC | 0.118 | 0.152 | -.011 | 0.388 | 0.024 | 1 | 0.485 | 0.486 |
| | MIS | 0.087 | 0.146 | -0.038 | 0.293 | -0.05 | 0.485 | 1 | 0.546 |
| | CC | 0.172 | 0.141 | 0.012 | 0.315 | -0.12 | 0.486 | 0.546 | 1 |
| Sig.(1-tailed) | AS | | 0.352 | 0.003 | 0.003 | 0.005 | 0.064 | 0.13 | 0.013 |
| | GL | 0.352 | | 0.047 | 0.388 | 0.113 | 0.024 | 0.029 | 0.034 |
| | AGE | 0.003 | 0.047 | | 0.009 | 0 | 0.444 | 0.313 | 0.439 |
| | FB | 0.003 | 0.388 | 0.009 | | 0 | 0 | 0 | 0 |
| | PES | 0.005 | 0.113 | 0 | 0 | | 0.377 | 0.26 | 0.061 |
| | GC | 0.064 | 0.024 | 0.444 | 0 | 0.377 | | 0 | 0 |
| | MIS | 0.13 | 0.029 | 0.313 | 0 | 0.26 | 0 | | 0 |
| | CC | 0.013 | 0.034 | 0.439 | 0 | 0.061 | 0 | 0 | |

a. Determinant = 0.145

Table.5 Anti – image matrix

| Anti-image Matrices | | | | | | | | | |
|---------------------------------------|-----|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | WAS | GL | AGE | FB | PES | GC | MIS | CC |
| Anti-image Covariance | WAS | .902 | .053 | -.069 | -.075 | -.038 | -.012 | .013 | -.092 |
| | GL | .053 | .883 | -.177 | .052 | .136 | -.095 | -.059 | -.006 |
| | AGE | -.069 | -.177 | .486 | .022 | -.316 | .061 | .039 | -.084 |
| | FB | -.075 | .052 | .022 | .710 | -.149 | -.157 | -.057 | -.104 |
| | PES | -.038 | .136 | -.316 | -.149 | .450 | -.042 | -.014 | .129 |
| | GC | -.012 | -.095 | .061 | -.157 | -.042 | .637 | -.160 | -.158 |
| | MIS | .013 | -.059 | .039 | -.057 | -.014 | -.160 | .628 | -.230 |
| | CC | -.092 | -.006 | -.084 | -.104 | .129 | -.158 | -.230 | .579 |
| Anti-image Correlation | WAS | .807 ^a | .059 | -.103 | -.093 | -.059 | -.016 | .017 | -.127 |
| | GL | .059 | .379 ^a | -.271 | .066 | .216 | -.126 | -.079 | -.008 |
| | AGE | -.103 | -.271 | .485 ^a | .037 | -.676 | .109 | .071 | -.158 |
| | FB | -.093 | .066 | .037 | .746 ^a | -.264 | -.234 | -.086 | -.163 |
| | PES | -.059 | .216 | -.676 | -.264 | .485 ^a | -.079 | -.026 | .253 |
| | GC | -.016 | -.126 | .109 | -.234 | -.079 | .749 ^a | -.253 | -.260 |
| | MIS | .017 | -.079 | .071 | -.086 | -.026 | -.253 | .741 ^a | -.380 |
| | CC | -.127 | -.008 | -.158 | -.163 | .253 | -.260 | -.380 | .670 ^a |
| a. Measures of Sampling Adequacy(MSA) | | | | | | | | | |

Table.6 Total Variance Explained

| Total Variance Explained | | | | | | | | | |
|--|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.395 | 29.942 | 29.942 | 2.395 | 29.942 | 29.942 | 2.325 | 29.061 | 29.061 |
| 2 | 1.855 | 23.184 | 53.126 | 1.855 | 23.184 | 53.126 | 1.908 | 23.851 | 52.913 |
| 3 | 1.059 | 13.237 | 66.363 | 1.059 | 13.237 | 66.363 | 1.076 | 13.451 | 66.363 |
| 4 | .854 | 10.674 | 77.037 | | | | | | |
| 5 | .622 | 7.777 | 84.815 | | | | | | |
| 6 | .504 | 6.302 | 91.117 | | | | | | |
| 7 | .459 | 5.743 | 96.860 | | | | | | |
| 8 | .251 | 3.140 | 100.000 | | | | | | |
| Extraction Method: Principal Component Analysis. | | | | | | | | | |

Table.7 Component Matrix

| | Component | | |
|--|-----------|------|------|
| | 1 | 2 | 3 |
| Working alongside schooling | | | |
| Geographical location of the student | | | .900 |
| Age of the student | | .808 | |
| Family Background | .665 | | |
| Parental Educational Status | | .869 | |
| Guidance and counselling | .754 | | |
| Monthly Income of student | .725 | | |
| Climatic Condition | .747 | | |
| Extraction Method: Principal Component Analysis. | | | |
| a. 3 components extracted. | | | |

Table.8 Rotated Component Matrix

| | Component | | |
|---|-----------|------|------|
| | 1 | 2 | 3 |
| Working alongside schooling | | .409 | |
| Geographical location of the student | | | .921 |
| Age of the student | | .876 | |
| Family Background | .572 | .414 | |
| Parental Educational Status | | .890 | |
| Guidance and counselling | .785 | | |
| Monthly Income of student | .789 | | |
| Climatic Condition | .809 | | |
| Extraction Method: Principal Component Analysis. | | | |
| Rotation Method: Varimax with Kaiser Normalization. | | | |
| a. Rotation converged in 5 iterations. | | | |

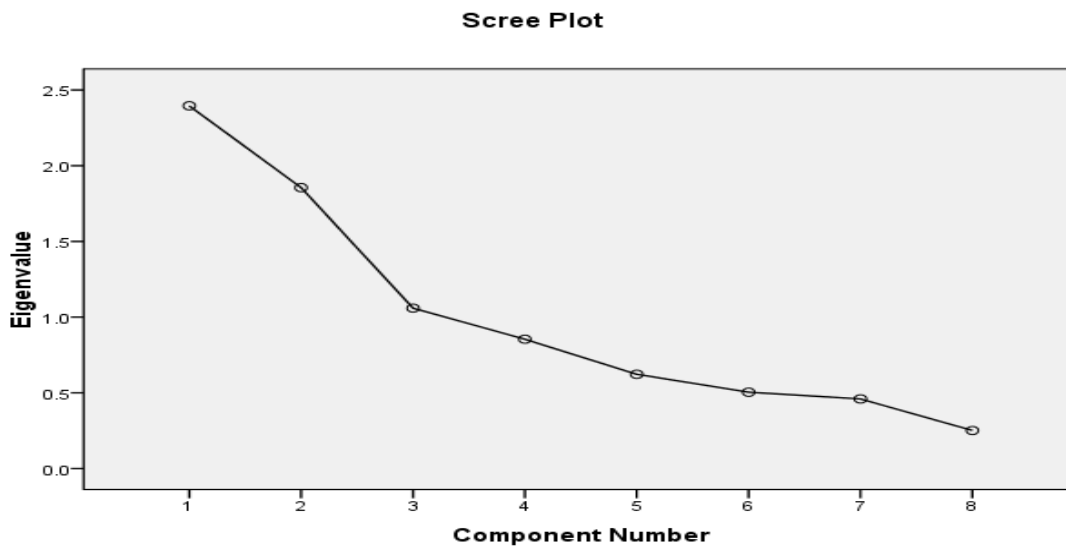
Table.9 Reliability Test

| Reliability Statistics | | |
|-------------------------------|--|------------|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .683 | .684 | 5 |

Table.10 Inter-Item Correlation Matrix

| Inter-Item Correlation Matrix | | | | | |
|-------------------------------|-------|-------|-------|-------|-------|
| | WAS | FB | GC | MIS | CC |
| WAS | 1.000 | .232 | .102 | .073 | .167 |
| FB | .232 | 1.000 | .359 | .290 | .312 |
| GC | .102 | .359 | 1.000 | .480 | .467 |
| MIS | .073 | .290 | .480 | 1.000 | .535 |
| CC | .167 | .312 | .467 | .535 | 1.000 |

Fig.1 Scree plot



From Fig. 1, we would consider retaining three factors and the rest are scree.

Further Analysis

The Cronbach’s Alpha value in Table 9 had a value of 0.683 which is more than 0.5 showing that the result is acceptable. The Cronbach’s Alpha is based on correlated items total. The total uncorrelated and Cronbach’s Alpha is totally deleted.

According to Cronbach, if the factor has a correlation below 0.3 in the inter-item correlation matrix, it should be deleted to increase reliability.

From the table 10, guidance and counselling (GC); family background (FB); Monthly Income of Students (MIS) and climatic

condition (CC) have a high correlation compare to the others. These variables need to check since they may affect students academic performance.

Conclusion

The variables under study were weakly correlated with students’ academic performance. Which implies the effect may not be direct on students academic performance.

However, variable such as guidance and counselling, family background, socio-economic status and climatic condition should be considered when checking on

factors affecting student's academic performance.

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How to cite this article:

Mathias Akamba, Gborbitey Stephen Torgbor, Juliana Agalga. 2016. Factors Affecting Students' Academic Performance: A Case of UDS-Navrongo Campus. *Int.J.Curr.Res.Aca.Rev.4(12): 44-53*. doi: <http://dx.doi.org/10.20546/ijcrar.2016.412.004>