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Statistical survey of factors affecting students' academic performance of the university, A.B.U, students, Nigeria

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Abstract
In this study, we investigated the Factors Affecting students' Academic Performance in Ahmadu Bello University, Zaria. The twelve faculties in the institution were used for the research. A sample of undergraduate students served as the subjects. Descriptive statistics and Chi-square were used to analyse the research questions. The results show that lecturer's-student relationship does not influence students' academic performance but management-student relationship, student-student (peer) relationship and availability of facilities influences students' academic performance. In line with these, recommendations were made which hopefully will help to cope with the effect of management-student relationship, student-student (peer) relationship and availability of facilities that influence students' academic performance. The recommendations include: management organizing students-conference, acknowledging student accomplishment by the management, management should endeavour to regulate the number of students being admitted and provide prompt feedback to students' requests.

Keywords: Academic, performance, relationship

1. Introduction
It is an obnoxious fact in the academic circles in Nigeria that Factors Affecting Students' Academic Performance is spacious. From the point of national interest, a far more serious consequence of the inability of the students to excel academically is worrisome. This is in regard to scientific and technological advancement that we so much desire in Nigeria today. We need many qualified doctors, engineers, agricultural scientists, economists, computer programmers, mathematicians, statisticians and so many profession. All these professionals require authentic knowledge before they can specialize in these fields.

The nature of higher education is such that the students are seen by members of campus community as adults who have attained the age of taking full responsibility of their behaviours and students on their part see themselves as those liberated from the encumbrances of family control and influences. Perhaps, this is why other studies on the factors that affect students' academic performance neglected the possible effects of the interaction of a student and other members of the campus community. This neglect is harmful considering the fact that many teenagers are increasingly gaining admission into higher education. This assumption of dealing with adult is so pervasive in the school that one loses sight of psycho-social environmental which affects the student's sense of satisfaction, motivation, and learning.

The study was designed to investigate how the (if any) students' academic performance is affected by the relationship of the students with other players (human beings and infrastructure) on campus. We designed a questionnaire that includes questions that will elicit responses from the students concerning their relationship with those players on campus as well as the student's academic performance. To ensure adequate coverage, stratified random sampling technique was used to distribute questionnaires to respondents. We believe the outcome will provide useful information to school authority so that they can effectively and positively model the factors affecting students' academic performance.

2. The literature review
The psychological sense of belonging can mostly be created by the students' perception of support and care from the members of the campus communities. This increases their belongings and connectedness to their community.

Blum, (2005) [2] observed that the relationships formed between students and school staff members are at the heart of school relationship. Students who perceived their teachers and administrators as creating a caring, well-structured learning environment, in which expectations are high, clear and fair are more likely to perform highly in their academic.

Some evidence indicates that the relation between peer support and academic performance related outcomes is more social in nature (Cotterell, 1992; Wentzel, 1994; and Johnson, *et al.* (2001)) [5, 17, 9]. For example, Wentzel (1994) [17] found that academic support from peers was positively related to the pursuit of academic social goals, as well as effort to achieve academic social responsibility goals. Therefore, students who were supported by their peers were more engaged in socially responsible behaviour in the classroom. Appropriate social behaviour has been identified as an important factor in peer acceptance which, in turn, is related to academic performance (French, *et al*. 1995; Walter and Bowen, 1997) [8]. Therefore, those students who are supported by their peer tend to act in a more socially acceptable manner, which is more socially acceptable by their peer and foster their academic performance in a positive manner.

To promote effective teaching, the lecturer should provide prompt feedback, offer optional student assignments, set reasonable academic expectations, demand academic rigour, utilize multiple instructional materials, and provide tutoring sessions (Brian and Sutton 2010) [3]. Halloran, (1997) has opined that education is a people business in which the goals we seek and the things we try must eventually be judged in terms of the persons in the process. We simply cannot stay glued to an office or classroom and expect to optimally influence the students we teach. "The real intellectual life of a body of undergraduates, if there be any, manifests itself, not in the classroom, but in what they do and talk of and set before themselves as their favourite objects between classes and lecturers. There is the need for university lecturers to be involved in many and varied campus activities. There is no simpler way to be visible on any campus than to attend performance, games, and other activities. In this way the lecturer is modelling a behaviour that students are encouraged to pursue that of being actively involved.

Research has shown that psychological factors impact on students' sense of satisfaction and learning. The school psychological environment is built by the school administrators. Indeed, the psychological school environment is a product of all non-material elements of the school resulting from the school management relationship. Omenyi, *et al.* (2010) [13] have it that student connectedness (attachment/bonding/engagement) to the school is determined by how the students receive support and care from the school management. Wilson (1996) [18] observed minority students' active participation in class and improvement in academic performance as a result of interpersonal interaction with peer and the management and concluded that when school management really care about their students and when they show that caring in respectful, humane and caring ways students return that caring and respect in concrete and creative ways. Agajanian, *et al.* (2006) discovered inapproachability of management as one of the reasons undergraduate dropout from science programs.

Instructional resources which are educational inputs are of vital importance to the teaching of any subject in the school curriculum. Wales (1975) was of the opinion that the use of instructional resources would make discovered facts glued firmly to the memory of students. Savoury (1958) [15] also added that, a well-planned and imaginative use of visual aids in lessons is of great value, supplement inadequacy of books arouses students' interest by giving them something practical to see and do, and at the same time helping to train them to think things out themselves. Savoury (1958) [15] suggested a catalogue of useful visual aids that are good for teaching history i.e. pictures, post cards, diagrams, maps, filmstrips and models.

Fagbamiye (1977) noted that schools with better school facilities in terms of school buildings, books and equipments have high achievement than schools which do not have such. He claimed that in order to do their parts in meeting the crisis in education, educational systems will need real resources that money can buy, they will need a fuller share of the nation manpower, not merely to carry on the present work of education, but to raise its quality, efficiency and productivity. The students need buildings, equipment and more learning materials, (Popoola, 1980) [14].

3. Research Methodology

The study population for this research comprise of undergraduate students in the twelve faculties in Ahmadu Bello University (A.B.U) Zaria, Kaduna State. The twelve faculties are made up of fifty-two departments - Administration has four departments, Agricultural Science two departments, Art six departments, Education four departments, Engineering nine departments, Environmental Design six departments, Law two departments, Medicine four departments, Pharmaceutical Science one department, Science nine departments, Social Science four departments, and Veterinary one department.

3.1 Study Sample and Sampling Procedure

The questionnaire was tested on some group of students in the institution and was found appropriate for the test. The choice of the instrument was based on the following: nature and scope of the investigation, availability of financial resources, availability of time, degree of accuracy desired.

The technique used in sampling is the stratified sampling, because it takes the heterogeneity of the population into consideration. In the stratified sampling the proportional allocation (Bowley allocation) scheme was used. In this scheme, samples are drawn from each stratum in proportion to the stratum size (Cochran, 1977) [4]. When cost is fixed, the stratum size n_h is given by

Where

N= population size = 90343 and n = 800 (i.e. number of questionnaires)

The strata represent the faculties. The resulting sample sizes are shown in table 1.

Table 1: Computation of Stratum Allocation

Stratum Name	Stratum Size(N_h)	Sample taken	Sample Received	Invalid	Unreturned	Sample Analysed
Administration	10711	95	87	12	8	75
Agriculture	6141	54	51	5	3	46
Arts	7332	65	59	7	6	52
Education	7735	68	61	8	7	53
Engineering	10177	90	86	10	4	76
Environ. Design	5201	46	43	3	3	40
Law	4372	39	34	4	5	30
Medicine	6725	60	51	7	9	44
Pharm. Sc.	3703	33	29	2	4	27
Science	14837	131	119	11	12	108
Social Science	10260	91	82	5	9	77
Vet. Med.	3149	28	26	4	2	22
Total	90343	800	728	78	72	650

The data collected in this survey were analyzed and interpreted using descriptive statistic and chi-square tools. The descriptive statistic used in the analysis was simple percentages. The choice of simple percentages was based on the ease of interpretation to the general public. The formula guiding the calculation of the simple percentages is:

$$\frac{F}{N} \times 100$$

Where:
N is the total numbers of respondents
F is the frequency of the variable concerned.
The results were tabulated based on the demographic and other characteristics of the respondents.
The chi-square (χ^2) (Helmert in 1875) was used for the analysis. The chi-square analysis for test of independence of cross-classified categories of variables will be used to test for independence or otherwise of factors that are known or perceived to be contributory to the academic performance of students. The chi-square statistic is given by:

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(O_{ij}-E_{ij})^2}{E_{ij}} \sim \chi^2_{\alpha}(r-1)(c-1)$$

Where α is the level of significance of the test.
χ^2_{α} [(r – 1) (c – 1)] is the null distribution of the chi-square statistic at α level of significance and [(r – 1)(c – 1)] degrees of freedom.
r is the number of rows.
c is the number of columns.
O_{ij} is the observed frequency in cell (i, j)
E_{ij} is the expected frequency in cell (i, j)
A null hypothesis is rejected if and only if

$\chi^2 > \chi^2_{\alpha}$ [(r – 1) (c – 1)]

3.2 Research Hypothesis

The following research hypotheses were tested in this study.
1. Residence and Student class of degree
$H_{01:}$ students' academic performance is independent on student residence
Vs H_{11}: students' academic performance is depending on student residence
2. Lecturer's guidance and students' class of degree
$H_{02:}$ students' academic performance is independent on lecturers guidance through learning
Vs H_{12}: students' academic performance is depending on lecturers guidance through learning
3. Students' pride of school management and class of degree
$H_{03:}$ students' academic performance is independent of students' pride of school management,
Vs H_{13}: students' academic performance depends on students' pride of school management
4. Management having students interest at heart and Class of Degree
$H_{04:}$ students' academic performance is independent of Management having students interest at heart.
Vs H_{14}: students' academic performance is depends on Management having students interest at heart
5. Peer making students enjoy class activities and Class of Degree
$H_{05:}$ students' academic performance is independent on peer making students enjoy class activities.
Vs H_{15}: students' academic performance is depends on peer making students enjoys class activities
6. Students enjoy cooperative Learning with peer and Class of Degree
$H_{06:}$ students' academic performance is independent on students enjoy cooperative learning with peer.
Vs H_{16}: students' academic performance is depending on students enjoy cooperative learning with peer

4. Results

The demographic and other characteristics of the respondents are presented in table 2. The test was be used to test whether academic performance depends on resource availability, student-lecturer rapport, student-management rapport, student-student rapport. The academic performance is taken as the class of degree, which was obtained by finding the average of previous Cumulative Grade Point Average (CGPA) and current CGPA. The tables for the χ^2 analyses are presented in appendix I.

Table 2: Summary statistics of data collected

Level	Frequency	Percent
200 Level	243	37.7
300 Level	154	23.9
400 Level	166	25.7
500 Level	82	12.7
Total	645	100.0
Sex	Frequency	Percent
Male	323	51.2
Female	308	48.8
Total	631	100.0
Age Group	Frequency	Percent
Below 18	90	14.0
18-24	340	52.7
25-31	191	29.6
32-38	19	2.9
39 Above	5	.8
Total	645	100.0
Marital Status	Frequency	Percent
Single	545	84.6
Married	89	13.8
Divorced	6	0.9
Separated	4	0.6
Total	644	100.0
Residence	Frequency	Percent
Hostel	393	61.2
Off Campus	249	38.8
Total	642	100.0

5. Discussion

Table 2 shows clearly that faculty of Sciences has the largest number of undergraduate, followed by Engineering while Veterinary Medicine has the least. Faculty of science and engineering has the largest number of undergraduate this may be due to the fact that they have the largest number of departments. It Indicate that no respondent in 100 and 600 level filled the questionnaire. Most of the respondents (243 representing 37.7%) are in 200 level. The inability of the 100 and 600 level to partake in the survey may be due to the fact that the 100 students are probably shy and they do not have any previous CGPA; the 600 level they may be busy with their professional certification work in the hospitals/clinics.

It is an obvious fact that most of the undergraduate students that respondent to the questions are youth. Youth, according to Omenyi, *et al.* (2010) [13] are people within the age range of 12-24 years.

The calculated χ^2 statistics for the research hypotheses and the associated degrees of freedom and *p*-value are shown in table 3. The null hypothesis is rejected whenever the *p*-value is less than the chosen level of significance for the test α (α = 0.05).

Table 3: Chi-square (χ^2) statistics of the responses

Variable	χ^2	Degrees of Freedom	*p*-value
Residence	7.594	2	0.020
Lecturer	0.458	2	0.795
Pride of Management	12.856	2	0.002
Management Interest	10.617	2	0.005
Peer Motivation	6.949	2	0.031
Study with Peer	8.109	2	0.017

5.1 Findings

With respect to student's place of residence, H_0 is rejected and conclude that the students' academic performance depends on students' residence. Knezewich (1975) also stressed the importance of having appropriate personnel plan and adequate physical facilities to support educational effort. This means that students' residence affects the academic performance of students. Those living in the hostel tend to perform better than those residing off-campus.

For the second hypothesis (on lecturers), H_0 is not rejected. Thus, the students' academic performance is independent of lecturer's guidance. Farrant, (1980) [6] asserted that 'once the students want to learn, the battle is half won'. Omoh, (1987) equates scholastic excellence to reading and proficiency and failure to inefficient reading. Hence it shows that lecturers have little impact on students' academic performance. The adage that you can lead a horse to the stream, but you cannot force it to drink speaks volume on how learning and performance is a function of individual attitude. Most students have reluctant attitude in studying their books during their leisure time thereby adversely affecting their academic performance

Also, we reject H_0 and conclude that the students' academic performance is depending on student's pride on school management. Battistich, 1995; Shouse, 1996; Solomon, Battistoch, Watson, Schaps, and Lewis 2000; Klem and Conell 2004, restating that students with caring and supportive interpersonal relationships in school report more positive academic attitude and values, and more satisfaction with school. It is a clear fact management leadership has a great impact on students' academic performance.

Similarly, the Management having students' interest at heart influences the students' academic performance. Omenyi, *et al.* (2010) [13] has it that students' connectedness (attachment/bonding/engagement) to the school is determined by the students perceived support and care of the school management. It is a clear fact management support and care have an effect on the performance of it students. This is because the decision management takes can affect

the students indirectly such as changing school calendar, strike by the various bodies in the university.

Furthermore, the students' academic performance depends on peer making students enjoy class activities. Fertinger (1954) [7] asserted that people evaluate their opinions and abilities through comparison with other people and that they can make much more stable evaluations by comparing with other people who are similar. It is obvious facts that peer have an impact on academic performance. The findings indicate that peer have an effect on the academic performance of students.

Finally, the students' academic performance depends on students enjoy cooperative learning with peer. Evidence shown by (Johnson & Johson, 1991, Slavin, 1990, Acar & Tarhan, 2007, Nicholas, 2002) [10, 16, 1, 12] proved that students in a cooperative learning class perform extremely better than those in a non-cooperative learning class with respect to achievement. Zajonc, (1976) [20] Suggest that children often benefit from teaching younger siblings who are intellectually less advanced. Michael (1987) [11], viewed that young people helps each other in many ways. Beginning in childhood, as they play together, children learn more important lessons such as sharing, communication, and cooperating. It shows that cooperative learning has an impact on the academic performance of students.

5.2 Conclusions

Bearing in mind the importance of academic performance, adequate measure has to be put in place to regulate the factors affecting students' academic performance among undergraduate students and in education sector in general. The facilities in the institution (where they exist at all) are either inadequate or in bad condition (or both). The institutions are in dare need of facilities such as hostel accommodation, good toilet facilities, lecture rooms, laboratories, textbooks, etc. The available hostel accommodation is not conducive for the students - where large numbers of students are occupying single room. Even a room of four now accommodate six to seven students. This is because some students cannot afford the cost of accommodation off-campus. With respect to lecture theatres, during lecture you find some students hanging on windows, some sitting on bare floor. If the student is not psychologically balanced, this may lead to low academic performance. And in the libraries there are not enough textbooks for the students to use, even if there are, they are not recent publications.

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Appendix

Table 1: Residential and Class of Degree

	Class of Degree			Total
Residence	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Hostel	17(25.1)	253(251.0)	123(116.9)	393
Off Campus	24(15.9)	157(159.0)	68(74.1)	249
Total	41	41	191	642

Table 2: Lecturer's guidance through learning and Class of Degree

	Class of Degree			Total
Response	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Yes	26(28.0)	275(273.1)	128(127.9)	429
No	16(14.0)	135(136.9)	64(64.1)	215
Total	42	410	192	644

Table 3: students' pride of school management and Class of Degree

	Class of Degree			Total
Response	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Yes	9(14.7)	131(143.7)	85(66.6)	225
No	33(27.3)	281(268.3)	106(124.4)	420
Total	42	412	191	645

Table 4: Management having students interest at heart and Class of Degree

	Class of Degree			Total
Response	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Yes	16(17.7)	155(171.9)	98(79.4)	269
No	26(24.3)	254(237.1)	91(109.6)	371
Total	42	409	189	640

Table 5: Peer making students enjoy class activities and Class of Degree

	Class of Degree			Total
Response	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Yes	22(21.6)	198(213.4)	115(100.0)	335
No	20(20.4)	216(200.6)	79(94.0)	315
Total	42	414	194	650

Table 6: Students enjoy cooperative Learning with peer and Class of Degree

	Class of Degree			Total
Response	**Third Class**	**Second Class Lower**	**Second Class Upper**	
Yes	29(26.9)	247(263.6)	138(123.5)	414
No	13(15.1)	165(148.4)	55(69.5)	233
Total	42	412	193	647