Computing, Information Systems, Development Informatics & Allied Research Journal
ISBN 978-2257-44-7(Print) ISSN 2167-1710 (online)
Vol. 4. No. 2, 2013 – www.cisdijournal.net

MULTI-DIMENSIONAL POST-UTME DATA ANALYSIS: A CASE STUDY OF DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF IBADAN, NIGERIA

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ABSTRACT
The open access to higher education is introducing admission challenges among universities in Nigeria and requires them to introduce alternative methods for admitting students, in order to identify and select the most appropriate students to reach better performance. The study accumulated admission data of prospective Computer Science candidates invited for Post-Unified Tertiary Matriculation Examination (UTME) interactive tests conducted at the University of Ibadan for a period of four academic sessions (2007/08, 2008/09, 2009/10 and 2010/2011). A data warehouse was implemented with a star schema for the data. Multidimensional analysis was thereafter performed on the data. This study reveals that something very urgent has to be done to some Centres being used for Unified Tertiary Matriculation Examinations (UTME) conducted by the Joint Admissions and Matriculation Board (JAMB) in Nigeria.

Keywords: Admission, JAMB, UTME, Data Warehouse, Multi-Dimensional Data Analysis.

1. INTRODUCTION

The Federal Government of Nigeria in 1978 established Joint Admissions and Matriculation Board (JAMB) with the primary objectives of ensuring a uniform standard for the conduct of matriculation examination and the placement of suitably qualified candidates into the Nation's universities taking into account:

(i) the vacancies available in each institution;
(ii) the guidelines approved for each institutions by its proprietors and other competent authorities; and
(iii) the preference expressed for certain tertiary institutions and courses and following certain stipulated guideline (Judith and Yusuf, 2007).

JAMB was established through decree (act) No.2 of 1978 and amended by decree (act) No.33 of 1989 as an agency charged with the dual responsibility of testing and placement of suitably qualified candidates into the Nation's tertiary institutions viz; Universities, Monotechnics, Polytechnics and Colleges of Education. It was established as a response to the problems of multiple applications, multiple admissions as well as the absence of standardization and lack of uniformity in admission guidelines which beset tertiary institutions before 1978. The central entrance examination conducted by JAMB is tagged University Matriculation Examination (UME) redefined recently as Unified Tertiary Matriculation Examination (UTME). Students seeking admission into tertiary institutions in Nigeria rose from a paltry 30,000 in 1978 to over one million while degree awarding institutions and universities in Nigeria has risen to a little above 100 (Judith and Yusuf, 2007). A fair and transparent admissions system is essential for all applicants. Higher education is a valuable commodity: it can affect salary, job security and power to influence society (Brunel University, 2004).

One major challenge facing the use of selection examination for placement into tertiary institutions in Nigeria is the scourge of examination malpractice. It has to a large extent militated against the objectives for which the selection examinations were set to achieve viz; ensuring that suitable and qualified candidates are offered admission into institutions of higher learning. Examination malpractice is a broad name for all forms of misconduct, which include, cheating, copying, spying, being in possession of unauthorized materials, use of GSM handsets, impersonation etc. A frightening dimension is the involvement of parents, guardians and examination officials in this unwholesome act. The spate of misconduct during examination in Nigeria occasioned calls by some universities about six years ago for a Post Universities Matriculation Examination (UME), redefined as Post UTME Screening which has generated a lot of debates.

It is against this backdrop that admission data of candidates into the Department of Computer Science, University of Ibadan, Nigeria, were collected over a period of four sessions and analysed in order to determine the extent to which Post UTME has been effective in admitting suitable candidates into the Department. A multidimensional data model is an integral part of On-Line Analytical Processing, or OLAP. Because OLAP is on-line, it must provide answers quickly; analysts pose iterative queries during interactive sessions, not in batch jobs that run overnight. And because OLAP is also analytic, the queries are complex. The multidimensional data model is designed to solve complex queries in real time **(Oracle® OLAP Application Developer's Guide).**

A multidimensional data model is composed of logical cubes, measures, dimensions, hierarchies, levels, and attributes. The simplicity of the model is inherent because it defines objects that represent real-world business entities. Analysts know which business measures they are interested in examining, which dimensions and attributes make the data meaningful, and how the dimensions of their business are organized into levels and hierarchies (David, 1997).

1.1 Logical Cubes
Logical cubes provide a means of organizing measures that have the same shape, that is, they have the exact same dimensions. Measures in the same cube have the same relationships to other logical objects and can easily be analyzed and displayed together.

1.2 Logical Measures
Measures populate the cells of a logical cube with the facts collected about business operations. Measures are organized by dimensions, which typically include a Time dimension.

An analytic database contains snapshots of historical data, derived from data in a legacy system, transactional database, syndicated sources, or other data sources. Measures are static and consistent while analysts are using them to inform their decisions. They are updated in a batch window at regular intervals: weekly, daily, or periodically throughout the day.

1.3 Logical Dimensions
Dimensions contain a set of unique values that identify and categorize data. They are qualifying characteristics that provide additional perspectives to a given fact (Osofisan, *et al.,* 2003). They form the edges of a logical cube, and thus of the measures within the cube. Because measures are typically multidimensional, a single value in a measure must be qualified by a member of each dimension to be meaningful. For example, the Sales measure has four dimensions: Time, Customer, Product, and Channel. A particular Sales value (43,613.50) only has meaning when it is qualified by a specific time period (Feb-01), a customer (Warren Systems), a product (Portable PCs), and a channel (Catalog).

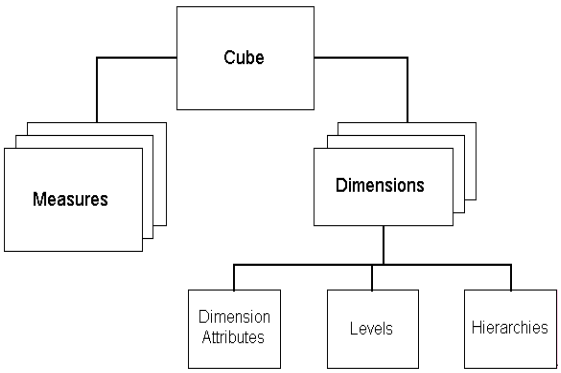

Figure 1: Diagram of the Logical Multidimensional Model

1.4 Logical Hierarchies and Levels

A hierarchy is a way to organize data at different levels of aggregation. In viewing data, analysts use dimension hierarchies to recognize trends at one level, drill down to lower levels to identify reasons for these trends, and roll up to higher levels to see what affect these trends have on a larger sector of the business.

Each level represents a position in the hierarchy. Each level above the base (or most detailed) level contains aggregate values for the levels below it. The members at different levels have a one-to-many parent-child relation. For example, `Q1-02` and `Q2-02` are the children of `2002`, thus `2002` is the parent of `Q1-02` and `Q2-02`.

Suppose a data warehouse contains snapshots of data taken three times a day, that is, every 8 hours. Analysts might normally prefer to view the data that has been aggregated into days, weeks, quarters, or years. Thus, the Time dimension needs a hierarchy with at least five levels.

Similarly, a sales manager with a particular target for the upcoming year might want to allocate that target amount among the sales representatives in his territory; the allocation requires a dimension hierarchy in which individual sales representatives are the child values of a particular territory.

Hierarchies and levels have a many-to-many relationship. A hierarchy typically contains several levels, and a single level can be included in more than one hierarchy.

1.5 Logical Attributes

An attribute provides additional information about the data. Some attributes are used for display. One might also have attributes like colors, flavors, or sizes. This type of attribute can be used for data selection and answering questions such as: Which colors were the most popular in women's dresses in the summer of 2002? How does this compare with the previous summer?

Time attributes can provide information about the Time dimension that may be useful in some types of analysis, such as identifying the last day or the number of days in each time period.

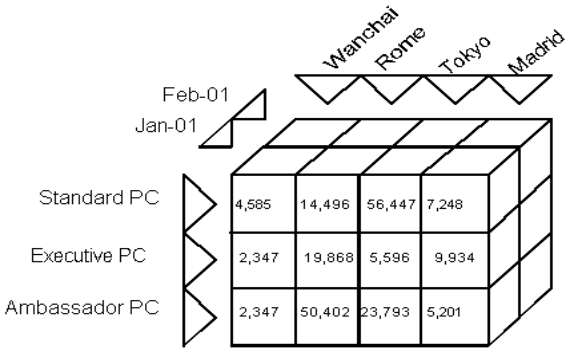

Figure 2: A multi-dimensional data model that compares the sales of various products in different cities for some months

Figure 2 compares the sales of various products in different cities for January 2001 (shown) and February 2001 (not shown). This view of the data might be used to identify products that are performing poorly in certain markets.

The relational implementation of the multidimensional data model is typically a star schema. The model of a data mart is usually in terms of the "dimensions" of the data – the terms of reference, by which retrievals are expected to be specified. The data could be considered to be in a cube, with, for example, with each data element at the intersection of the dimensions "product", "time", and "geography."

The data to be retrieved are collapsed into one or more "fact tables", related to each of the dimensions. An entity/relationship diagram can then be drawn of each fact and its dimension tables, with each occurrence of a fact entity related to one and only one of each of the dimensions. With the fact entity in the center and the dimension entities distributed around it, it tends to look like a star. For this reason, the design is often called a "star schema".

2. METHODOLOGY

2.1 Data

The data for this study was obtained from the information supplied by the candidates invited for Post-UTME admission test at the Department of Computer Science, University of Ibadan, Nigeria for four sessions (2007/08, 2008/09, 2009/10 and 2010/2011). A total of 411 candidates' records were obtained from the four sessions' admission exercises. The researcher acted as the secretary of the Department's Post UTME Examiners' panel for the period of the study. Each candidate was asked to supply his/her age, gender, the particular State and location where he/she did the University Matriculation Examination (UME), his/her score in the UME and grades obtained in the three basic qualifying Ordinary Level (O'L) subjects – Physics, Mathematics and Chemistry. Notwithstanding, the scores supplied by the candidates were cross-checked in the University's Admission Broad Sheet brought to the Department.

Other data like the candidates' batch number and final score obtained by the candidates in Post-UTME tests were recorded. Usually, candidates for the test were invited in three batches. Batch 1 represents candidates invited based on merit, i.e. those who took University of Ibadan, Computer Science course as first choice and were able to meet the minimum cut-off points set for the course in each session. The cut-off points actually varied and it was obtained by the additions of weighted scores of O'L and UME scores of the candidates. Batch 2 represents candidates who took Computer Science as second choice and were able to meet the minimum cut-off points set for the course. Batch 3 represents staff's biological children and the change of course candidates who were able to meet the ELDS (Educational Less Developed States) minimum cut-off points for Computer Science.

2.2 Data Warehouse Design

A star schema was employed as the data modelling technique for this study. This was used because it yields an easily implemented model for multi-dimensional data analysis while still preserving the relational structures on which the operational database is built (Osofisan, *et al.,* 2003, Rob and Coronel, 2000). The basic components of our star schema are:

2.2.1 Facts

The facts are the scores obtained by candidates in both UTME and Post-UTME exercises. Our star schema has one fact table called Candidate. The table contains the candidate-UTME_ID, Gender, Age, O'L Subjects' Scores, UTME-Score and Post-UTME-Score. These facts were stored in the fact table – Candidate. The Candidate table was updated every session the admission exercise took place.

2.2.2 Dimensions

There are three dimensions in our star schema – The UTME-State, representing the State where candidates took their UTME, the UTME-Center, representing the locality in the State where candidates took their UTME and the Time, which represents the batch number of the candidates (1, 2 or 3). The dimensions were stored in the dimension table.

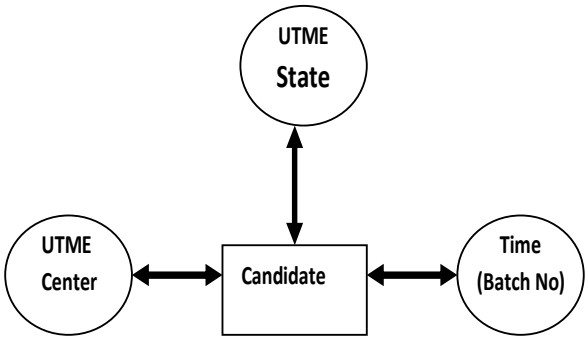

Figure 3: The Star Schema

The star schema depicted in Figure 3 shows that a candidate's Post-UTME performance can be dimensioned to or viewed from the perspectives of his/her UTME center, UTME-State and Time of invitation for the test, known here as the batch number of the candidate.

2.2.3 Attributes

Each dimension table contains attributes which were used to search, filter and classify the facts in the fact table. The attributes for the dimensions are stated below:

UTME-State dimension: (State-ID, State-Name)
UTME-Center dimension: (Center-ID, Center-Name)
Time dimension: (Time-ID, Batch-No.)

2.2.4 The Star Schema Representation

Physical tables in our Data warehouse represent the fact and dimension tables. The fact and dimension tables have Many-to-one relationship. This means many fact table rows are related to each dimension row. The primary keys of the dimension tables are stored as part of the primary key of the fact table. The foreign/primary key constraints were applied to the tables. The star schema of the data warehouse is depicted in Figure 4.

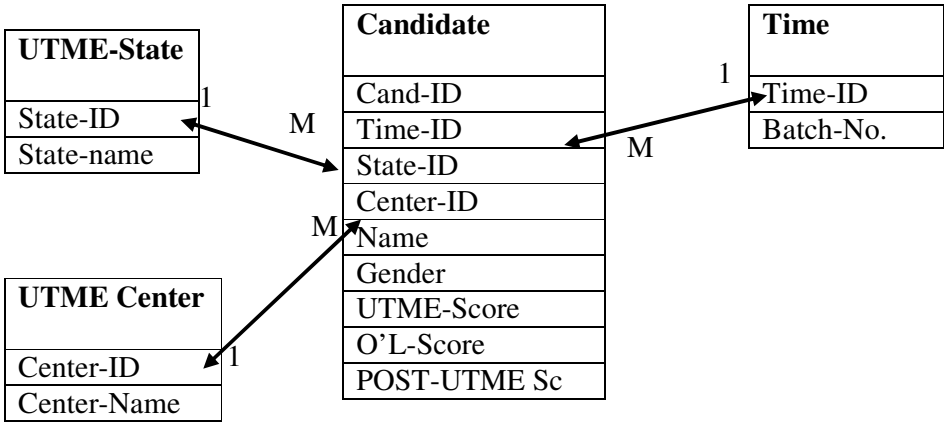

Figure 4: Star Schema for Candidate

3. RESULTS

This section provides the results of the analyses carried out on the Post-UTME admission data.

(a) Age Distribution and Percentage Admitted

Table 1 shows that out of 411 candidates invited for Post-UTME test in the Department of Computer Science for the four-session admission period were between the ages of 15 to 20 years (73%) followed by candidates in the age category of 21 – 25 years (24%). The mean age from the data set is approximately 19 years. Only one candidate was of the age 15 and was asked to defer the admission to the next session when he would have clocked 16. University of Ibadan only admits candidates in the age 16 and above.

Table 1: Age Distribution and Percentage Admitted

Age category	Number Invited	% Invited	Number Passed	% Admitted
15 – 20	298	73.0	208	69.8
21 – 25	99	24.0	38	38.4
26 – 30	12	3.0	6	50.0
Total	411	100.0	252	61.3

Table 1 further shows that majority of the candidates admitted in the four session period of the study were between the age of 15 and 20 years.

(b) Gender Distribution and Percentage Admitted

Table 2 shows that 280 (68.1%) out of the 411 candidates invited were males while about half of this were females (31.9%).

Table 2: Gender Distribution and Percentage Admitted

Gender	Number invited	% Invited	Number Passed	% Admitted
Male	280	68.1	170	60.7
Female	131	31.9	82	62.6
Total	411	100	252	61.3

The table shows that about 60% success rate was equally obtained for both genders. However, males are about twice more than females numerically.

(c) Batch Distribution and Percentage Admitted

Table 3 shows that 241 (58.6%) of the candidates were invited on Merit list (First Batch), 89 (21.7%) were invited on Second Choice list (Second Batch) while 81 (19.7%) were invited on Change of Course/Biological Children list (Third Batch).

The Table further shows that large proportion of candidates admitted in the admission period came for 3rd Batch interactive Sessions.

Table 3: Batch Categories of the Candidates

Batch	Number invited	% Invited	Number Passed	% Admitted
First Batch (First Choice, Merit)	241	58.6	140	58.1
Second Batch (Second Choice)				
Third Batch (Change of Course & Biological Children)	89	21.7	45	50.6
Total	81	19.7	67	82.7
	411			

(d) UTME Score Distribution and Percentage Admitted

Table 4 shows that 140 candidates (34.06%) scored between 241 to 260 in the UTME conducted in the four admission sessions, followed by 105 (25.6%) scored between 221 to 240 in the entrance examinations. The mean score in the UTME was approximately 243.

Table 4: UTME Score Distribution and Percentage Admitted

UTME Score Range	Number invited	% Invited	Number Passed	% Admitted
201 – 220	66	16.06	46	69.7
221 – 240	105	25.55	74	70.5
241 – 260	140	34.06	81	57.9
261 – 280	79	19.22	44	55.7
281 – 300	10	2.43	7	70.0
301 – 320	1	0.24	0	0.0
Total	411		252	61.3

Table 4 shows that a large proportion of the 'best materials' for the university education are those candidates who scored between 200 and 240 in their UTME. A few exceptional candidates occurred in the range 281 to 300.

(e) UTME State Distribution and Percentage Admitted

Analyses show that the invited Post-UTME candidates sat for their UTME in 19 out of the 36 States and Abuja (Federal Capital Territory) in Nigeria. Table 5 shows the distribution of the candidates according to the States where they sat for UTME in the four session periods.

Table 5: States Where UTME was Sat and Percentage Admitted

State	Number Invited	Number Passed	% Admitted
ABIA	1	1	100.0
ABUJA	2	2	100.0
ANAMBRA	1	1	100.0
DELTA	2	1	50.0
EBONYI	2	2	100.0
EDO	1	1	100.0
EKITI	1	0	0.0
IMO	1	1	100.0
KEBBI	1	0	0.0
KWARA	7	6	85.7
LAGOS	266	136	51.1
NIGER	4	2	50.0
OGUN	20	13	65.0
ONDO	4	4	100.0
OSUN	17	13	76.5
OYO	77	66	85.7
PLATEAU	2	2	100.0
Rivers	1	0	0.0
C-River	1	0	0.0
Total	411	252	61.3

It could be deduced from Table 5 that a large percentage of the candidates (266, 64.7%) who were invited for Post-UTME exercise in the Department of Computer Science, University of Ibadan for the period of data collection sat for their UTME at Lagos. Few candidates from Oyo State (77, 18.7%) where the University is situated managed to be invited simply because either they did not have good grades in their O' Level results or they could not pass the UTME at high scores like 260 or more; since the aggregate of the weighted scores from the two results were used to invite the candidates.

Results from Table 5 also show that only about 51.1% of candidates that did their UTME in Lagos State were admitted finally, while 85.7% of the candidates from Oyo State were admitted.

(f) UTME Major Centre Distribution and Percentage Admitted

Further probing into the UTME Center data, the locality where the candidates sat for their UTME, Table 6 gives the major result obtained. The table shows that centres in Ibadan and its environs have the highest number of invited candidates (63, 15.3%) followed by Lagos Island (24, 5.8%) and Agege (19, 4.6%), all in Lagos State.

Table 6: Major UTME Centres and Percentage Admitted

Center	Number invited	Number Passed	% Admitted
Ibadan & its Environs, Oyo State			
Oyo Town, Oyo St.	63	56	88.9
Agege, Lagos	9	9	100.0
Ajegunle, Lago			
Egbeda, Lagos			
Ikoyi, Lagos	19	8	42.1
Ikorodu, Lagos	13	6	46.2
Ikeja, Lagos	8	3	37.5
Lagos Island	9	4	44.4
Mushin, Lagos	7	2	28.6
Ojo, Lagos	6	3	50.0
Oshodi, Lagos	24	9	37.5
Surulere, Lagos	11	9	81.8
Yaba, Lagos	6	3	50.0
	6	3	50.0
Abeokuta, Ogun St.	19	7	36.8
	11	7	63.6
Oshogbo, Osun State			
	7	4	57.2
	6	6	100.0

Other centres not reported in this table have one or two candidates invited from them. Examples are Aja, Agbado, Abule Egba, Ajeromi, Akoka, Alaba, Alagbon, Alagbado, Apapa, Alakuko, Coker, Ebute-Meta, Festac, Badore, Badagry, Alimosho, etc all in Lagos State, Iseyin in Oyo State, Jos and Kotangora from Niger State, Ijebu-Igbo, Ifo and Ota from Ogun State and others.

Altogether, the candidates sat for UTME in 94 centres in the States covered in this study. Table 6 further shows that majority of the candidates who did their UTME in most of the centres in Lagos performed woefully in the Post-UTME conducted compared to candidates from other Centres.

(g) Post-UTME Scores

For the Post-UTME test, the candidates were given two interactive questions from mathematics, and one question each from Physics, Chemistry, and English Language or General Knowledge. In addition, the candidates' postures and comportments in the interactive test were scored. Everything amounts to 100 percent for each candidate. 40% was set as the final cut-off point or pass mark in order for the candidates to be admitted into the Department in the period of this study. Table 7 shows the distribution of the Post-UTME scores obtained by the candidates.

Table 7: Post-UTME Scores

% Score range	No. of Candidates	%
0 – 39	159	38.68
40 – 60	94	22.87
61 – 80	90	21.89
81 – 100	68	16.54
Total	411	100.00

Table 7 shows that the Post-UTME admission exercise in the Department of study was able to achieve about 60% success in the four session periods of study. This percentage represents the candidates with scores of 40 and above. The average score in the Post-UTME interactive exercise was 48.7%.

(h) O' Level Subjects Versus Admitted

Tables 8 (a) – (c) show that on the average, majority of the candidates that passed the Post-UTME test had B3 in both Mathematics, Physics and Chemistry at their Ordinary Level qualifying subjects. It also shows that majority of candidates admitted have high O' Level grades from C4 to A1 in both Mathematics and Physics. The reverse is the case for Chemistry where the trend is from B3 to C6.

Tables 8 (a) – (c): O' Level Subjects and Percentage Admitted
(a) Mathematics Weighted Score vs. Admitted

Weighted Score	Number invited	Number Passed	% Admitted
6 (A1)	107	68	63.6
5 (B2)	110	68	61.8
4 (B3)	150	92	61.3
3 (C4)	19	13	68.4
2 (C5)	16	6	37.5
1 (C6)	9	5	55.6
Total	411	252	

(b) Physics Weighted Score vs. Admitted

Weighted Score	Number invited	Number Passed	% Admitted
6 (A1)	42	28	66.7
5 (B2)	52	30	57.7
4 (B3)	199	131	65.8
3 (C4)	58	36	62.1
2 (C5)	31	15	48.4
1 (C6)	29	12	41.4
Total	411	252	

(c) Chemistry Weighted Score vs. Admitted

Weighted Score	Number invited	Number Passed	% Admitted
6 (A1)	59	30	50.9
5 (B2)	91	52	57.1
4 (B3)	165	109	66.1
3 (C4)	43	25	58.1
2 (C5)	25	15	60.0
1 (C6)	28	21	75.0
Total	411		

Table 9: Pearson Correlations

		Age of Candidates	UTME Score	UI Post UTME Score
Ages of Candidates	Pearson Correlation	1	0.088	-0.268(**)
	Sig. (2-tailed)		0.076	0.000
	N	411	411	410
UTME Score	Pearson Correlation	0.088	1	-0.097(*)
	Sig. (2-tailed)	0.076		0.050
	N	411	411	410
UI Post UTME Score	Pearson Correlation	-0.268(**)	-0.097(*)	1
	Sig. (2-tailed)	0.000	0.050	
	N	411	411	411

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

3.2 Statistical Correlations

Table 9 shows the results of correlations obtained in the analysis of the data in this study. The Table shows that there are very weak correlations between the ages of candidates and their both UTME (0.088) and UI Post UTME (-0.268) scores. The same result was obtained for the candidates' UTME and UI Post-UTME scores (-0.097).

4 DISCUSSION OF RESULT

A fair and transparent admissions system is essential for all applicants in a Higher Education (HE) admission exercise. A fair admissions system is one that provides equal opportunity for all individuals, regardless of background, to gain admission to a course suited to their ability and aspirations. Higher education is a valuable commodity: it can affect salary, job security and power to influence society. The education sector is diverse and choice of course and institution matters. In this context, it is vital that all stakeholders in the admissions process – applicants, parents, schools, colleges, teaching and admissions staff – believe the system is fair. The student population studying HE is diverse, but certain groups are still under-represented. A large number of factors can affect who participates in HE, of which admissions is one.

Prior educational attainment data remains the best single indicator of success at undergraduate level, and continues to be central to the admissions process (Admission Steering Group, 2003). The authenticity of entrance examinations conducted by Joint Admission and Matriculation Board (JAMB) in Nigeria has been seriously criticized and faulted among the universities in Nigeria. Many studies have been carried out even at the Medical School of the University to ascertain the quality of JAMB candidates in the University of Ibadan. For instance, in the studies of "Students admission grades and their performance at Ibadan University pre-clinical MBBS examinations" by Bamgboye, *et al.,* (2001) and "A comparative study of students' performance in preclinical physiology assessed by multiple choice and short essay questions" by Oyebola, *et al.,* (2000), results from their studies indicate that JAMB UTME scores of students had no effect on their preclinical examinations.

Vital results from this study also support this claims. Result from the study shows that candidates admitted with very high JAMB UTME scores were very few over the four-year period of the study. Many candidates came with fantastic JAMB results but in the University of Ibadan (UI) Post-JAMB Interactive exercise, they performed woefully. This suggests something must be wrong somewhere. It was either the Centres where the candidates sat for the UTME were questionable or the results were got "by any means". Most of the failed candidates actually came from Lagos State. Only 136 out of 266 (51.1%) of the candidates that came from Lagos State were admitted. This set of candidates coming with high JAMB scores is preventing other candidates, who did their examination by themselves, to have chance in the fair admission process. For instance, only fewer candidates from other States scaled through to the Post-UTME exercise. Candidates from Oyo State where the University is situated found it very difficult to be invited simply because they did not score well in the JAMB or have good grades in their O' Level results.

Preliminary unreported studies of the researcher on the admitted candidates into Computer Science programme at the University of Ibadan before the introduction of Post-UTME interactive exercise showed that most of the students in the department were usually from Lagos State with good JAMB scores of between 260 and 290 but they end up with either extra year or third class degree. UTME centres in Lagos State need to be scrutinized and sanitized by JAMB and the Government of the Federation to avoid future JAMB examination malpractices in the State.

Results from the study also show that Third Batch candidates performed very well in the Interactive Sessions for the four year period of study compared to the Merit candidates (First Batch). Though they were very few (n = 81, 19.7%), the candidates had low grades in their O' Level General Certificate of Education (GCE) results and JAMB UTME scores, the admission rate for them was very encouraging (82.7%). This set of candidates was usually invited on the basis that they could meet the Educational Less Developed States (ELDS) minimum cut-off point, which is usually very less than the Merit cut-off point. Few of them are biological children of members of staff of the University and others came in through change of course process. These students would have been denied admission if the third batch was not included in the University's admission process. These students could be said to have done their GCE and UTME examinations themselves and they were indeed the owner of their results compared to the Merit candidates.

Certain states are considered educationally less developed (ELDS). Candidates from these states are given special concession for admission. The Tertiary Institutions assign lower cut-off marks to this category of candidates so that they can be given opportunity to forestall a lopsided development of education in the country. Some of these States are Kwara, Delta, Ebonyi, Niger and Plateau. Results from this study indicate that candidates from these States performed very well in the Post-UTME Interactive tests. This indicates that the inclusion of ELDS candidates in the admission process of the University should continue so as to bridge the gap in the educational development among the States of the Federation.

Further results shows that most candidates admitted into Computer Science programme in the four-session period of study at the University of Ibadan did very well in their O' Level Physics and Mathematics. This suggests that the admitted candidates are promising Computer Programmers as suggested by Akinola, *et al.,* [10]. The study finally shows that there was no significant correlation between the JAMB and UI Post-UTME scores of the candidates. This shows that the JAMB results of the candidates did not justify their real academic capacity.

5. CONCLUSION AND RECOMMENDATIONS

The study accumulated admission data of prospective Computer Science candidates invited for Post-UTME interactive tests conducted at the University of Ibadan for a period of four academic sessions (2007/08, 2008/09, 2009/10 and 2010/2011). A data warehouse was implemented with a star schema for the data. Multidimensional analysis was thereafter performed on the data.

No doubt, the establishment of JAMB as a clearing house has eliminated the problems of multiple applications and multiple admissions, in spite of this; a lot of problems still subsist, even though the Board has taken series of measures in this direction. Something very urgent has to be done to some Centres being used for Unified Tertiary Matriculation Examinations (UTME) conducted by the Joint Admissions and Matriculation Board (JAMB) in Nigeria, especially the Lagos Centres.

Government must rise up to the challenge by instituting procedures for the effective prosecution of culprits guilty of examination malpractice. Government must also ensure a commensurate increase in the number of vacancies available in the tertiary institutions to cater for qualified applicants. This will reduce the problem of scarcity and remove the 'do or die' syndrome from the educational system.

REFERENCES

1. Admission Steering Group, (2003). Fair admissions to higher education: recommendations for good practice, *Admission to Higher Education Review*, www.admissions-review.org.uk
2. Bamgboye, E. A, Ogunnowo, B. E., Badru, O. B., and Adewoye, E. O. (2001).Students admission grades and their performance at Ibadan University pre-clinical MBBS examinations, *Africa Journal of Medical Sciences,* Sep;30(3):207-11.
3. Brunel University (2004). Fair admissions to higher education: recommendations for good practice, *Admissions to higher Education Review,http://www.admissions-review.org.uk/downloads/finalreport.pdf,* visited in May 2012.
4. David C. Hay (1997). From a Relational to a Multi-dimensional Data Base, Essential Strategies. Inc http://www.essentialstrategies.com/publications/datawarehouse/relmult.htm, visited in May 2012.
5. Judith E. Asein & Yusuf Lawal (2007). Admission Into Tertiary Institutions In Nigeria, 33rd Annual Conference of the International Association for Educational Assessment (IAEA) Baku, Azaerbaijan, 17th – 21st September, 2007.
6. Olalekan S. Akinola**,** Opeoluwa B. Akinkunmi and Tosin S. Alo (2012). A Data Mining Model for Predicting Computer Programming Proficiency of Students of Computer Science, *African Journal Of Computing & ICT (Journal of the IEEE Nigeria Computer Chapter)*, ISSN 2006-1781, Vol. 5 No. 1, pp. 43 – 52. http://www.ajocict.net/services.html
7. Oracle® OLAP Application Developer's Guide, 10*g* Release 1 (10.1), http://docs.oracle.com/cd/B12037_01/olap.101/b10333/multimodel.htm . Visited in May 2012.
8. Osofisan A., Ajayi F., Adeoye A., Akinola O. & Olamiti A. (2003): Data Warehouse Application in Education Information System: A case study of Junior Secondary Educational System (Oyo) State Nigeria. Proceedings of *Intelligence Économique: Recherches et Applications,* France, 14 – 15 Avril 2003, pp. 79-99.
9. Oyebola, D. D., Adewoye, O. E., Iyaniwura, J. O., Alada, A. R., Fasanmade, A. A., and Raji, Y (2000). A comparative study of students' performance in preclinical physiology assessed by multiple choice and short essay questions, *Africa Journal of Medical Sciences,* Sep-Dec;29(3-4):201-5.
10. Rob and Coronel (2000). Database Systems: Design, Implementation, and Management, Fifth Edition.

Author's Brief

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