
EXPLORATORY ANALYSIS OF VARIABLES OF BRAIN DRAIN OF TECHNICAL EDUCATION
LECTURERS IN COLLEGES OF EDUCATION IN SOUTH EASTERN, NIGERIA

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Abstract

Attrition or brain drain rate of lecturers in technical education from colleges of education in Nigeria is becoming uncontrollable. The purpose of study was to analyze variables of brain drain of technical education lecturers in colleges of education in south eastern, Nigeria. The population of the study consisted of 49 lecturers of technical education in colleges of education in South Eastern, Nigeria. The sample for the study comprised 36 male lecturers and 13 female lecturers of technical education in colleges of education. A 52 item well-structured questionnaire developed from literature reviewed together with focused group discussion were used for data collection. The instrument was subjected to face and intrinsic validity. The reliability coefficient of the instrument was 0.78. Factor analysis was employed in analyzing data for answering research questions. The study found that variables of brain drain of the lecturers emanating within and outside of the college system can be categorized under promotional, welfare and prestige factors. The study also found that variables that enhance the retention of both male and female lecturers of technical education in colleges of education in South Eastern Nigeria were under promotional, teaching/training and welfare factors. Based on the findings, it was recommended among others that governments and school administrators should maintain a conducive and cooperative environment for lecturers in the colleges of education in Nigeria for smooth running of their programmes

Keywords: Exploratory analysis, technical education, attrition of lecturers, brain-drain, College of Education, factor loading

Introduction

Education is the activity performed to impart the required knowledge or skills to

students in formal institutions. These activities include assessment of students, classroom management and supervision of students. The activities are span through

the periods of crèche, care centres, nursery schools and other higher levels of education. Okoro (2010) explained that education is what makes an individual to function and be relevant not only for himself/herself but to the society irrespective of place, time and circumstances. In Nigeria, education can be acquired in primary school, secondary school and tertiary institutions. The type of education acquired in universities, polytechnics and colleges of education is called tertiary education.

Colleges of education in Nigeria are tertiary institutions where teacher education is obtained. Ellah (2007) described colleges of education as types of institution that prepare intermediate level teachers for a minimum of three years to make them qualify to teach their respective subjects. Bakare, Zakka and Fittoka (2010) explained that these colleges are under the control of the National Commission for Colleges of Education (NCCE) which uses the minimum standard to monitor the implementation of their teacher education programmes. The colleges of education produce teachers for the implementation of primary and junior secondary school curricula. Colleges of Education run various technical education programmes such as automobile technology, technical drawing, woodwork technology, metal work technology, building technology and electrical/electronic technology.

Individuals are trained in these areas of education to teach in primary, secondary schools and technical colleges. They are

made specially to equip students with knowledge, skills and attitudes required to impart the curricula of primary and secondary schools. The two major categories of human resources found responsible in imparting skills in technical education programmes are instructors and lecturers. Instructors are supporting academic officers that teach practical activities in a particular course(s) to students. Onipede (2013) described instructors as academic support staff within the programme with minimum qualification of Higher National Diploma (HND). Instructors teach practical contents in the workshops while lecturers teach theoretical contents to students in classroom setting. Lecturers are individuals that teach courses specified in the minimum standard recommended by NCCE to students in different programmes. Lecturers at colleges of education possess minimum qualification of first degree. They specialize in any areas of technical education programmes and are involved in teaching technical education courses to students in colleges of education. Kolade (2014) stated that the acquisition of the required knowledge and skills in teacher education programmes of colleges of education depends on the quality of the lecturers available.

Current trend of globalization requires that teacher education institutions should be equipped to produce teachers with skills and competencies to develop learners as critical citizens in a digital world (Institute of Education, 2013). Colleges of education programmes in Nigeria need academic staff to effectively implement it

and develop high quality teachers with the experience and determination to deliver high quality teaching and learning in a sustainable and inspiring manner supported with innovative research and technology. The importance of lecturers in technical teacher education programmes in colleges of education has been expressed in various forms. According to Power (1996), one teacher in a school is worth more than 100 volumes of books for imparting the required knowledge, skills and attitudes to learners. Lecturers therefore are the hub or pivot on which technical education programmes revolves.

Sawyer (1997) stated that the colleges of education should be a stimulating place for learners, but that can only be possible with their marks. Having a good lecturer implementing educational programme is like having a nation being led by a good leader. Similarly, the policy document (FRN, 2004) hinged the entire level of education attainable in the country on teachers, by declaring that the education system cannot rise above the quality of its teachers. All these statements point to the inevitability of lecturers in the colleges of education; and therefore lecturers deserve a special focus and attention.

The occurrence of brain drain of technical education lecturers in colleges of education in Nigeria therefore becomes an issue that requires special attention of all those concerned with the planning and implementation of the technical courses in colleges of education. Brain drain refers to large scale movement or migration of top flight man power from various developing

countries (predominantly African Countries) to more developed countries notably United States of America, Canada, United Kingdom, Germany, France, Italy, Holland, Newzeland and Australia. (Emeghara, 2013). Brain drain or attrition of lecturers therefore refers to the reduction in number of the lecturers in a college of education or school system. Ndomi (2003) explained that one way of obtaining sufficient information on attrition of teachers in a school system is to identify the variables that cause it, and their coefficients.

The coefficients of the variables provide a clear understanding of the brain drain and also serve as data for factorial analysis of the variables responsible for brain drain of lecturers in colleges of education. The measurement of these variables of brain drain in education is called edometrics. Edometrics is a systematic process of accessing the educational component in quantitative format and creating universal acceptable result in teaching and learning process or in education setting (Kumar, 2013). It is also referred to as the application of test score interpretation to educational contexts.

Variables responsible for brain drain are factors causing the continuous exit of lecturers from the colleges of education in South Eastern Nigeria thereby creating a gradual reduction in the number of qualified technical education lecturers. The movement of some quality and well educated technical education lecturers with higher degrees into university systems has been observed over the years,

despite their well packages and less academic activities or workloads have been observed. Most of the lecturers after being trained through the Tertiary Education Trust Fund (Tetfund) Intervention and other sources still leave colleges of education for universities. Those who trained themselves for higher degrees such as Masters and Ph. D also prefer joining the university systems. This situation needs to be carefully studied to identify the specific variables causing the attrition or brain drain of these technical education lecturers, and the interest of those that are still teaching in colleges of education. This is necessary to provide inputs to policy makers for combating undesirable effects of attrition of the technical education lecturers in South Eastern, Nigeria.

Purpose of the Study

The major purpose of the study was to identify the exploratory analysis of variables of brain drain of technical education lecturers in colleges of education in South Eastern, Nigeria

Specifically, the study sought to:

1. identify the variables of brain drain of lecturers of technical education in colleges of education that emanate from the college system and those that emanate from outside the college system in South Eastern, Nigeria
2. identify the factors that enhance retention of lecturers of technical

education colleges of education in Southeastern, Nigeria.

Research Questions

The following research questions were formulated in line with the purpose of the study.

1. What are the variables of brain drain of lecturers of technical education in colleges of education emanating within and outside the college system?
2. What are the variables enhancing the retention of male and female lecturers of technical education in colleges of education in Southeastern Nigeria?

Methodology

Research Design

This study adopted cross-sectional survey design. Hall (2013) stated that a Cross-sectional survey is described as snapshots of the populations about which data are gathered. Cross-sectional design is suitable for this study since questionnaire are developed from the literature and focuses group discussion by the researchers and were utilized to collect data from respondents that were considered to be representative of the entire groups.

Population and Sample

The population of the study consisted of four hundred and eight one (481) technical education lecturers. The population was made up of 356 male and 125 female lecturers of technical education. Simple random sampling technique was used to select 49 lecturers made up of 36 male and 13 female lecturers of technical education

in colleges of education in South Eastern, Nigeria

Instrument for Data Collection

The instrument used for data collection was 52 structured questionnaire consisting of variables on brain drain of lecturers of technical education in colleges of education that emanate from the college system and those that emanate from outside the college system; and the factors that enhance retention of male and female lecturers of technical education in teaching in colleges of education in Southeastern states Nigeria.

The instrument was validated using two types of validation; face and intrinsic. For face validation, the copies of draft of the structured questionnaire were given to three experts to certify the adequacy, suitability and coverage of the items. Some suggestions were made by the experts to improve on the construction of the questionnaire items. This procedure conforms with what Gay (1992) suggested, that face validity should be determined by expert judgment.

The intrinsic validity was obtained through the use of the test statistics. This statistics was derived from Rulon's formula, that intrinsic validity is an index of reliability (Guilford, 2000). The intrinsic validity coefficients obtained for each section of the instrument were as follows: Section A, 0.89; Section B, 0.83. These values indicated a high level at which the items on the questionnaire measure what they should measure. The reliability coefficient of the instrument was determined using

Cronbach Alpha and 0.72 coefficient was obtained.

Data Analysis

Exploratory factor analysis was used to analyzed the data. Principal component analysis with varimax rotation was adopted with factor loading of 0.40. Factor loading of less than 0.40 or variables that load is more than one factor were discarded.

$$Y_n = a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nn}X_n$$

Where:

Y_n = observed variables of brain drain of lecturers of technical education in colleges of education that emanate from the college system and those that emanate from outside the college system.

$a_1 - a_n$ = factor loadings or correlation coefficients.

X_1, X_2, \dots, X_n = unobserved underlying factors that enhance retention of male and female lecturers of technical education in teaching in colleges of education in Southeastern states Nigeria

Results

Research Question 1

What are the variables of brain drain of lecturers of technical education in colleges

of education emanating within and outside of the college system?

Table 1: Varimax Rotated Factors of Brain Drain of Lecturers of Technical Education in Colleges of Education emanating within the College System

SN	Observed / Variables	Factor 1: Promotion factor	Factor 2: welfare factor	Factor 3: Prestige/Respecting factor
A	Variables Emanating within the College System			
1	No much challenges in colleges of education	0.485	0.368	0.228
2	Allocation of excessive teaching loads to lecturers	0.227	0.120	0.107
3	Compulsory setting of examination questions with model answers	0.161	0.455	0.283
4	Compulsory moderation of examination questions set by lecturers	0.283	0.075	0.453
5	Unfair evaluation of lecturers performance by the management of the colleges	0.451	0.269	0.230
6	Inadequate training facilities for students' practical	0.365	0.215	0.050
7	Lack of sufficient pedagogical skills	-0.368	0.225	0.235
8	Lack of modern equipment and machines in the colleges	0.276	0.515	0.250
9	Lack of staff offices for lecturers	0.257	0.511	0.166
10	Students indiscipline to lecturers	0.224	0.206	0.541
11	Students lack of interest in the technical courses	0.053	0.252	0.104
12	Poor quality of facilities provided for teaching technical courses	0.175	0.466	0.289
13	Concentration on practical activities than class work	0.183	0.284	0.309
14	Delay in payment of normal allowances	0.268	0.485	0.185
15	Narrow chances of raising to top position	0.620	0.227	0.227

16	Use of quarries to threaten lecturers	0.435	0.441	0.341
17	Delay in the payment of promotion arrears	0.575	0.483	0.283
18	Lack of insurance policy cover for lecturers of technical education	0.269	0.451	0.051
19	Non professionalization of teaching in colleges of education	0.215	0.365	0.365
20	Delay in normal promotion of lecturers of technical education	0.425	0.468	0.368
21	Incommensurate salary with volume of work	0.215	0.376	0.676
22	Lack of commendation of outstanding lecturers in colleges of education	0.511	0.517	0.253
23	Wit-chanting lecturers of technical education during paper assessment	0.406	0.224	0.175
24	Poor electricity supply	0.252	0.053	0.183
25	Lack of respect for lecturers of technical education by other colleagues and school management	0.266	0.275	0.468

Table 2: Varimax Rotated Factors of Brain Drain of Lecturers of Technical Education in Colleges of Education emanating Outside of the College System

S/N	Observed/ Variables	Factor 1: Promotion factor	Factor 2: Welfare factor	Factor 3: Prestige/ Respecting factor
26	Bonuses paid to lecturers in universities	0.268	0.468	0.355
27	Better allowances paid by the universities	0.120	0.120	0.275
28	Respect and prestige accorded university lecturers by public	0.355	0.355	0.469
29	Opportunities available in the universities to pursue higher degrees	0.275	0.575	0.215
30	Better conditions of service offered by other universities	0.269	0.469	0.175
31	Higher salaries paid to employees in other organizations	0.215	0.215	0.183

32	Provision of loan facilities to employees in universities	0.225	0.385	0.268
33	Employment opportunities in other organizations	0.215	0.227	0.120
34	Opportunities for lecturers in the universities to become professors	0.516	0.241	0.355
35	Recognition given to universities as apex institutions	0.206	0.283	0.575

Tables 1 and 2 present varimax-rotated principal component factor analysis of Brain Drain of Lecturers of Technical Education in Colleges of Education emanating within and Outside of the College System. From the result presented, factor loading of less than 0.40 were discarded. The naming of each factor was equally adopted to group the variables into three major strategic factors as; promotional; welfare, and prestige/respecting. Promotional brain drain of lecturers of technical education in colleges of education emanating within and outside of the college system include: no much challenges in colleges of education (0.485), unfair evaluation of lecturers performance by the management of the colleges (0.451), narrow chances of raising to top position (0.620), use of quarries to threaten lecturers (0.435), delay in normal promotion of lecturers of technical education (0.425), lack of commendation of outstanding lecturers in colleges of education (0.511), wit chanting of lecturers of technical education during paper assessment (0.406) and opportunities for lecturers in the universities to become professors (0.516).

Under factor 2 (Welfare factor), the identified variables include: (0.455) compulsory setting of examination questions with model answers (0.515), lack of modern equipment and machines in the colleges (0.511), lack of staff offices for lecturers (0.466), poor quality of facilities provided for teaching technical courses (0.485), delay in payment of normal allowances (0.483), delay in the payment of promotion arrears (0.451), lack of insurance policy cover for lecturers of technical education (0.517), lack of commendation of outstanding lecturers in colleges of education (0.468), bonuses paid to lecturers in universities (0.57), opportunities available in the universities to pursue higher degrees and better conditions of service offered by other universities (0.469).

The variables of brain drain of lecturers of technical education in colleges of education under factor 3 (respect/prestige factor) include: compulsory moderation of examination questions set by lecturers (0.453), students indiscipline to lecturers (0.541), lack of respect for lecturers of technical education by other colleagues and school management (0.468), respect and prestige accorded university lecturers

by public (0.469) and recognition given to universities as apex institutions (0.575).

Research Question 2

What are the variables enhancing the retention of male and female lecturers of technical education in teaching in colleges of education in Southeastern states Nigeria?

Table 3: Varimax Rotated Variables Enhancing the Retention of Male and Female Lecturers of Technical Education in Teaching in Colleges of Education in Southeastern States, Nigeria

SN	Observed / Variables	Factor 1: Promotion factor	Factor 2: Teaching factor	Factor 3: Welfare. Factor
1	Regular leave and holidays in the school calendar	0.385	0.268	0.228
2	Having less workloads	0.227	0.210	0.107
3	The promotion requirement in colleges of education is cheaper	0.441	0.255	0.283
4	Less hustling and bustling in teaching	0.283	0.575	0.253
5	There are opportunities for private practices/businesses	0.251	0.269	0.230
6	There are no challenges in colleges of education	0.365	0.215	0.050
7	Opportunities for sponsorship for further studies come easily in colleges of education	0.368	0.225	0.435
8	Teaching in colleges of education is pensionable	0.276	0.515	0.250
9	In-service training opportunities	0.257	0.451	0.166
10	Less competition among staff of colleges of education	0.224	0.206	0.541
11	Very easy to make carrier in colleges of education	0.513	0.252	0.104
12	There is fat package for academic staff in colleges of education	0.175	0.266	0.589
13	There is functional association in colleges of education to fight for the interest of academic staff	0.183	0.284	0.399
14	Quick opportunity to get to administrative positions	0.671	0.212	0.291
15	Provision of good offices and accommodation for staff	0.210	0.213	0.211
16	Remuneration is adequate for a normal living	0.262	0.211	0.452
17	Promotion satisfaction	0.413	0.112	0.234

Table 3 presents varimax-rotated principal component factor analysis of variables enhancing the retention of male and female lecturers of technical education in

teaching in colleges of education in Southeastern states Nigeria. From the result presented, variables with factor loading of less than 0.40 were discarded.

The naming of each factor was equally adopted in this study to group the variables into three major strategic factors as; promotional, teaching/training and welfare. Promotion enhances the retention of male and female lecturers of technical education in teaching in colleges of education promotion wise in south eastern Nigeria include: the promotion requirements in colleges of education is cheaper (0.441), very easy to make carrier in colleges of education (0.513), quick opportunity to get to administrative positions (0.671), and promotion satisfaction (0.413).

Under factor 2 (teaching/training factor), the identified variables include: less hustling and bustling in teaching (0.575), teaching in colleges of education is pensionable (0.515) and in-service training opportunities (0.451) while the variables for enhancing the retention of male and female lecturers of technical education in teaching in colleges of education under factor 3 (welfare factor) include: less competition among staff of colleges of education (0.541), there is fat package for academic staff in colleges of education (0.589) and remuneration is adequate for a normal living (0.452).

Discussion of Results

This study found that the variables of brain drain of lecturers of technical education in colleges of education emanating within and outside of the college system can be categorized under promotional factor, welfare factor and prestige factor. The variables under these identified factors include: no much challenges in colleges of

education, compulsory setting of examination questions with model answers, lack of modern equipment and machines in the colleges, lack of staff offices for lecturers, narrow chances of raising to top position, delay in the payment of promotion arrears, lack of commendation of outstanding lecturers in colleges of education, better conditions of service offered by other universities, respect and prestige accorded university lecturers by public and opportunities for lecturers in the universities to become professors. The findings of this study on the variables of brain drain of lecturers of technical education in colleges of education emanating within and outside of the college system agreed with the findings of Adeagbo (2014) that teachers in secondary schools prefer to change from teaching to other lucrative profession because of some factors such as delay in payment of salaries, welfare and delay in promotion

The study found that the variables that enhance the retention of male and female lecturers of technical education in teaching in colleges of education in Southeastern states under promotional, teaching/training and welfare factors include: promotion requirement in colleges of education is cheaper, very easy to make carrier in colleges of education, quick opportunity to get to administrative positions, promotion satisfaction, teaching in colleges of education is pensionable, in-service training opportunities, less competition among staff of colleges of education, there is fat package for academic staff in colleges of education

and remuneration is adequate for a normal living.

The findings of the study also agreed with the opinion of Adelabu (2003) that payment of salaries of teachers is not regular and school environment is not conducive for active teaching and learning and facilities in most schools are dilapidated and inadequate. This could be the one of the reasons why teachers are leaving their jobs for another jobs. In a situation where the motivational initiatives that could be used to retain technical teachers on the job in colleges of education are provided for effective teaching and learning of vocational/technical subjects, and sponsoring technical teachers to workshops, trade fair, conferences, and summit in their areas of specialization, embarking on regular retraining of technical teachers, assign to technical teachers responsibilities and others could be put in place to retain technical teachers in post primary schools.

Conclusion

It was concluded from the findings of the study that variables of brain drain of lecturers of technical education in colleges of education emanating from promotion, welfare and prestige factors. Variables that emanate from promotion factor include no more challenges in colleges of education, unfair evaluation of lecturers' performance by the management of the colleges, use of quarries to threaten lecturers, delay in normal promotion of lecturers of technical education, lack of commendation of outstanding lecturers in

colleges of education and wit-chanting lecturers of technical education during paper assessment. It was also concluded that emanating variables from welfare factor include compulsory setting of examination questions with model answers, lack of modern equipment and machines in the colleges, lack of staff offices for lecturers and poor quality of facilities provided for teaching technical course. The emanating variables from prestige include compulsory moderation of examination of examination questions set by lecturers, lack of respect for lecturers of technical education by other colleagues and school management, respect and prestige accorded university lecturers by public.

Recommendations

The following recommendations were made based on the findings of the study:

1. The governments and school administrators should maintain a conducive and cooperative environment that could retain lecturers of Colleges of education for smooth running of their programmes
2. The school administrators with the help of governments should make the welfare of lecturers in colleges of education a priority to avoid them leaving for universities and other organisations.

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