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Effects of High–Stakes Examinations on the Teaching and Learning of Physics in Secondary Schools in Nigeria

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Abstract

The results of candidates in high-stakes examinations have significant consequences for schools and or students. Therefore in this study, the author examined the likely effects of high-stakes examinations on the teaching and learning of Physics in senior secondary schools in Nigeria. In this study the examinations that the author considers as high-stakes are specifically the ones that determine prospective candidate entry to tertiary institutions (Universities, Polytechnics, and Colleges of Education) in Nigeria. Thirty secondary school Physics teachers were randomly sampled from Ibadan Educational Zone I, Oyo state, Nigeria. In addition 862 (Boys = 513; Girls = 349) senior secondary school three students were sampled. These were the students being taught by these teachers. Two Forms (A and B) of Questionnaires, titled “High-stakes Examination and Teaching-Learning of Physics”, were used to collect data. The data collected were analysed using frequencies, percentages and Chi Squared. Results show that most of the students reported that when studying physics they try to understand the basic concepts, master the fundamental principles of Physics, memorize formulae and procedures, and practice old/past examination questions. Most of the students are anxious about SSCE and about half of the students are afraid of failure in SSCE. More males than females indicated high level of anxiety. Most of the teachers indicated that they use lecture method often in order to complete WAEC syllabus within the regulated time. Physics teachers seem to feel being under pressure to teach to the test. Physics teachers should adjust their teaching method so that students can master the fundamental principles of physics.

Keywords: High-stakes Examination, Test Washback, Physics Teaching-learning, Public Examining Bodies.

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INTRODUCTION

Worldwide, high-stakes examinations are very important to all stakeholders in the educational system including the teachers, students, parents, public examining bodies, and policy makers. High-stake examinations, besides gauging the quality of teaching and learning in schools, they also determine the future career of students. Researchers such as Smyth, Banks and Calvert in Aysel (2012) describe ‘high-stakes tests as standardized examinations, the results of which have significant consequences for schools and/or students. Heubert’s (2000) description was very similar to that of Smyth, Banks and Calvert (2011). To Heubert, high-stakes assessments are those used to make significant educational decisions about students, teachers, schools or school districts.

In Nigeria, examples of high-stakes examinations are specifically the ones whose results thereof determine candidates’ entry into tertiary institutions (Universities, Polytechnics, Monotechnics, and Colleges of Education). Examples of such examinations are the ones conducted by the West African Examination Council (WAEC), National Examination Council (NECO) for final year students of senior secondary schools and National Board for Technical and Business Education (NABTEB) for final year students of technical schools. In Nigeria, the examination being conducted by these public examining bodies is known as Senior School Certificate Examination (SSCE). It is a standardized examination in which candidates must pass at minimum of credit level in at least five subjects including English Language.

However, there are other different types of high-stakes examinations. For example, there is an assessment system at the junior secondary school level, which determines entry to senior secondary school level and technical schools. This examination is usually prepared and conducted by the State Ministry of Education. Also there is Unified Tertiary Matriculation Examinations (UTME) being conducted by the Joint Admissions and Matriculation Board for candidates who wish to gain admission into Universities, Polytechnics and Colleges of Education. It is assumed that those who wish to take UTME must have had the requisite passes in the SSCE.

In Nigeria, a lot of importance is attached to level of success of candidates in the SSCE being conducted by WAEC and NECO. For example, proprietors of private secondary schools attach promotion and increase in salary of teachers to number of students who do well in the SSCE being conducted by WAEC and NECO. Even such schools flaunt their success for all to see. This is because parents will likely send their children to schools which are known to have high success rate in Senior School Certificate Examination (SSSCE). Also State Governments that control and manage public secondary schools assess the quality of the school system and teachers by the number of students who have five credits and above in the examination. In addition, the Electoral Act and the 1999 Constitution (As Amended in 2004) of the Federal Republic of Nigeria (Section 65 subsection 2a) requires that all candidates for elective position into legislative and executive arm of government shall be educated up to school certificate level. That a candidate shall be educated up to school certificate level has been interpreted to mean that he or she must have a minimum of five passes/credits in five Ordinary level papers including English language. This further underscores the importance of SSCE being conducted by the examining bodies such as WAEC, NECO and NABTEB.

The importance attached to standardized tests is not peculiar to Nigeria. For example, in the United States of America, the ‘No Child left Behind’ policy means that standardized examinations play an important role for schools to get funding and for teachers to get or keep a

job (Dee & Jacob, 2011). In England, testing begins at the ages of seven; these tests are called the Standard Attainment Tasks 2 and Tests (SATs) (Gregory & Clarke, 2003). The purpose of the SATs is to show if students have reached the National Curriculum learning targets. School funding can be affected by the results of SATs. All of these examinations are high-stakes examinations for schools and/or for students.

Because of the importance attached to success rate in the high-stakes examinations, teachers often struggle to meet the demands of proprietors, government and parents. That is they struggle so that their students do well in the examinations. Students on the other hand struggle to satisfy their parents and guardians and also struggle to meet the requirements for admissions into tertiary institutions. Because of this, there can be a 'washback effect' on teaching and learning. That is "shaping both what is taught and how it is taught" and often changing the frame in terms of what counts as worthwhile knowledge (Conway & Sloane, 2005, p. 28). Washback or backwash, also known as measurement-driven instruction (Cheng, 2000), is a common term in applied linguistics referring to the influence of testing on teaching and learning, which is a prevailing phenomenon in education. In this study, the major focus is assessment of such washback effect on the teaching and learning of Physics among senior secondary school physics teachers and students.

The importance of Physics in career aspiration of students in science-based subjects cannot be overemphasized. This is because Physics is required for nearly all science-based courses in the University, Polytechnics and Colleges of Education. For examples, in all Universities in Nigeria courses such as Basic Medical Sciences (Medicine, Dentistry, Nursing, Pharmacy, and Biochemistry), all disciplines in Engineering, Mathematics, and Chemistry require at least a credit pass in Physics. It means therefore that any prospective candidate who fails to have a credit pass in Physics may not have the opportunity to actualize his or her dream to make a career in science-based course.

Many studies have been carried out on the effects of high-stakes examinations on the teaching and learning of mathematics (Aysel, 2012; Phelps, 2001; Stetcher, 2002) and English Language (Cheng & Curtis, 2004; Wanatabe, 2004, Yildirim, 2010), and there is a considerable amount of evidence to suggest that washback effects do exist. However, some studies did not find appreciable results to confirm the backwash effect in English and mathematics. This suggests that more researches are needed. There is dearth of literature on washback effect of high-stakes examination in the area of Physics. In the area of Mathematics, the results of survey research conducted by Stecher (in Aysel, 2012) on the high- stakes testing on classroom practices in the United States of America showed both positive and negative potential effects on teaching methods and on students' learning.

The positive potential effects on students were that high-stakes testing provides students with better information about their own knowledge and skills, motivates students to work harder in school, sends clearer signals to students about what to study, and rewards students' efforts. The negative potential effects on students were that tests may discourage them from trying, make students more competitive, and influence students not to do higher grades and school assessments (Stecher, 2002, p. 86). Some of the potential effects on teachers mentioned were that tests may motivate teachers to work harder, help them to diagnose student difficulties, encourage teachers to focus more on specific test subjects rather than on curriculum standards, and guide teachers to participate in inappropriate test preparation.

In addition to the findings of Stetcher (2002) in the area of mathematics, Phelps (2001) chose six out of the nine top-performing countries on the Trends in International Mathematics

and Science Study (TIMSS) eight-grade mathematics test and compared how they controlled their curriculum and instruction systems. Phelps found that most of high-achieving countries had more than one high-stakes examination. He found that a country's performance on the TIMSS study was positively correlated with the number of decision points in their education system, and this was true even when GDP was controlled for. This implies that the more the number of high-stakes examinations a country makes its school take, the better the performance of the children in the TIMSS. This suggests that high-stakes examination prepare the students for the TIMSS.

In their study Abrams, Pedulla and Madaus (2003) conducted a survey in which teachers were asked to rate their level of agreement with statements concerning their state testing programs, classroom practices, and student learning. The states were classified according to the consequences of test results for districts, teachers and schools; and the consequences of test results for students. There were three levels of test result implications: These were high-stakes moderate-stakes and low-stakes. In their paper, Abrams, Pedulla and Madaus (2003) made a comparison between states that had high-stakes consequences for all of districts, teachers, and schools and for students, and states that had low or moderate stakes consequences for districts, schools, and teachers and low stakes consequences for students. One of their results was that 43% of teachers in high-stakes states, compared to 17% of teachers in low-stakes states, indicated that they had increased the time spent on tested material a great deal because of the state examination. This was at the expense of material that was not tested. Teachers in both high-stakes (76%) and low-stakes (63%) states reported that the state tests led them to teach in ways contrary to their ideas of good practice. These teachers were likely to use old examination questions or commercially produced revision materials to prepare students for tests. Teachers in high-stake states reported that they felt under pressure from their employers (and from parents) to raise students' scores on state tests. However, 57% of teachers in high-stake states (as opposed to 37% in low-stake states) felt that these tests should be used to decide if students graduate from high school. Teachers had some bad things to say about tests but they still wanted to use them. Abrams et al. (2003) found that 35% of teachers in high-stakes states and 20% of teachers in low-stakes states strongly agreed that students were very anxious because of the state examination.

Madaus (in Aysel, 2012) wrote a summary of many of the effects of high-stakes examinations. Some of the advantages he mentioned are: high-stakes examinations are objective; they provide national homogeneity in education and they encourage students to focus more on studying. According to him some of disadvantages are: they tend to encourage students to pay more attention to material covered in examinations and as a consequence of that many worthwhile educational objectives and experiences are not addressed in the teaching and learning of the subject; preparation for the test overemphasizes rote-memorization by students and drill-and-practice as a teaching method; teaching to the test can encourage students to perform without higher levels of knowledge; they are carried out in a very limited time; they can be stressful and they can negatively affect students' self-concept and self-esteem; they can make some students be anxious and unnecessarily fearful.

According to Sarason, Davison, Waite, Lighthall and Ruebush (1960) we live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test performance. Although the observation was made about sixty years ago what is striking is that it could so easily read for the present-day climate faced by schoolchildren the Nigeria and indeed elsewhere in the world. An examination of the literature reveals a large number of studies dealing with the topic of test anxiety. These have been conducted with a variety of frames of

reference ranging from construct validation studies to developmental studies to factor analysis and desensitization theory studies.

Earlier studies as reported in Educational Testing Services documents (such as ETS, 1968) converge to show that multidimensional scaling of test situations reflects that test can differ in their tension – (anxiety) arousing properties as a function of (a) the subjective importance that examinees/testees attach to the test and (b) how well prepared the examinees feel for the test. Anxiety is thought to be greater on a subjectively important test than an unimportant test. It follows therefore that in high-stakes examination such as SSCE, it is highly probable that some candidates will exhibit some form of anxiety.

In the 20th century, psychologists (Spielberger & Vagg, 1995) view test anxiety construct as a situation-specific trait accounting for individual differences in the extent to which people find examinations threatening. Within this general conceptualisation there are broad and narrow definitions. Narrow definitions focus on fear of failure (emphasising how performance is judged), or evaluation anxiety (emphasising how test anxiety can be located with other, so called, subclinical anxieties including sports performance, public speaking, and so forth). These emphasise a social dimension where the performance is judged by others. Spielberger's (1966) notion of 'ego threat' offers a potentially broader definition by including threats to self-esteem and the consequences of performance success or failure, in addition to potential derogatory judgment by others. Zeidner (1998) outlines three components of test anxiety:

- Cognitive: the negative thoughts and depreciating self-statements that occur during assessments (e.g. 'If I fail this exam my whole life is a failure') and the performance-inhibiting difficulties that may arise from anxiety (e.g. recalling facts and difficulty in reading and understanding questions);
- Affective: the person's appraisal of their physiological state (such as tension, tight muscles and trembling);
- Behavioural: poor study skills, avoidance and procrastination of work.

In this study, one of the objectives was to find the extent to which students are anxious about high-stakes examination such as SSCE in Nigeria.

As explained in the preceding sections, there are many studies in the area of language and mathematics. More importantly these studies were conducted mostly in the Western Europe such as United Kingdom (Saville & Hawkey, 2004) and Greece (Tsayari, 2009) and in Asia such as China (Qi, 2005; Chen & He, 2003). Ayse (2011) study conducted in Turkey was in the area of Mathematics. There is, however, dearth of empirical studies in the area of Physics and importantly there is dearth of literature on effect of high-stakes examinations on teaching and learning in the sub-Saharan Africa and especially in Nigeria. Studies such as being conducted by this author will provide teachers teaching Physics in the terminal classes the opportunity to evaluate their teaching behavior and adjust appropriately towards assisting students to acquire knowledge rather than focusing on passing examinations only. Physics students will also be able to adjust their learning style. Guidance and Counsellors will have empirical information on the need to adequately guide and counsel final year students against being anxious and the need to develop good study habits.

In this study, the author sought to determine the extent to which SSCE affect teaching of Physics by the teachers (such as teaching method being adopted, conduct of extra lessons and quantity of teaching) and learning of Physics by the students (study methods being used and

anxiety level). Specifically, the author answered two questions and tested one hypothesis. These are:

Research Questions

- What are the influences of SSCE (high-stakes examination) on the teaching of physics by the Physics teachers?
- What are the influences of SSCE (high-stakes examination) on the learning of physics by the students?

Hypothesis

- Gender of the student does not affect his or her level of anxiety about SSCE.

METHODOLOGY

Participants

Thirty senior secondary schools were sampled in Ibadan Educational Zone I, Oyo State, Nigeria. From each school, Physics teacher teaching the terminal class (that is senior secondary school Three SSS 3) in each school was sampled. Thus in all thirty physics teachers were sampled. Among these Physics teachers 21 (70 %) were men and 9 (30 %) were women. The age range of the teachers was between 29 and 54. The mean age of the teachers was 33years (SD =4.85). All the teachers sampled had at least First Degree.

In addition all the SSS 3 Physics students in each of the school sampled participated in the study. In all, the student sample size was 862. Among these 862 students sampled, 513 (59.5 %) were boys and 349 (40.5 %) were girls. The ages of the students ranged from 16 and 18. The average age was 16.8 (SD = 1.1)

Materials

Two forms of Questionnaires were used for collection of data. These were titled: “High-stakes Examination and Teaching-Learning of Physics – Form A” (HETLP Form A) and “High-stakes Examination and Teaching-Learning of Physics – Form B (HETLP Form B)”. The HETLP Form A was administered to Physics teachers while HETLP Form B was administered to students. The HELTP Form ‘A’ consisted of two sections ‘A’ and ‘B’. Section ‘A’ sought information on Demographics, while section B consisted of seven items (See Appendix I). The reliability of the HELTP Form ‘A’ was determined using test-retest method. The reliability index was 0.79. The HELTP Form ‘B’ consisted of two sections ‘A’ and ‘B’. Section ‘A’ sought information on Demographics, while section B consisted of eight items (See Appendix II). The reliability of the HELTP Form ‘A’ was determined using test-retest method. The reliability index was 0.83.

Method of Data Collection

For this study, the author engaged the services of six of his In-service M.Ed. students and one doctoral student in the Institute of Education, University of Ibadan to administer the two forms of

questionnaires. The M.Ed. students were offering EVE 737-Statistics Method. On the first visit HELTP Form A was administered to the Physics Teachers and on the second occasion, HELTP was administered to the students. The average response time for the HELTP Form A was 18 minutes while for the Form B it was 22 minutes. The administration of the two Forms of questionnaires took place during the 2017 April/May SSCE being conducted by WAEC. Each Form of the questionnaires were administered and collected immediately.

Method of Data Analysis

The data collected were analysed using frequencies, percentages. For the differences between boys and girls level of anxiety Chi Square Statistics were adopted and the level of significance was set at $p < 0.05$.

RESULTS

The results are hereby presented in the order that the research questions were raised.

Research Question One: What are the influences of SSCE (high-stakes examination) on the teaching of physics by the Physics Teachers?

Table 1: Teachers Responses

		Response		
		Yes	No	Total
1	Does SSCE being conducted by the WAEC affect the way you teach Physics	26 (86.7)	4 (13.3)	30 (100.0)
2	If Yes, In what direction does SSCE being conducted by the WAEC affect the way you teach Physics?			
	a) Puts me under pressure to cover all the topics in the syllabus	23 (88.5)	3 (11.5)	26 (100.0)
	b) Encourages me to concentrate on areas/questions that usually come out in SSCE	21 (80.8)	5 (19.2)	26 (100.0)
	c) Encourages me to practice past/old questions with my students	24 (92.3)	2 (7.7)	26 (100.0)
2a	What method of teaching do you usually adopt in order to cover the syllabus?			
	a) Lecture method	23 (76.7)	7 (23.3)	30 (100.0)
	b) Demonstration	12 (40.0)	18 (60.0)	30 (100.0)
	c) Discussion	5 (16.7)	25 (83.3)	30 (100.0)
	d) Peer Tutoring	0 (0.0)	30 (100)	30 (100.0)
	e) Laboratory practical	19(63.3)	11 (26.7)	

The majority (86.7%) of the Physics teachers sampled were of the opinion that the SSCE (high-stakes examination) influenced the way they teach. More importantly majority of the teachers mentioned more negative effects than positive effects. Some of the teachers (80.2%) indicated that they had to teach to the examination and covered mostly examination materials. Some teachers (88.5 %) felt that the examination gave their teaching structure and ensured that all topics are covered. The teaching method being applied by most of the Physics teachers was lecture method. Apparently this method was adopted because the teachers were under pressure to complete the WAEC syllabus within the stipulated time.

As table 2 shows most of the teachers (96.7%) sampled responded that they teach contents that are directly related to the examination. In addition, some teachers responded that they trained their students for the examination. This they do by practicing past and old questions that were set by WAEC in previous examinations. As table 2 shows that 29 out of the 30 teachers sampled indicated this. In Nigeria students require at least a credit pass in Physics and in other four subjects in SSCE being conducted by WAEC and NECO to gain admission into tertiary institutions to read science-based courses. This could possibly be one reason why physics teachers seem to place so much emphasis on the SSCE.

Table 2: Teacher Response on Extent of Practice of Past Questions

Statements	Response		
	LE	SE	NA
To what extent do you practice past/old questions with your students?	24 (80.0)	5 (16.7)	1 (3.3)

Some studies found results that are quite similar to the results of my study. For example, Lyons et al. (2003) and Hourigan and O'Donoghue (2006), whose works were in the area of backwash effect of high stakes examination mentioned that the culture in Irish mathematics classes was 'teaching to the examination'. In corroborating this, Au (2007) mentioned that one effect of a high-stakes examination system is that emphasis may be placed on teaching content directly related to the examination instead of on general subject knowledge.

Research Question Two: What are the influences of SSCE (high-stakes examination) on the learning of physics by the students?

Table 3: Students responses to influence of High-stakes Exams on Learning

Statements	Response	
	Yes	No
1 Does SSCE being conducted by the WAEC affect the way you learn Physics in SS Three?	862 (100.0)	0 (0.0)
2 If Yes, In what direction does SSCE being conducted by the WAEC affect the way you learn Physics?		
a) Encourages me to read all the topics in the syllabus	490 (56.8)	372 (43.2)
b) Encourages me to me to practice past/old questions with my colleagues	764 (88.6)	98 (11.4)
c) Encourages me to read to pass	742 (86.1)	120 (13.9)
d) Encourages me to attend class more regularly	757 (87.8)	105 (12.2)
e) Encourages me to concentrate more on areas that usually	558 (67.8)	304 (32.2)

	come out in SSCE		
	f) Encourages me to understand Physics concepts	720 (83.6)	142 (16.4)
3	What method of teaching do you use to learn Physics?		
	a) Practice past/old questions	739 (85.7)	123 (14.3)
	b) Practice questions from textbooks	668 (79.1)	180 (20.9)
	c) Memorization of concepts in Physics	598 (69.4)	264 (30.6)
	d) Reading Textbooks	720 (83.5)	142 (16.5)
4	Are you afraid of failure in SSCE?	435 (50.5)	427 (49.5)

As table 3 shows all the students indicated that SSCE being conducted by WAEC has influence on the way they learn physics. The effects of these high-stake examinations are positive and negative. In the questionnaire Form B, the students were asked how they studied physics. The majority of the students indicated that they tried to understand the fundamental principles and basic concepts of Physics and attend classes more regularly. The negative aspect of the effects is that they encourage students to memorize formulae and procedures. The high-stakes examinations make students to engage in practicing old and past questions that were set by WAEC.

The students were asked the extent to which they practice old/past questions. As table 4 shows 393 (45.6%) indicated to “a large extent”, 436 (50.6) indicated to “some extent” while only 33 (3.8) indicated “not at all”. This result implies that practicing past and old questions is important to most of the physics students.

Table 4: Students’ Response on Extent of Practice of Past Questions

Statements	Response		
	LE	SE	NA
To what extent do you practice past/old questions?	393(45.6)	436(50.6)	33(3.8)

In order to assess the level of anxiety of the students about SSCE, the students were asked if they are afraid of failure in SSCE. In their responses 535 (62.1%) indicated that they are of failure in the SSCE. In their responses to their level of anxiety, as table 5 shows, 264 (30.6%) indicated to “a high extent”, 215 (24.9%) indicated to “a moderate extent”, 56 (6.4%) indicated to “a low extent” while 327 (37.9%) indicated “not at all”

Table 5: Students Response on Anxiety about SSCE

Statements	Response			
	HE	ME	LE	NA
To what extent are you anxious about SSCE?	264 (30.6)	215 (24.9)	56 (6.4)	327(37.9)

In order to assess which group of student was more anxious the students’ responses were subjected to Chi Square analysis on the male-female dichotomy. This led to research question three.

Hypothesis: Gender of the student does not affect level of anxiety about SSCE

To test this hypothesis, Chi Square was used. Table 6 presents the results of the analysis.

Table 6: Chi Squared Analysis of Gender Influence on Anxiety about SSCE

Statements		Response				Total	χ^2
		HE	ME	LE	NA		
To what extent are you anxious about SSCE?	Boys	163(31.8)	105(20.5.)	42(16.2)	113(22.0)	513(100.0)	42.79*
	Girls	101(28.9)	110(31.5)	14(4.01)	134(38.4)	349(100.0)	
Total		264	215	56	327	862(100.0)	

The result shows that more boys than girls indicated high level of anxiety. The table also shows that more girls indicated not at all than boys. The observed differences in the boys and girls were statistically significant χ^2 (N = 662, Df = 9) = 42.79, $p < 0.05$.

DISCUSSION

In the introductory aspect of this report, the positive and negative effects of high-stakes examinations were summarised. Research has found that high-stakes examinations among others encourage students and teachers to pay more attention to material covered in examinations (and as a consequence many worthwhile educational objectives and experiences may not be addressed in the teaching and learning of the subject) (Stecher, 2002; Koretz et al., 2001; Abrams et al., 2010; Au, 2007), are stressful and they negatively affect students' self-concept and self-esteem; (Madaus, 1991; Abrams et al., 2010; Leonard and Davey, 2001), may lead to teaching to the test (Shepard, 2002; Au, 2007) may encourage students to perform without higher levels of knowledge due to teaching to the test (Madaus, 1991; Kohn, 2000, Linn, 2000), may lead to teachers adopting certain teaching methods (sometimes contrary to their own belief on what constitutes good practice) which are not useful for students (Au, 2007; Johnston & McClune, 2000). Kelleghan et al. (1996) mentioned that students motivated by external examinations are likely to have performance goals and not learning goals. Alkharusi (2008) studied classroom assessment that was focused on grades, and not on learning, and stated that these examinations encouraged students to have performance rather than learning goals. The findings of my study are in line with that of past researchers cited in this work. Most of the students in my study seemed to be focused on doing well on the examinations. At the same time, many of them wanted to understand the ideas of physics.

On the assessment of the anxiety level of the students, results show that majority of the students were anxious about SSCE. Furthermore more boys than girls indicated high level of anxiety. These findings in my study might not be unconnected with the value which boys in science class normally attach to success in physics. My experience as physics teacher shows that boys generally see physics as domain of boys and as such are always eager to pass, at least at the credit level. This is because a minimum credit in physics is needed to study science based course such as engineering which is regarded as male dominated profession. Research (Putwain, 2008) shows that many highly test-anxious students make more effort than low test-anxious students as a compensatory mechanism. Therefore the results of this study confirm that an important

variable that is likely to affect anxiety is the subjective importance of the test. The senior school certificate examination is a high-stakes examination upon which so many decisions are usually taken, therefore it is highly probable that it can generate tension among students are preparing for the exams.

CONCLUSION AND RECOMMENDATIONS

The results of this study have implications on teaching and learning of physics in senior secondary schools. The results of this study suggests that Physics teachers in the terminal classes need to evaluate their teaching behavior and adjust appropriately towards assisting students to acquire knowledge rather than focusing on passing examinations only. Findings of this study also suggest that Physics students should endeavour to learn the fundamental principles and basic concepts of physics rather than just concentrating on passing the SSCE. School Guidance and counsellors the need to adequately guide and counsel final year students against being anxious and the need to develop good study habits.

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APPENDIX 1
**HIGH-STAKES EXAMINATIONS AND TEACHING-LEARNING OF PHYSICS
 FORM A**

Introduction

This questionnaire was developed to assess the effects high-stakes examination such as Senior School Certificate Examination (SSCE) being conducted by the West African Examination Council and National Examination Council; have on the quality and quantity teaching and learning of Physics in secondary school. Please be very honest. The responses will be used for academic work only. However, results will help in improving teaching-learning of Physics as well as assessment procedures in Nigeria

Section A: Demographics

- 1) Age (in years) as at 1st July, 2017.....
- 2) Highest Qualification.....
- 3) Teaching Experience (in years) as at 1st July, 2017.....

Section B: Statements

To each statement, there are options. Place a tick in the space that reflects you.

1. In what direction does SSCE being conducted by the WAEC affect the way you teach Physics? You can tick as many as applied to you.

-
- a) Encourages me to do extra lessons for my students: Yes..... No.....
 - b) Encourages me to cover every topic in the syllabus: Yes..... No.....
 - c) Encourages me to practice past/old questions with my students: Yes.....No.....
 - d) Puts me under pressure to cover all the topics in the syllabus: Yes.....No.....
 - e) Encourages me to counsel my students to read their books: Yes..... No.....
 - f) Encourages me to concentrate on areas/questions that usually come out in SSCE?
Yes.... No...
2. To what extent do you practice past/old questions with your students? Place a tick in the one that applies to you
- a) To a large Extent (more than two times a week).....
 - b) To some Extent (once or twice a week).....
 - c) Not all (None each week).....
3. How many topics were you expected to cover before SSCE?.....
4. How many topics were you able to cover before SSCE?.....
5. Do you think the quality of Physics you taught is enough for the students to pass SSCE?
Yes.....No.....
6. Do you think the quantity of topics you taught is enough for the students to pass SSCE
Yes.....No.....
7. What method of teaching do you usually adopt in order to cover the syllabus?
- a) Lecture method
 - b) Demonstration
 - c) Discussion
 - d) Peer Tutoring
 - e) Laboratory practical

APPENDIX 2
**HIGH-STAKES EXAMINATIONS AND TEACHING-LEARNING OF PHYSICS
 FORM B**

Introduction

This questionnaire was developed to assess the effects high-stakes examination such as Senior School Certificate Examination (SSCE), being conducted by the West African Examination Council and National Examination Council have on the quality and quantity teaching and learning of Physics in secondary school. Please be very honest. The responses will be used for academic work only. However, results will help in improving teaching-learning of Physics as well as assessment procedures in Nigeria

Section A: Demographics

- 4) Age (in years) as at 1st July, 2017.....
- 5) Gender: Male.....Female.....

Section B: Statements

To each statement, there are options. Place a tick in the space that reflects you.

8. In what ways does SSCE being conducted by the WAEC affect the way you learn Physics? You can tick as many as applied to you.
 - g) Encourages me to read all the topics in the syllabus: Yes..... No.....
 - h) Encourages me to practice past/old questions with my colleagues: Yes.....No.....
 - i) Encourages me to read to pass: Yes.....No.....
 - j) Encourages me to attend class more regularly: Yes..... No.....
 - k) Encourages me to concentrate on areas that usual come out in SSCE? Yes.... No...
9. To what extent do you practice past/old questions? Place a tick
 - d) To a large Extent (more than two times a week).....
 - e) To some Extent (once or twice a week).....
 - f) Not all (None each week).....
10. How many topics were you expected to cover before SSCE?.....
11. How many topics were you able to cover before SSCE?.....
12. To what extent were you anxious about SSCE?
 - a) High Extent.....
 - b) Moderate Extent.....
 - c) Low Extent.....
 - d) Not at all.....
13. What method do you use to learn Physics? Tick all that apply to you
 - a) Practicing past/old questions Yes..... No.....
 - b) Practicing questions from textbooks: Yes.....No.....
 - c) Memorization of concepts in Physics: Yes.....No.....
 - d) Reading Textbooks: Yes.....No.....
14. Are you afraid of failure in SSCE? Yes.....No.....



Students' Perceptions of the Mini-Enterprise in Botswana Junior Secondary Schools

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Abstract

This paper presents the findings of a study on the perceptions of junior secondary school students in Botswana on the effectiveness of the mini enterprise project carried out in schools in equipping them with business, management and entrepreneurial skills. Students' perceptions were evaluated using a qualitative approach which involved the use of focus group interviews of Form 3 students in 3 junior secondary schools in Gaborone, the capital. The findings of the study suggest that despite experiencing administrative, financial and operational problems, overall, students benefit through the acquisitions of invaluable business skills such as creativity, market research, risk-taking, financial planning, problem-solving, and, running and operating a micro business.

Keywords: Business Education, Business Studies, Entrepreneurship, Entrepreneurship Education, Entrepreneurial Skills, Attitudes, Mini-enterprise Approach, Mini-companies, Mini-enterprise Projects.

Reference to this paper should be made as follows:

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INTRODUCTION

At junior secondary school level in Botswana, Business Studies is informed by the National Policy on Education of 1977, Revised National Policy on Education of 1994 and the Curriculum Blueprint: Ten Years Basic Education Programme of 1995. These policy documents called for the establishment of an education system that will prepare learners for the necessary skills needed to function in the 21st century and the needs of an economy that seeks to diversify from agriculture and mining. Among their major aims, the curriculum planners envisioned an education system that prepares the youth for the world of work and further education. To achieve this, they called for the vocationalization of academic subjects and the introduction of practical subjects which included, among others, Business Studies, in the existing Botswana junior secondary education curriculum. Students taking Business Studies at this level have the option of specializing in either Commerce and Accounting/Book-keeping or Commerce and Office Procedures. Also, these documents recommend constructivist pedagogical approaches that are action-oriented and learner-centered (Republic of Botswana, 1977; Republic of Botswana, 1994; Republic of Botswana, 1995). Thus the mini enterprise project undertaken by all Business Studies students at junior secondary school is congruent with the recommended teaching methods and envisioned outcomes of these foundational documents.

The mini-enterprise approach is one of the widely used methodologies in Botswana's junior secondary business subjects with the mini enterprise project contributing roughly 40% of the teaching time in the three years of study (Lauglo, cited in Sithole 2012). Business Studies is perceived as a practical subject, meant to impart students with skills necessary for them to be either self-employed or future employees (Fuller & Snyder 1991; Thetsane & Matsela 2014). The mini-enterprise projects therefore serve to bring about the vocational element to impart learners with practical business skills, balancing out business education from being too academic and teacher-centred in its teaching (Thetsane & Matsela, 2014).

According to Sithole (2010), some of the benefits of mini-enterprise methodology include equipping learners with business, management and personal entrepreneurial skills. He further argues that learners taking part in the mini-enterprise learn how to set up and operate new business ventures. The mini-enterprise approach is the embodiment of "education through enterprise" par excellence. It exposes learners to practical skill of operating a business such as carrying out market research, advertising and selling of products and/or services. They also learn about recording business transactions, processing and storing business information, and the appreciation of managerial functions of various departments in a business (Swartland, 2008; Sithole, 2010). When running the mini companies, students assume the roles of different functional managers in an organization which gives them an insight of how to run businesses. Students who participate in entrepreneurial activities also develop skills such as risk taking, creativity and innovation, planning and the ability to manage projects to achieve set goals (European Commission, cited in Quesel, Moeser & Burren 2015).

The inclusion of entrepreneurship education at secondary education has sparked debates about its effectiveness and benefits among scholars. According to Lope Pihie and Bagheri (2010) the debate emanates from questioning the ability and maturity of students at this age to grasp the intricacies and hurdles associated with the running of a business. This doubt about the maturity of students in junior secondary school seems plausible. In a study that focused on pedagogical challenges faced Business Education teachers, Thetsane and Matsela (2014) found that 61% of teachers in Lesotho (a country with a comparable education system to Botswana) were of the

impression that students in this age group lack maturity and mental readiness to operate school-based mini companies. The teachers submitted that students were mostly excited about businesses that sell food items they could eat, and not business knowledge and skills they are supposed to get from running the mini-enterprise. These findings corroborated an earlier study by Sithole and Lumadi (2012), which focused on the pedagogical challenges facing business subjects' teachers in Botswana. The duo found that junior secondary school students shy away from projects that do not entail any food-related products. They therefore submitted that learners at this level of education may be lacking the maturity to come up with viable business ideas, carry out meaningful market research and other activities related to setting up a new venture. They however argue that even with such challenges, introducing learners to entrepreneurship at an early age is still desirable.

Proponents of entrepreneurship education at secondary level, however, argue that students should be prepared for careers at adolescence; they are still malleable and as such, traits and attitudes of entrepreneurship can be easily developed than at a more older age (Oosterbeek et al. 2010); students also show interest in these programmes; and they are less risk-averse and more creative, traits which are important for one to be successful as an entrepreneur. It therefore becomes more beneficial for these opportunities to be exploited and nurtured when students are still at middle school or high school (Lope Pihie & Bagheri, 2010). In addition to the potential to develop an entrepreneurial mindset among learners, the mini-enterprise is a powerful pedagogical approach capable of delivering a wide range of learning outcomes (Williamson, 1989).

Rationale of the study

Regardless of all the purported benefits and limitations of the mini-enterprise, there is need to capture students' experiences about how it is administered, benefits derived from participation and challenges they faced during the mini-enterprise projects. As the first study of this nature in Botswana, the findings of this study will communicate to teachers, policy makers and teacher educators students' perceptions about its effectiveness. It will hopefully highlight practices that make the experiences a success and worthwhile for learners so that they can inform existing practices. Highlighted problems make it possible to think of possible solutions to make the mini-enterprise better through recommendations.

METHODOLOGY

The study took a qualitative approach with focus group interviews of Form 3 (junior secondary school final year) students in schools around Gaborone. The researchers interviewed 6 groups of students, with each group not exceeding 10 students. The participants were purposively sampled based on the fact that they were doing Business Studies class, had participated in the mini-enterprise project, and belonged to teams or groups that worked together in the projects. It is worth noting that in some cases mini-enterprise groups were far less than ten, and in such instances different teams were combined to make a focus group of ten students. The benefit of this was that it increased the breadth of experiences by pooling together different mini-enterprise teams into one. The focus group approach was adopted because the current study was influenced by an earlier study in Wales by Williamson (1989) which used group interviews of learners. In addition, a focus study is "particularly useful for exploring people's knowledge and experiences

and can be used to examine not only what people think but how they think and why they think that way” (Kitzinger, 1995, p. 299). It is also easy to implement since students run enterprises in small groups, as such easy to administer and capture their experiences. The homogeneity and familiarity among group members is likely to create a relaxed atmosphere where respondents can freely express themselves and they can also correct one another in the case of contradictions (Kitzinger, 1995).

For ethical considerations, we as researchers, communicated to and assured participants of anonymity and confidentiality. Their names will not be revealed and the groups will be labeled randomly using letters and figures. The collected data were used solely for purposes of the study. Permission was sought, first from the Ministry of Education and Skills Development and from school heads of sampled schools to interview learners. Learners were also informed that they had the right to not participate in the study and that they were free to discontinue at any time should they felt the need to do so.

Limitations of the Study

Although there are many positives about this study, it is also in order to note a few limitations that come with it. The study was qualitative and therefore used a relatively small sample size in its focus groups. Whereas this is in order as pertaining to the nature of qualitative studies, it is also a limiting factor in that the findings cannot be generalized to the larger student population outside Gaborone and the whole country. The learning that has occurred as a result of participation in the mini-enterprise is not so much measurable, thus necessitating a larger scale quantitative study with a pre-test and post-test to actually determine the entrepreneurial learning gains that occur as a result of participation in the study. Another limitation pertains to some of the participants’ responses. On a few instances, some of the students gave their responses in the local language, *Setswana*, so such responses were translated to English. Also, researchers had to undertake data cleaning in some cases to make sure participants responses are clear and comprehensible without adulterating the essence of what the respondents sought to communicate.

Research Questions

This study was guided by the following research questions:

1. How is the mini-enterprise administered in junior secondary schools?
2. What are the perceived benefits learners derive from the mini-enterprise approach?
3. What are the challenges faced by learners in setting up and operating mini-enterprises?

RESULTS

Profile of Respondents

A total of 60 students from 3 junior secondary schools in Gaborone (School A, School B and School C) participated in the study. 20 students in each school formed 2 focus groups of 10 students each and consisted of a fair distribution of boys and girls. The interviewees in each

focus group did not necessarily represent a business team but were randomly pooled from different mini-enterprise teams or groups. This way experiences from different groups or businesses were represented in the study.

School	Group	Subject area	Form	No. in group
School A	G1	Commerce and Office Procedures	3	10
	G2	Commerce and Accounting	3	10
School B	G3	Commerce and Office Procedures	3	10
	G4	Commerce and Accounting	3	10
School C	G5	Commerce and Office Procedures	3	10
	G6	Commerce and Accounting	3	10

The Administration of Mini-Enterprise Projects in Junior Secondary Schools

In all 3 schools, students worked collaboratively on the ME project in groups whose sizes ranged between 4 and 11 members. Evidence gathered showed that it was the teachers who assigned students to groups using random or purposeful assignment procedures. The following were some of the comments proffered by respondents on group formation and dynamics:

G1: “Group members were selected randomly by the teacher. There were 10 members in the group and some members were not productive and preferred to work independently”.

G3: “Groups were formed through random assignment. We worked well and cooperatively because we had been together in the same classes since Form 1”.

G5: “The teacher allocated us to groups of 6 members per group. Relationships in the group were not good. Most members did not cooperate with others and did not contribute to discussions”.

It is apparent that the methods of group formation mostly used did not secure groups that are homogeneous in any ability or characteristic and this may explain why respondents from all but one of the 6 groups complained that the groups so-formed were fraught with conflicts and there was lack of cooperation and group cohesion.

Once formed the groups started by discussing and agreeing on a business idea which was arrived at by consensus after the idea had been brainstormed and market research carried out. Market research was mostly in the form of surveys in which questionnaires were distributed to fellow students. The group responses to an interview item that sought to elicit information on how students arrived at their business ideas and how they implemented them attest to this:

G1: “We arrived at three business ideas, carried out market research and settled on the most liked idea which was about with selling mini-pies and chocolate flakes”.

G3: “We came up with three business ideas and carried out market research on each looking at the cost of production, the likeability of the products, the availability of the products and the amount of money available. The teacher helped us to come up with the final idea. We had wanted to sell cream doughnuts but because the teacher said

there were no storage facilities for perishable foods, we ended up settling for selling chocolate bars and sweets”.

G5: “We identified three business ideas, did market research and chose the idea of selling Toppers, muffins and pies because it was the idea that the school community liked most. The teacher influenced choice of idea by rejecting ideas that were not feasible given the resources that we had”.

On the choice of business ideas, first individuals came up with their own ideas the group would caucus and come up with the “best three” ideas. The final idea would be chosen after the group had considered factors like potential demand for the product, benefits to customers, capital available and how readily available suppliers were. An observation made during the study was that all the 6 groups in the 3 schools had similar business ideas and that students were mostly involved in selling consumables like snacks and food-related products. It also emerged that some business teachers influenced and/or imposed the choice of business idea(s) and we can hazard a guess that teachers did this to dissuade students from embarking on business ideas that they considered risky or impractical. However responses from 3 focus groups insinuated that teacher influence was minimal and ended at offering guidance only.

In Botswana junior secondary schools, mini enterprises are funded by the government through a vote for practical subjects or students can contribute the start-up capital. Responses from all 6 focus groups indicated that ME projects were funded in three main ways: wholly by the school, school plus individual group members’ contributions and solely student contributions.

G1: “Our teacher provided us start-up capital but it was insufficient. We just had to work with what was made available to us.”

G3: “The school provided start-up capital for our business. Our subject teacher facilitated the process of getting funds from the school on our behalf.”

G5: “Each group member contributed BW P30.00. Through these contributions we managed to raise enough funds for our business but our teacher volunteered to buy the first batch of stock for us.”

G6: “We raised our start-up capital through our own contributions. Each member contributed BWP 35.00. The funds were sufficient and we did not get any assistance in the form of additional funding from anywhere.”

It is apparent that different modalities are used by different schools to raise start-up capital for the mini enterprise project. For two of the schools in the study, however, the project was funded through the vote for practical subjects. A drawback about this approach is that on some occasions the money made available may not be sufficient for the sum required to start the business. Although students in Groups 5 and 6 were able to raise sufficient funds through personal contributions, it came out clearly that this approach needs to be carefully looked into because some students may take long to make contributions, stalling progress as a result and some may not totally afford to raise the required amount due to family economic background. A standard

way of financing the project, especially through the vote for practical subjects could be more ideal and an equalizer for all groups.

Business subjects' teachers play a significant role in the administration of the mini-enterprise project, which has serious implications on the success or failure of the enterprise. They provide the needed guidance in the choice of business ideas, the writing of the business plan, sourcing funding, providing motivation and any other roles they may deem necessary. One the role of teachers in the mini enterprise projects, students had the following to say:

G1: "Our teacher allocated us into groups, and also taught us our roles and responsibilities for different departments, and provided us guidance on how to write the business plan. She also helped with the start-up capital. However, we were not satisfied with her engagement in the project because when we made a loss she did not care if we were fine, and did not advice when we made mistakes."

G4: "The teacher played mostly the role of a facilitator. She allowed us to pursue our business ideas without much influence, organized funding for us and handled our finances. She was very supportive and was always available when we needed help."

G5: "Our teacher allocated us into groups, and also provided guidance on how to write a business plan. Her role was mostly oversight as she gave us space to do things on our own. She however, helped with sourcing the start-up capital and kept money for us. When records did not balance, she helped us identify what the problem might be. We were very satisfied with her support."

The findings from the study reveal that students look at teachers as very important partners for the successful administration of the projects. It is clear that their role is mostly of coordinating and facilitating success of the mini enterprise project while giving students autonomy to run their projects. They organize resources such as start-up capital, provide advice on business ideas, supervise the writing of the business ideas and may also handle finances for learners. In fact groups that had teachers manage finances did not have issues of loss of finances due to theft. Students seem to expect their teachers to be very supportive as they are prone to make mistakes, face challenges such as making a loss and it is on those times that they need motivation and support from their teachers since they are just teens.

Perceived Benefits Learners Derive from the Mini-Enterprise Approach

Students who participate in mini-enterprise projects at Botswana junior secondary schools glean many benefits which may help to instill an entrepreneurial mindset in them. The mini-enterprise approach provides students many opportunities to acquire knowledge, skills and attitudes necessary in the setting up and running a successful enterprise. The leading question in this section of the study is stated below followed by a summary of emerging responses: "*What would you say were your major lessons from running the mini-enterprise?*"

Creativity and problem solving: Among the important skills and qualities of an entrepreneur are creativity and problem solving. Responses from participants in the mini-enterprise project suggest that the mini company is capable of instilling and cultivating these skills. The direct quotes from students' responses evidently demonstrate this:

G3: “We had to think outside the box. When people were not buying the product, we came up with strategies to increase sales.”

G6: “When we realized that students could not afford our pizza, we decided to be innovative by increasing our product range. In addition to pizza we sold biscuits and chocolate.”

G2: “At the beginning some members were not cooperative. They refused to go buy stock refused to sell, absented themselves from meetings, and did not even attend meetings. Eventually we saw that team work is better, were rotated roles or activities (e.g. selling) and assisted one another.”

Students who participate in the ME project in all the groups, with the exception of one indicated that the mini-enterprise experience encouraged them to be creative in various ways. This creativity starts right from the generation of business ideas, product development, and finding creative ways to market or coming up with strategies to increase sales of their products to the school community. In essence, creativity was also a necessary element in solving problems in their businesses. At the beginning of the ME project students had to manage group dynamics and solve conflicts were some of their team members were not cooperative enough. Some of the businesses were not making profit and learners had to find ways of turning around the business.

Risk taking: Risk taking is one of the attributes required for one to be a successful entrepreneur. In response to whether the mini enterprise influenced participants’ inclination to take business risks, students’ responses showed that the experience encouraged risk taking in the following ways:

G1: “We invested our own money to recapitalize the business when we made a loss.”

G2: “We took a loan from the school that had to be paid back with interest. That was risk enough, and we could not afford to fail.”

G5: “The ME project helped me to be a risk-taker. Naturally I fear taking risks, I want to be sure of the outcome before doing something”

G6: “Selling pizza was a huge risk because the product is perishable. If we are not successful at selling all our output for the day, all that remained would be a loss to us.”

Without exception all the groups reported that the mini-enterprise helped them to be risk takers. The ME project helped learners to acquire this attitude depending on circumstances unique to each group. Some students took risk by investing their own resources such as money, some believe it was risk enough to commit time and effort to their business regardless of competition; some took a loan that they paid back with interest or just product choice. It is therefore plausible to deduce that the ME experience in creating authentic context does not totally remove all risks that are relatable to running a real business. With such “cushioned risks”, it helps students to be less risk averse through its wealth of near real life business experiences.

Working collaboratively with others: The ME project functions through students working together collaboratively in small groups to execute their business plans. The results below show the extent to which the mini enterprise is able to inculcate teamwork and collaboration among learners belonging to the same group.

G4: “Generally we were comfortable with one another in the group. However, we had challenges collecting start-up capital contributions and slackness when it came to participating in the selling of our product. These challenges in a way strained relationships among members. Nonetheless, our relationships improved as members learned to be patient with others and issues late coming and slackness were resolved.”

G3: “When the business was not doing well, we would not listen to each other. Each had their opinion. However, at the end we were able to make peace even after such challenges.”

G6: “Yes, we learnt to work with others even when my suggestions for promotional strategies were not considered or adopted by my team”

This study revealed that groups are teacher-assigned and heterogeneous, and, as a result they are fraught with group forming conflicts. Interestingly, as the ME projects come to an end most of the students appreciate the value of synergistic team work. Most students in the study report that the ME helped them to appreciate the value of working cooperatively with others. Perhaps what is saliently emerging here is that students learned how to manage and resolve conflicts for the sake of the project. They began to appreciate more fully that the success of their enterprise depended on collective effort. Interestingly, for the majority of the groups, students found things such as team work, interacting with others, handling customers and making friends as one of the most interesting aspects of the ME project.

Business planning, setting up and operating/managing a business: The ME project provided learners with the practical side of actually generating business ideas, evaluating the feasibility and viability of those ideas. After coming up with the business ideas, students had to carry out market research which formed the basis of arriving at the final idea they eventually implemented. Students from all the schools affirmed that the ME effectively taught them how to generate business ideas. All, but one, groups in the study reported that they believe they are not competent at preparing a business plan.

G1: “Through participating in the ME project...we got the reality of what was taught in class.”

G3: “The ME project gave us lots of experience in the running of the business compared to just attending class only. The ME project equipped us with skills to manage a business, to the extent that some of us are already selling stuff from home, through its inspiration.”

As indicated by the responses above, the ME project exposed learners to the real feel and experience of running an enterprise. It did not only bring book knowledge but also the practical challenges that entrepreneurs face such as dealing with changes in prices, competition, managing internal conflicts/disagreements within the enterprise for the greater good of all stakeholders,

handling customers and dealing with dwindling sales. Some students observed that ME project allowed them to interact with many stakeholders such as businesses outside the school where they had to enter into negotiations on discounts and agreements on free delivery of their stock. Students felt strongly about opportunities to interact with outside businesses and this came out more clearly in one group that did not have such an opportunity. Their concern follows below:

G3: “We did not have support from outside businesses. We never met the business that delivered our product as the teacher bought stock for us. We also needed the experience of interacting with outside businesses.”

Students see interacting with outside businesses as something that is enriching to their experience as well as invaluable. In fact managing relationships with business partners is an important element in business success. Some students got “privileged” information from such interaction or relationships as the businesses were able to share information most liked flavours by customers in addition to negotiating discounts.

Contextualized learning and marrying theory with practice: This study also examined the extent to which the ME project helped participants to understand the relevance of the concepts they were taught to the real world and also engender deeper learning of those concepts. The following verbatim quotes demonstrate how the mini enterprise project through its experiential nature contributed to helping students understand better concepts taught in class and provided opportunity for application and transfer of knowledge and skills.

G4: “It showed relevance of content we learnt in class and how it may be applied in the real business world. We were able to do many things hands-on such as business planning, budgeting, profit forecast, choosing location of our business, study customer buying habits and respond to them among other things. All in all, it helped us understand better what was taught class.”

G5: “Through the mini-enterprise projects we were able to understand much better concepts such as budgeting, sales forecasts, sales promotion to name a few. We were also able to see much clearly the stages that real enterprises go through from idea generation until they are fully operational selling their products and/or services. Some of the skills we learnt were also transferable to other subjects we are taking.”

The ME project was shown to provide opportunities for contextualized learning, thus marrying theory with practice. Students who took part in the project believe that the ME project helped them see the relevance of what they learned in class and how it applies in the real world. Not only that, it provided the hands on experience necessary for transfer of knowledge and skills to authentic contexts. Typically, students cover topics related to the setting up and operating enterprises in the third term, Form 2 and start working on the business plan and do production at Form 3. Students also reported that the ME project engendered deeper understanding and learning of the topics they had earlier learned through hands on experience. Some of the specific examples of topics that they indicate to have understood better during working on the ME project include business planning, profit forecast, choosing the business location, customer service, sales management and promotional strategies. Some of the students reported that they also learnt skills that are transferable to other subjects, such as the business aspect of Agriculture.

Challenges Faced by Learners in Setting up and Operating Mini-Enterprises

The mini-enterprise project is a simulated business that provides students practical experience while shielding learners from risks inherent in the real world. However, it is not entirely free from challenges. We gathered from the data that students experienced challenges of various forms. In the analysis, the following categorization of challenges emerged: team work related challenges; time demands challenges; competition and low sales; and dealing with debtors. All these are presented more fully below.

Teamwork challenges: Evidence gathered showed that managing well teams of heterogeneous group and enlisting the cooperation of every member towards the achievement of goals of the enterprise was a challenge for all groups from the 3 schools:

G1: “Yes, people did not know their roles, others did not take responsibility and other took decisions without consulting. Some stole money from the business, as they used money for personal matters without permission.”

G2: Some of our team members refused to take part in selling the product, only 70% were actively engaged. The other challenge is that some did not pay up their required dues towards start-up capital”

G3: “When the business was not doing well, we would not listen to each other. Each one had an opinion on how issues should be resolved.”

G4: “We had challenges with some of our team members that related to punctuality and absenteeism from work.”

G5: “Not everyone did their fair share of work. Some refused to sell...they were not cooperative. The accountants were “eating” our money”.

What is evident is that conflicts and non-cooperation among students right from generating business ideas through to the implementation phase of the project were rife for almost all the groups. Some students were not happy when their ideas were not adopted on various situations such as solving business problems, whereas others were unhappy that some of their colleagues were uncooperative, absented themselves unnecessarily and did not do their fair share of the work. Another challenge that drew the students aback was mishandling or misuse of finances from those who were supposed to be custodians of the business finances. They helped themselves from the coffers of the business without consent of the whole team.

Time demands challenges: Although many students reported that they found the ME project to be more enjoyable compared to normal schooling, all the groups found it to be more demanding time wise. Students’ verbatim responses are captured below:

G1: “The business plan was tiring because if we made a mistake we had to rewrite again. We missed lessons because we had to finish the project (business plan).”

G3: “The mini-enterprise brought lots of pressure because during study time we had business meetings instead of reading. It was also time consuming because we did business during tea break and lunch time, so there was no sufficient time for eating and preparing for lessons that come after tea break or study time in the afternoon.”

G3: “We had a normal school day and had to purchase stock purchase stock every day after school, as a result we would get home late.”

G5: “Writing the business plan was a difficult task for us and was time consuming too.”

The data showed that time demands came from various aspects of the ME project. For some students, writing the business plan proved a challenge time wise. They found it exhausting and having to rework certain parts of the business plan that they had not done well naturally added strain on time demands. Some of the time-related challenges came from the actual running of the business. The ME project demands lots of time in actual implementation because students have to sell their product during tea break and lunch time and still have their meals. To some students juggling these two was quite demanding. Other groups held business meetings during afternoon study time, which means they forfeited study time on some days or time to work on assignments while still at school. In addition, some groups had to replenish their stock every day, and this meant that after school they had to first to go buy their stock first before going home.

Competition and low sales: Like any other business which has to deal with competition and develop strategies to raise sales, the mini-enterprise is not an exception. Students’ mini-companies faced various competition related challenges from various sources, affecting sales:

G1: “We faced stiff competition from the school tuck shop; as a result we had to lower prices to attract customers.”

G3: “We faced competition from the school tuck-shop and some suppliers increased their prices. The effect of such competition and changes caused our business to experiences damages and sometimes shortages.”

G5: “Sometimes customers would not buy our product, especially in the middle of the month or on days of the week where our product conflicted with the school menu, leading to low sales.”

The ME projects mostly faced competition from the school tuck-shop. This forced students to lower prices to attract business and stay afloat. The small businesses were also affected by changes in prices from their suppliers and this threatened the bottom line. The mini-companies cannot easily change their prices to respond to changes on the suppliers’ end because their primary customer base is students who may not afford higher prices. In addition, some of them sold food related-products, and some groups faced very low sales on days were their product collided with the school menu. Case in point, if the mini company sold a product with chicken meat, sales would go down on the day the school menu served chicken. The primary customers of ME projects are students whose income is not stable. In the middle of the month sales would be very low as students did not have money to spend or they would find the products just expensive.

Dealing with debtors: Students reported to have challenges dealing with debtors. Some of their illustrative verbatim responses are captured below:

G3: “Some of the debtors made late payments whereas others totally refused to pay. Teachers were often the ones who often took our products and refused to pay.”

G5: “Our product was very expensive for most students and we ended up resorting to sell to them on credit, and they would not pay. Whereas some of the teachers supported the business by buying our products, some just took and did not pay at all.”

The issue of dealing with debtors was not so much prevalent across all groups but nonetheless experienced by some mini-companies and affecting their profits negatively. Although not common across, it is evident that this was a challenge which affected students felt strongly about. Two of the six businesses, specifically, lamented the issue of debtors making late payments or failure to pay by student customers. Coupled with the issue of late payments was the issue of the teachers who would buy the products on credit with the promise to pay but eventually failing to pay or flatly refuse to pay to the items they got on credit. This challenge of defaulting teachers proved difficult for learners because they could not hold adult figures to account or honour their promise and they felt weak to refuse to give them the products.

DISCUSSION

Students were generally assigned to ME groups on random selection or teacher nomination which often led to group dysfunction due to the lack of group cohesion and cooperation and the forming of disruptive factions within the groups. One way to go round these problems could have been for teachers to consider using friendship grouping. The use of friendship grouping was found to be beneficial in mini enterprise work by Riese (2011), who in his study on school-based mini enterprises in a Norwegian secondary school found friendship grouping to be beneficial in all ME work since friendship includes a notion of trust and intimate knowledge of the other members of the group. He argued further that friendship supports creativity and promotes action and activity by group members towards their common mini enterprise assignment.

This study confirms earlier findings that students mostly sell food related products in their mini-enterprises (Sithole & Lumadi, 2012; Thetsane & Matsela, 2014). Whereas this was attributed to lack of maturity and desire to sell products they may eat, this study seems to suggest the possibility that students and their teachers take a more pragmatic approach when deciding on business ideas to implement. Looking at the customer base's ability to afford products and services, and the duration of the mini enterprise, they tend to lean towards fast-selling products which students can afford and are fast moving. However, the challenge still remains to explore other products and services beside those that are food related.

With regard to the administration of mini enterprise projects in Botswana junior secondary schools, teachers play a paramount role of a mentor and facilitator. In entrepreneurship education, the major functions of a role model or mentor include modelling, providing hands-on support and advice, helping learners develop self-belief in their competency (self-efficacy) and providing learners inspiration and motivation (Bosma, Hessels, Schutjens, Van Praag, & Verheul, 2012). In line with this thought, findings of this study reveal that teachers' mentorship role is mostly supervisory in nature as they facilitate the smooth setting up

and operation of the mini enterprise, as well as the writing of the business plan. They provide advice on the business ideas students may embark on, help with sourcing of funds, training students on functional roles, record keeping and assist in the safe keeping of students' finances and allow students autonomy in the operation of their enterprises. This is in agreement with the recommendation by Quesel, Moeser and Burren (2015) that teachers involved in mini-enterprise projects should exercise the principle of pedagogical self-restraint by avoiding to be too prescriptive and key decision makers for students. They argue that this helps to develop learners as well as help them realize their business ideas. In addition, the role of teachers as role models or mentors was found to be among the major influences for students to pursue entrepreneurship as a career (Kenedy, Drennan, Renfrow, & Watson, 2003).

This study also reveals that students expect teachers to provide support, encouragement and guidance when the business is not doing well. Invoking the social support theory, Boyd and Vozikis, (1994) posit that the support that students get from their teachers, who are also perceived by learners as role models or mentors, helps them deal with stress and challenges in a positive way, and that their words encouragement build learners' self-efficacy. The concerns of students who had an "absent" teacher during their challenging times seem to affirm this. We therefore conclude that teachers' mentorship and facilitator role is very important for the success of the mini enterprise but should also strive for a balance between guidance and freedom for learners while encouraging them to be autonomous and self-regulating.

This study also confirms that the mini-enterprise project is potent with many benefits in terms of imparting entrepreneurial skills, knowledge, and attitudes. Its experiential, action-oriented and authentic nature allows for contextualized learning that complements classroom teaching. Students who participated in the mini-enterprise reported that the projects enriched their classroom experience as it married theory with practice. They managed to see the relevance of what they learned and how it may be applied in the real world. The likelihood of greater understanding and retention for the long-term is increased. When experiential learning is brought into entrepreneurship classrooms, it helps students to develop higher level thinking skills such the ability to analyse, interpret, decision making and consideration of consequences (Daly, cited in NBEA, 2013). The mini enterprise corroborates this assertion as participants learnt to quickly interpret feedback from their customer base, analyse data from their market research, solve problems and make decisions based on the information at their disposal.

Students also learn entrepreneurial skills and attitudes such as risk taking, autonomy, team work and collaboration, conflict resolution, and communication which are necessary for one to be a successful entrepreneur. They also learn skills that are directly related to conceptualizing and running a successful business such as business planning, marketing, sales management, customer service, budgeting, and choosing the location of a business among others, as was established by earlier studies (Swartland, 2008; Sithole, 2010).

Whereas the mini-enterprise project proffers many benefits to learners, it is equally clear that it is fraught with many challenges akin to those of running a real business. These challenges range from insufficient start-up capital, too much time demands, lack of cooperation among group members, dealing with competition and low sales. The issue of insufficient financing in mini-enterprise projects has been reported before by Thetsane and Matsela (2014). However, this study shows that different schools have different modalities of financing student mini companies. Some schools finance the projects from the school votes, some school votes and student contributions and others strictly student contributions. These differences in how mini enterprises are funded negatively affect the success of projects and disadvantages students who may not

afford to contribute due to their families' financial backgrounds. It should be clear policy wise how the projects should be funded so that there is consistency among schools and avoiding humiliation on students who may not honestly afford to contribute towards start-up capital, or failure of projects due to insufficient financing.

The findings of this study on the issue of too much time demands for both covering subject matter content in business education and doing the mini-enterprise project corroborate the findings of Thetsane and Matsela (2014). In a related study, the duo found out that the syllabus is congested as it requires students to cover both content and do the practical aspects, thus requiring teachers to find extra time to complete the syllabus since the mini enterprise is so time-consuming. Policy makers and educators may do well to look into the syllabus as to whether it is too congested and may need some revision so that students reap greater benefits of both content and the practical aspect of the subject.

Although the challenge of non-cooperation and conflicts within groups could be solved through homogeneous groups comprised of friends and like-minded individuals (Riese, 2011), it may not be entirely a bad problem for several reasons. The majority of teams indicated that they eventually made peace, solved their conflicts and dedicated their efforts to the project. This finding confirms an earlier study by Quesel, Moeser and Burren (2015) on mini-enterprise projects in Switzerland that found that students as individuals learn that their individual effort can make a difference to the success of the team. They learn to appreciate the value of individual accountability in team success. The skill of de-escalating situations, resolving and managing conflicts is essential for any entrepreneur. Vocational subjects such as business education train students for careers and entry into higher education. Interpersonal skills and collaboration are therefore important for success in careers and the workplace. The conflicts at the beginning of group formation which eventually resulted in focused performing groups that channelled their efforts towards the goals of their enterprises seem to be more of part of the normal group dynamics identified by Tuckman and Jensen (1977) as *forming*, *storming*, *norming* and *performing*. In a study on entrepreneurial teams of newly formed ventures, Vanaelst, Clarysse, Lockett, Morray and Jeggers (2006) have argued that "the concept of team is evolving rather than static" (p. 251). Furthermore, Darling, Keefe, and Kay (2006) submitted that the world of entrepreneurship is characterised by a myriad of exciting activities, different stakeholders and constantly changing innovations and concepts that require a business environment that encourages and nurtures constant change and conflict management. The trio further argue that the ability to build active, cooperative and enthusiastic teams that are loyal and willing serve to pursue organisational goals and fully exploit the window of opportunity is paramount to entrepreneurial success. Hence we submit that the group dynamics in the ME projects could possibly be an important factor in building entrepreneurial mind-sets. Teachers and leaders of groups need to be trained in team building so that the heterogeneous groups stay focused and deliver on their mandate.

Furthermore, students who run mini-enterprises in Botswana junior secondary schools face challenges of competition, low sales and late or no debt payment. The challenge of competition arises from the fact that different school based mini-enterprises run simultaneously, in addition to the existence of a school tuckshop in some schools. This competition may be a contributor to lower sales, in addition to the fact that the majority of customers are students with meagre disposable income. We agree with Thetsane and Matsela (2014) that mini-enterprises do not necessarily exist to make a profit but to provide a laboratory for entrepreneurial learning. Lope-Pihie and Bagheri (2010) have found that there is a positive correlation between coping

with unexpected challenges and new venture creation. Thus these challenges provide learners opportunities for problem solving through critical thinking, creativity and innovation as was observed in this study. Perhaps students need protection by school authorities from adult figures such as teachers who take students' products and refuse to pay as this may not only demotivate learners but may lead to the collapse of the enterprise, and much worse, interferes with student learning.

CONCLUSION AND RECOMMENDATIONS

This study examined the junior secondary school students' experiences of participating in the Business Studies mini-enterprise projects. It focussed on how the mini-enterprises were administered, the perceived learner benefits and the challenges faced by the students in setting up and managing the mini-companies. The study found out that most students were concerned by the way the mini-enterprise project group members were selected. The random nature of formulation of groups was seen as the cause of the tensions, conflicts and lack of co-operation and team work challenges faced by the groups and affected the operations of most businesses. Students were of the view that teachers must allow the students to choose their own friends and colleagues as group members. Future studies could focus on group dynamics between heterogeneous and homogenous mini-enterprise groups, to determine which the role of each and the benefits each confers to learners. However, due to the many relational challenges and conflicts among students in mini-enterprise projects, we recommend for teachers to train their students in interpersonal skills such as team building and conflict resolution. The study also found out that many teachers', who participated in the mini-enterprise project, play the role of a facilitator, allowing learners to be self-regulating and autonomous.

The study found out that most students benefitted and accumulated real life business skills by participating in the mini-enterprise projects. Such skills include creativity, problem solving, risk taking, collaboration, conflict resolution and many other interpersonal skills. Students also expressed their desire and confidence to start and establish their own business after leaving school, as they had acquired business planning, set up and management skills and that they are able to relate and marry the theory they learn in the classroom to the real world of business.

Like any other business, the students as entrepreneurs, faced various challenges in running the mini-enterprise projects, including team work challenges, delay or non-payment of dues, misuse of funds, restricted time allocations and high levels of competition that resulted in low sales. The same students also revealed that despite the challenges and the unfavourable trading environment, they still managed to operate profitable business ventures. It is the recommendation of the researchers that the government of Botswana must ensure that schools provide a uniform and standard method of operating mini-enterprise projects in junior schools. Since the mini-enterprise project is examinable, it must be run in well-defined and consistent manner and must not differ from one school to another.

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Prolonged Hospitalisation of Terminally-Ill Patients and its Impact on Family Care Givers at the Benue State University Teaching Hospital, Makurdi, Nigeria

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Abstract

The study determined the impact of prolonged hospitalisation of terminally-ill patients on family care givers in the Benue State University Teaching Hospital, Makurdi, Nigeria. A qualitative research design was adopted. The population of the study consisted of female family care givers to terminally-ill patients. The sample was 53 female care givers who were identified at the Female Medical Ward of the hospital. Key Informant Interview (KII) was conducted with the use of a structured interview guide. Data from the study were qualitatively analysed using Manual Inductive Approach (Thematic Approach). Findings revealed that prolonged hospitalisation has impact on the family finances, altered family life; reduce daily living activities and high level of depression among others. Female care givers prefer traditional therapy because it is less expensive. They rely on divine assistance since the patient has no hope of survival. Counselling implications were provided.

Keywords: Prolonged, Hospitalisation, Terminally-Ill, Patients, Impact, Care Givers.

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INTRODUCTION

Prolonging hospitalisation of terminally-ill patients has aroused ambivalent feelings in the minds of so many, especially those directly involved in the daily care of patients such as nurses, doctors, physiotherapists, nutritionists and family members. Family care givers appear to have been challenged with problems associated with the care and comfort of terminally-ill patients coupled with the stress of coping with prolonged hospitalisation of terminally-ill family member. They always have to deal with death because terminally-ill patients do not always recover. This is owing to the fact that some see it as an overbearing waste of reasonable time and resources. These feelings however trivial have been closely observed to have impacted on the co-operative care of the terminally-ill patient. On the other hand, some see it as an indirect contribution towards the peaceful death of the terminally-ill.

Prolonged hospitalization occurs when a patient's admission in the hospital is being extended for reasons best known to the medical team. At the Benue State University Teaching Hospital (BSUTH), there are patients who have been on admission for a long time because of terminal-illness and this appears to have a depleting impact on their family caregivers. A terminally-ill patient on the other hand sometimes crudely called a dying patient refers to a person suffering from an incurable disease which would subsequently lead to death (Cotton, 2013). They are a cohort of critically ill patients who require prolonged mechanical ventilation and consume an abundance of healthcare resources in an effort to enhance their likelihood for survival (Hickman & Douglas, 2010). These categories of patients are found in the hospital especially in the Female Medical Ward of the hospital. This definition may however seem controversial as the natural ageing process and other mysterious causes could subject one to become terminally-ill. Some of these patients seem to be suffering from various terminally-illnesses as a result of long protracted diseases of which Cotton (2013) asserts that causes of which might have either eluded medical therapy, gone beyond reversal or even have no cure. Diseases like cancer, hepatitis, malnutrition, Aids (fully blown), renal failure amongst others are readily available causes (Valente, 2010) and are common among some of the terminally-ill patients on admission in the hospital. Despite scientific medical discoveries in prolonging the life of a terminally-ill patients, there still exist some speculation as to the need to prolong the life of a terminally-ill person or a hopeless case to the extent that some even consider euthanasia a better end care than prolong hospitalisation as it has effects on family caregivers. Thus, there is the need to weigh the effects of prolonging the hospitalisation of terminally-ills especially on female family caregivers.

Female family caregivers of terminally-ill patients at the BSUTH have expressed concern on why patients have to go through extensive treatments that have horrible side effects if there is no hope of a better quality of life. They have also expressed concern on the impact it has on them and the entire family. Valente (2010) asserts that most people would want to die peacefully with dignity because a lot of cancer patients do not want to go through extensive treatments that have horrible side effects if there is no hope of a better quality of life. The silent question however, is whether it is better to keep these patients alive at a huge cost, with no hope of recovery or to let nature take its course. Modern medicine has become so good at keeping the terminally-ill alive by treating the complications of underlying disease that the inevitable process of dying has become much harder and is often prolonged unnecessarily. The increased health care demand is such that primary care physicians do not have time to spend an hour with a patient or see and assess their reactions to medication adjustments. The easiest thing for the health care team is to

admit such patients to the hospital. Once admitted, they are likely to be seen by a dozen or more specialist who will conduct all kinds of test, whether they are absolutely essential or not which is common among terminally-ill patients hospitalised at BSUTH.

The debate about euthanasia and assisted suicide has highlighted pervasive and serious short comings in the care of terminally-ill patients. These patients as well as others who experience pain and suffering often receive inadequate relief for pain and other debilitating symptoms despite the fact that effective treatments are available (Smith, 1993). In addition, many physicians fail to discover treatment options and the possibility of forgoing treatment with patients in a timely and appropriate manner, leading to over treatment a sense of isolation and powerlessness on the part of patients and those close to them (Smith, 1993). Improving care for terminally-ill patients is critically important not just as a response to those who seek assisted suicide and euthanasia, but as a basic obligation to all patients whose pain and suffering could be alleviated with responsive medical care. Health care professionals at the BSUTH have a duty to offer effective pain relief and symptom palliation to patients when necessary. According to Cotton (2013) it should be in accord with sound medical judgment and the most advanced approaches available.

Alleviation of pain and the symptoms of terminally-ill patients at the BSUTH will make a powerful contribution to the patients' quality of life and that of family caregivers. It can also speed recovery and provide other tangible medical benefits (Clement, 1993). Physicians and Nurses particularly at BSUTH have an ethical and professional responsibility to effective pain and symptoms management. This responsibility must be understood as central to the art of medicine and delivery of medicine care. Attention to patient's symptoms should not be reserved for the end of life, nor should it be a sign that curative effects have been abandoned. Palliative care should be understood to include symptoms control at all stages of disease (Clement, 1993). Health care teams that provide care for terminally-ill patients at BSUTH have a responsibility to develop the ability to provide effective pain and symptom management to such patients.

When terminally-ill patients take charge of the last stages of life, they may challenge health caregivers to re-examine attitudes about life saving technology, autonomy and values about preserving life. Medical technology and laws to protect the sanctity of life may unintentionally prolong life regardless of the cost or the patient's wishes (Tulsky, 2008). However, female family caregivers to terminally-ill patients at the BSUTH fear prolonged suffering, uncontrolled pain and expensive cost of dying (Isaac, 2006), and worry about life saving technological futile treatment (Tulsky, 2008) and the impact it has on them and the family. The issue of prolonging hospitalisation of terminally-ill patients has become one of the controversial issues facing health care professionals, as they are challenged by their therapeutically responses to patients request for hastened death (Valente, 2010).

Exposure to chronic critical illness has devastating effects on patients and damaging psychological consequences for their family members. The proportion of female family caregivers exposed to psychologically taxing conditions at BSUTH will continue to mount, consistent with steadily increasing rates of patients admitted to an intensive care unit (ICU) (Zilberberg, Luippold & Sulsky, 2008). An episode of exposure to chronic critical illness by family care giver was observed at BSUTH to have exposed the patient's family to an uncertain trajectory of critical illness that includes recurrent infections, hospital readmissions, and decrements in the patient's condition over time. Moreover, it was observed that chronic exposure to psychological stressors depletes the internal and external coping resources of the family. Hickman and Douglas (2010) assert that historically, the delivery of care in an ICU has been

centered on the patients and marginalised the needs of the family. The admission of a patient to an ICU is often an acute, non-elective transition that elicits uncertainty for patients as well as their families.

Research evidence revealed that the uncertain trajectory of chronic critical illness exposes the patient's family to heightened levels of psychological distress. Symptoms of psychological distress affect more than half of family members exposed to the patient's chronic critical illness. Although symptoms often dissipate over time, a significant proportion of family members will remain at moderate to high risk of psychological distress well after the patient's death or discharge from the intensive care unit (Hickman & Douglas, 2010; Zilberberg, De Wit, Pirone & Shorr, 2008). Similarly, Valente (2011) study revealed that nurses reported struggle with religious and spiritual values, uncomfortable feelings and fears, inadequate skills and knowledge, personal experiences and the weight of professional responsibility. Ersek (1998) study found that the most challenging impact of prolonged hospitalisation of terminally-ill patients on mental health of caregivers was how to avoid burdening family members, to preserve dignity, avoid degrading therapies, affirm religious beliefs, retain control during disability and preserve life savings.

Family caregivers have many functions including, but not limited to domestic chores and household tasks, providing personal care and assisting the dying person with activities of daily living, managing symptoms such as pain and constipation, providing emotional and social support to the dying person, being a spokesperson, advocate and proxy decision maker and coordinating all aspects of the dying person's care (Stajduhar & Cohen, 2009). While family care giving has considerable rewards, including allowing caregivers to facilitate closure after death and helping them find meaning in their experiences (Stajduhar, 2003), it is physically exhausting, difficult to recover from, and fraught with emotional and financial burdens (Grande, Stajduhar & Aoun, 2009). Therefore, it is not surprising that the health and well-being of family caregivers often suffer when they provide end of life care at home (Stajduhar & Cohen, 2009; Stajduhar, 2003).

Recognition of family caregivers' contributions and the importance of assessing family caregiver's needs in practice have been acknowledged (Ferris, Balfour & Bowen, 2002). Within the palliative care literature, the experience of care giving has been described as fundamentally uncertain, in part because of the unpredictability of the trajectory (Farber, Egnew & Herman-Bertsch, 2003; Kazanowski, 2005). There is a sense of a disruption in 'normal life' (Stajduhar & Davies, 2005; Wennman-Larsen & Tishelman, 2002) and experiences of helplessness and vulnerability are commonly noted (Broback, & Bertero, 2003; Milberg, Strang & Jakobson, 2005). Care demands can be particularly onerous towards the end of life, and emotional stresses can be particularly high as family members grieve successive losses, have vivid awareness of impending death and face an uncertain future. Social isolation is common (Boyd, Murray & Kendall, 2004; Strang & Koop, 2003) and obtaining support is hampered by the fact that many family members do not identify themselves as legitimate recipients of help, focusing instead on the dying person (Stajduhar & Davies, 2005; Harding & Higginson, 2001). High levels of psychological distress are common; for example, 41% to 62% of family caregivers providing palliative care in Quebec were reported to have experienced a high level of psychological distress compared with 19% of the general population. This percentage increased as the patient's health declined and as patients became less able to care for themselves (Dumont, Turgeon & Allard, 2006).

Many family caregivers have anxiety levels in the clinical range; higher than that of the dying patient's (Grunfeld, Janz, & Glossop, 2004; Sherman, 1998). Studies show that family caregivers experience levels of depression similar to patients and greater than the general population (Grunfeld, Janz, & Glossop, 2004). Psychosocial and mental health challenges are accompanied by physical burdens. Long hours of care provision are often associated with significant fatigue and sleep deprivation (Aoun & Kristjanson, 2005; Strang, Koop & Peden, 2002). The physical demands are often a result of excessive 'work' involved in care giving process and the 24 hour responsibility that many family caregivers have.

Evidence suggests that some family caregivers do not look after themselves well; they do not eat properly, often cease activities outside of home and postpone their own medical appointments (Coristine, Crooks & Grunfeld, 2004). In adding to this, many family members feel ill-prepared for caregiving roles (Stajduhar & Davies, 2005) and uncertain about their abilities (Cain, MacLean & Sellick, 2004); many feel pressured to provide such care (Stajduhar, 2003) yet feel ambivalent about providing it (Harding & Higginson, 2001). This is more challenging when the patient being cared for and the family caregiver have pre-existing tension in their relationship (Stajduhar, Martin & Barwich, 2007).

Providing care at the end of life can also result in occupational and financial consequences (Grunfeld, 2005; Grunfeld, Janz, & Glossop, 2004). Canadian-based research led by Dumont has found that the welfare state, the family and not-for-profit organizations sustained 71.3%, 26.6% and 1.6%, respectively, of all costs associated with end of life care (Dumont, Jacobs & Fassbender, 2009). An examination of Canada's Compassionate Care Benefit by Williams, Crooks and Stajduhar (2006) suggests that even where benefits are available, family members can experience challenges in negotiating the system. The study reported that family members were concerned about limitations of the benefit such as strict eligibility criteria and the relative short duration of assistance. In terms of workplace policy, many Canadian family caregivers have no paid leave or job security if they take time off work. A report from the Economist Intelligence Unit (2011) ranking the quality of end of life care around the world highlights that Canada suffers in the overall ranking because the cost of community-based care results in significant financial burdens to families.

Female family caregivers at the BSUTH appear to have been challenged with problems associated with the care and comfort of terminally-ill patients coupled with the stress of coping with prolonged hospitalisation of terminally-ill family member. They always have to deal with death because terminally-ill patients do not always recover. This is owing to the fact that some see it as an overbearing waste of reasonable time and resources. A patient's ability to be cared for and to die at home is heavily dependent upon the efforts of family caregivers. Considerable stresses are associated with such care giving including physical, psychosocial and financial burdens. Research has shown that unmet needs and dissatisfaction with care can lead to negative outcomes for caregivers. While many family caregivers also report care giving as life-enriching, some report that they would prefer alternatives to care at home primarily because of these associated burdens. At the BSUTH, little is known whether female family caregivers are going through associated burdens with devastating impact on them and the family, stresses associated with such care giving, including physical, psychosocial and financial burdens. Little is known whether female family caregivers at the Benue State University Teaching Hospital would prefer other alternatives to prolonged hospitalisation of terminally-ill patients. It is on this background that the study answered the following questions:

- What is the impact of prolong hospitalization of terminally-ill patients on family caregivers at the Benue State University Teaching Hospital?
- What are the preferred alternatives cares for the terminally-ill patient at the Benue State University Teaching Hospital?

METHODOLOGY

The study adopted a qualitative research design. The population of the study consisted of female family care givers to terminally-ill patients who have been hospitalised for at least a month or longer who were identified at the Female Medical Unit of Benue State University Teaching Hospital. For easy accessibility and availability of data, the population was restricted to the adult female medical wards of the hospital. Therefore, any female care giver that was not from the female medical ward was not considered as the population of the study. The sample for the study was 53 female care givers who were identified at the Female Medical Ward (FMW) of the hospital and all participated in the study. They were identified as the researchers visited the Female Medical Ward of the hospital. The instrument used for data collection was Key Informant Interview (KII) to obtain information from the female family caregivers. A KII guide was designed by the researchers based on the research questions presented as Appendix. The KII was guided by sets of structured questions that were asked female family caregivers. The KII was conducted on one on one in the wards. The discussion was guided by the sets of structured questions where the researchers served as moderators during the sessions. The views and opinions of the participants were written down and recorded for content analysis. Responses were transcribed for content analysis where individual responses were categorized according to questions answered by identifying patterns and diversity, editing the contents to fish out repeated responses and to get the pattern and diversity of responses. A written permission to conduct the study was presented by the researchers to the Hospital management. The researchers were referred to the Head of Department in charge of Female Medical Ward of the hospital. The researchers explained clearly the purpose of the study to the Head of Department and the permission to conduct the study was obtained. Two nurses were directed to assist the researchers identify the female family caregivers at the wards. Having identified them, the researchers clearly explained the purpose of the research to them and sought their consent to participate in the study. Out of the number of female family caregivers identified, 53 consented to participate in the study while two declined participation.

Data collected were qualitatively analysed. Information obtained from the KII was immediately transcribed through Manual Inductive Approach (Thematic Analysis Approach). The responses of participants were classified into themes, patterns and diversity in views and opinions. The results of the patterns and diversity in views and opinions are presented in the results and discussion section.

RESULTS AND DISCUSSION

Research Question One: What is the impact of prolong hospitalisation of terminally-ill patients on family caregivers at the Benue State University Teaching Hospital?

Results obtained from this research question revealed that prolong hospitalisation of terminally-ill patients has severe negative impact on the family finances. One of the respondents lamented that:

...since this child has been hospitalized, I have been spending money on drugs and other related hospital expenses. As you can see, her father is late and I am the only one taking responsibility not only in the hospital but at home as well. My job is not paying regularly because government said they do not have money so it has been so traumatising... (Participant FMW).

Participants expressed concern over the rising cost of hospital bill in the midst of dwindling finances and concluded that it was what they disliked about their hospitalisation. The result aligned with that of Grinfeld (2005) and Grinfeld, Janz and Glossop (2004). Canadian-based research led by Dumont has found similar result when they reported that the welfare state; the family and not-for-profit organisations sustained 71.3%, 26.6% and 1.6% of all costs associated with end of life care (Dunmont, Jacobs & Fesssbender, 2009). The result corroborated that of Grande, Stajduhar and Aoun (2009) that prolong hospitalisation is physically exhausting, difficult to recover from and fraught with emotional and financial burdens.

Other impact reported included alteration of family life, reduced daily living activities, poor medical attention and high level of depression similar to patients and greater than general population. This is similar to findings of Grinfeld, Janz and Glossop (2004) that psychological and mental health challenges accompanied by physical burdens, long hours of care provision associated with fatigue and sleep deprivation are common among hospital caregivers. One of the caregiver said that *...I have not been sleeping well since we came to this hospital, when we were at home I could sleep sometime because other family members could assist but now...* This was reported by Aoun and Stajduhar (2005) and Strang, Koop and Peden (2002). What could be deduced from the result in terms of implication is that the physical demands of care giving are often a result of the excessive work involved in the care giving process and the 24 hours responsibility that many family caregivers have. Psychologically, caregivers and their families are generally traumatised, felt alienated from family life, and reduce their daily living activities, expression of disappointment in the face of poor medical attention and high levels of depression similar to patients.

Research Question Two: What are the preferred alternatives cares for the terminally-ill patient at the Benue State University Teaching Hospital?

Findings revealed that female family caregivers would prefer traditional therapy because it is less expensive and since the patient has no hope of survival, relying on divine assistance since Medicare will not cure the illness again. One of the participants said that *...my brother, there is nothing God cannot do. I know that no medicine can cure mama again but if God wishes, she can be well again...* while others preferred to leave against medical advice (LAMA), few preferred euthanasia and others have no other alternative. The finding is contrary to that of Smith (1993) and Valente (2010) assertion that most people would want to die peacefully with dignity because a lot of cancer patients do not want to go through extensive treatment that have horrible side effects if there is no hope of better quality of life. Smith (1993) consistently argued that the debate about euthanasia and assisted suicide has highlighted pervasive and serious short comings in the care of terminally-ill patients. One of the caregivers lamented that:

My worry is that medical team no longer pays adequate attention to my sister despite the fact that huge amount of money is spent daily. They usually come around morning, afternoon and evening but nothing special is done. They just observe her and go away without saying anything to us. When you complain they will write drugs for us to buy yet no improvement and changes in her condition are noticed. Sometimes I wonder what they are keeping her here (Participant FMW).

The general consensus from participants is that patients receive inadequate relief for pain and other debilitating symptoms despite the fact that effective treatments are available. The result confirmed Smith (1993) that these patients as well as others who experience pain and suffering often receive inadequate relief. This result reaffirmed the findings of Broback and Bertero (2003) that helplessness and Milberg, Strang and Jakobsson (2005) that vulnerability are commonly noticed among caregivers. In addition, it aligned with Smith (1993) that many physicians fail to discover treatment options and other possibility of foregoing treatment with patients in a timely and appropriate manner, leading to over treatment, a sense of isolation (Dumont, Turgeon & Allard, 2006) and powerlessness on the part of patients and those close to them.

Participants generally preferred traditional therapy, some divine assistance, some LAMA and others without alternative. The result disagreed with the finding of Clement (1993) on the ground that alleviation of pain and the symptoms of illness or disease make a powerful contribution to the patient life. It can also speed recovery and provide other tangible medical benefits. Argument that the result aligned with were advanced by Hickman and Douglas (2010) and Zilberberg, De wit, Pirone and Shorr (2008) that although symptoms often dissipate over time, a significant proportion of family members will remain moderate to high risk for psychological distress well after the patient's death or discharged from the intensive care unit therefore, may prefer alternative treatment.

Follow-up question on why they preferred alternative treatment revealed that medical technology and laws to protect the sanctity of life un-intentionally prolong life regardless of the cost or the patient's wishes as found by Tulsy (2008). Female family caregivers to terminally-ill patients at the BSUTH fear prolonged suffering, uncontrolled pain and expensive cost of dying. One asked rhetorically that *...what about the suffering and the pain? Does one have to pay money for one to die...?* This confirmed Isaac (2006), and worry about life saving technological futile treatment as reported by Tulsy (2008) and the impact it has on them and the family. Valente (2010) concluded that the issue of prolonging hospitalisation of terminally-ill patients has become one of the controversial issues facing health care professionals, as they are challenged by their therapeutically responses to patients request for hastened death.

The silent question however, is whether it is better to keep people alive, connected to machines at huge cost, with no hope of recovery or to let nature take its course. Modern medicine has become so good at keeping the terminally-ill alive by treating the complications of underlying disease that the inevitable process of dying has become much harder and is often prolonged unnecessary. The implication is that the increase health care demand is such that primary health care physicians do not have time to spend an hour with a patient or see and assess their reactions to medication adjustments. The easiest thing for the health care team is to admit such patient to the hospital. Once admitted, they are likely to be seen by a dozen or more specialist who will conduct all kinds of tests whether they are absolutely essential or not.

CONCLUSION

The study highlighted the debilitating effects of prolonged hospitalisation of terminally-ill patients on female caregivers and their family members directly involved in their care. It also exposed the feelings of female family caregivers that aside the inevitability of prolonged hospitalisation of terminally-ill patients there are no better placed options for the care of the terminally-ill beside the hospital. They would preferred other alternatives like traditional therapeutic attention, will of God among others if the patients has no hope of living again considering the effect it has on family finances.

Counselling Implications

There is the urgent need for counsellors to provide caregivers and hospital workers with the appropriate techniques of self-management behavioural changes so as to help them manage themselves and their patients. Counsellors should ensure that caregivers acquire skills that are related to managing terminally-ill patients to help them cope with the trauma associated with prolonged hospitalisation of terminally-ill patients.

Hospital management as part of their corporate social and welfare responsibility should establish counselling clinics and where available, it should be made functional and effective. They should sensitise hospital caregivers to be attending counselling sessions based on their needs.

Government should put in place policy to provide terminally-ill patients caregivers free counselling services for taking care of their patients. Female caregivers in hospitals should be given motivation as reinforcement to encourage more female caregivers to be attending voluntarily counselling services in hospitals.

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Appendix: Interview Guide

1. How long has your patient been hospitalised?
2. What actually did the doctors said is the problem?
3. In your view what impact would you say prolonged hospitalisation has on you and the family?
4. What are the reasons why you don't like prolonged hospitalisation?
5. What other alternatives besides prolonged hospitalisation would you prefer if you had a choice?
6. Why did you prefer such alternatives?
7. What other challenges do you face in the cause of giving care to your patient?



Planning Teachers' Workload for Effective Service Delivery in the School System

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Abstract

The school system generally provides services to its clientele through the teachers. The teachers are therefore indispensable elements in schools through them, the goals and objectives of the education sector are achieved. Their demand and supply are therefore critical to the survival of the education sector. The nature of the teacher's job (teaching, assessing, recording and other non-teaching responsibilities) more often exposes them to work overload and stress. This paper focuses on the planning of teacher's workload for effective service delivery in the school system. It reiterates that the overall achievement of the objectives of any level of education, if teachers are overstretched, it will result to work pressure, boredom, stress and underachievement. Planning teacher's workload therefore have the advantage of ensuring that teachers are optionally utilized.

Keywords: Planning, Teachers, Workload, Effective, Service Delivery, School System, Nigeria.

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INTRODUCTION

The unequivocal statement in the National Policy on Education (FRN, 2014) that no education system may rise above the quality of its teachers remains incontrovertible. Teachers play significant role in the future development of any country by inculcating in the young minds certain desirable habits and develop in them certain skills that are considered as work oriented skills needed in national development. Teachers undoubtedly therefore are the pivot on which the wheel of any education system revolves.

While the above statements are true, it is equally true that the workload assigned to teachers have significant consequences not only on the students and the entire education system, but also on the overall effectiveness and productivity of the teachers themselves.

Thus the overall attainment of the education goals is contingent on how reasonable the workloads assigned to teachers in the system are. Teachers' workload is directly measured by the overall number of teachers available in the system against the number of students taught, the volume of non-teaching assignment, the number of scripts to mark and record, and other responsibilities considered worthwhile by the school administrator that is regularly or occasionally assigned to the teacher.

The effectiveness of school service delivery is contingent on what the school administrator conceives as the role expectations of the teachers. In this regard, a major function of the school administrator is to rationally analyze what constitute teachers' workload and decides how best to optionally utilize them to achieve results. It is necessary therefore for the school head to work out the most efficient method in assigning workloads that will enable the teachers put in their best toward achieving maximum result. Application of rationality in assigning workload to teachers is necessary because teachers, first and foremost must be seen from the angle of humans who have emotions, can be stressed, depressed, agitated and get bored if overworked. It is for this reason that Ukeje (1992, p. 66) had quipped that excellent management resides in "knowing exactly what you want men to do and then seeing that they do it in the best cheapest way".

The problem in the way schools are managed lies in school administrator not knowing how much work that are reasonable for teachers to do within a stated period of time, hence it is either teachers are been over utilized or underutilized. Either way, this has serious consequences on the overall school goal attainment and the psyche of the teachers. It is the position of this paper that teachers workload can be planned to minimize work overload or underutilization.

HINDRANCES TO EFFECTIVE TEACHER UTILIZATION/SERVICE DELIVERY

Assigning appropriate workload to staff in the school is contingent on the availability and adequacy of teachers in the school. A major setback in proper utilization of teachers in the education system in Nigeria has been that of wrong estimate of teacher requirement for the education sector at all levels of the education system. From early days of Nigerian independence till date, the education system has witnessed shortfalls in teacher demand and supply. For example, the Ashby commission of 1959 was one of the earliest commissions that submitted report on the Nigerian future manpower needs in post primary schools, while later committee on the implementation of national policy on education also submitted report on the manpower requirement of secondary schools for effective implementation of the new policy on education. This later committee for instance had projected that from 1981 to 1989, an additional 114,929 teachers with varying qualifications will be required throughout the federation to meet teacher demands in the secondary school level. The committee also estimated that about 100,000 additional teachers will be required for senior secondary schools in Nigeria shortly after that period (Adiele, 2002). These targets and subsequent reports on teacher demands were never met.

In such situations the school manager is left to plan with staff strength that is far below the prescribed standard. It may be deduced that this reason account for the apparent lack of commitment by the school managers in planning workload and supervised teaching. The system appears to have relapsed into the dictum of everyone to himself and God for us all.

Poor staffing conditions equally account for the inequitable distribution of workload among teachers. In some schools, teachers of social science subjects are more in number, while other disciplines have shortages. This account for uneven distribution of workload making those that are more to have lesser workload. A common feature of the patterns of

teacher recruitment in Nigeria is that more teachers are recruited in the arts and social sciences than in the sciences. It is not surprising then that over the years, the overall performance of school leavers in the sciences has remarkably remained abysmal and poor.

Another major hindrance to effective teacher utilization for quality service delivery is the astronomical increase in classroom population without corresponding increase in facilities and manpower provision. It might be instructive to state that even teachers with the highest academic qualification still need facilities of various kinds for their efforts to yield positive results in terms of teaching-learning outcome. No matter how evenly distributed a teacher's workload may appear, not much can be achieved if teachers do not have the material resources to complement their effort. This too could be frustrating.

PLANNING TEACHER DEMAND AND SUPPLY FOR RATIONAL WORKLOAD

The education system constantly experiences shortages of teachers at different point in time. It is for this reason that planning for teacher's recruitment is a regular management and personnel function in the education sector, to ensure that supplies are available to match demands (Enahwo, 1990). Teacher demand is the number of teachers needed in the education system at all levels to achieve a fixed students-teacher ratio, while teacher supply is the number of teachers that will be offered employment at the prevailing salary structure. (Enahwo, 1990).

The demand and supply factor in education to a great extent affects the availability of teachers in the system and by extension the workload of those recruited to teach. In planning teacher's workload therefore, the following questions should be addressed: First, do the schools have the required number of teachers needed in the various subject areas to achieve the overall objectives of education? Secondly, does the school have the necessary fund to employ and pay the wages of those who are qualified and willing to take up teaching as job? A major problem and set back in any education system is the inability of the system to meet with teacher demand in the sector. When the number of teachers required in the system cannot be met, it invariably result in the over use of the available ones, hence low output in service delivery.

A major characteristic of most education system has been shortage of teaching staff. Study by Adiele (2002) reveals that the prescribed students-teachers ration of 40:1 at the secondary school level in Nigeria has been problematic to achieve. This is the same in both primary and tertiary levels of education. Adiele and Abraham (2004) equally found that the pupil-teacher ratio at the primary school level was as high as 150:1 and 60:1 for secondary schools education in eastern states of the country. There are no indications that the staffing situation in the education system at all levels has improved.

All educational programmes embarked upon in Nigeria had suffered setbacks as a result of the teacher factor. For example in 2003/2004 academic session it was envisaged that basic education programmes would have achieved 85% universal access to junior secondary education at 10% expanded access rate and 100% transition rate (Adiele & Abraham 2004). This target was never achieved due to the fact that teachers of diverse qualifications and specializations who were to be used for programme implementation were not adequate, the available ones were then overstressed leading to programme failure. Obanya (2007) had observed that there are two principal ways of looking at the quantity dimension of the teacher and the teaching question: First is the number of teachers available in the system in relationship to needs (overall demand). Second is the availability of specialized teachers for specific subjects on the school curriculum.

Several factors accounts for the failure of the system to meet up with teacher demand in the education sector. First is the over rising cost of education and second is the poor

funding of education. Since education especially at the basic level is provided under the social welfare package, the government bears the cost of education at the first two levels (primary & junior secondary). For this reason, it is the responsibility of the government to adequately fund education. But over the years, governments have not been able to live up to its corporate social responsibility of funding basic education. The one area that suffers the effect of such poor funding is teacher recruitment. Increase in the demand for education results in increase in teacher demand, but this is not followed by increase in the funding of education. The cost of teachers' salary and entitlements alone consumes over 60% of the total cost of education (Adiele & Abraham, 2004). Thus it has been difficult for the education system to meet up with teacher demand and this has invariably affected the quality of education offered at all levels of the education system.

PLANNING TEACHERS' WORKLOAD FOR EFFECTIVE TEACHING

A major management function of the school administrator is to plan to make the best use of his teachers. A teacher's workload is measured by the number of periods that he spends in the classroom and other school related activities. It equally includes the ratio of students per teacher, the number of classes taught and non-classroom responsibilities (Adiele, 2002).

Planning teachers' workload involves activities geared towards ensuring proper use of teachers by assigning to them the rightful duties based on their qualification and experiences (Ukeje, 1992). To Nwaham (1997) planning for teachers' workload is a function performed by school heads geared towards providing effective utilization of human resources to achieve both the objectives of the school system, the satisfaction and development of the employees.

The basic administrative functions in planning for teacher workload revolve around:

- Efforts at ensuring that able and willing teachers are available to more students;
- Ensuring that teachers' efforts and energies are directed towards genuine educational objectives;
- Assessing teachers' abilities and ensuring that they are maximally utilized for instructional purposes;
- Recognizing individual differences among teachers and assigning teaching jobs accordingly; and
- Ensuring that teaching staff are relieved of routine duties meant for non-teaching staff.

Inherent in any good staffing design is the optimal utilization of staff. In this regards it has been suggested that school administrators should be guided by the following principles while assigning workload to teachers:

- Teachers should be assigned to those subjects for which they are reasonably prepared;
- The best teachers should be assigned to classes needing the greatest help, such as beginning classes, examination classes, slow classes and troublesome but brilliant classes;
- Teachers should be assigned to age levels they can best work with; and
- Teaching load should be seen to be equitably shared (Adiele, 2002).

Teacher's job descriptions should include the various duties performed in line with the following:

- Preparing lessons to be taught, teaching students in the classroom;
- Giving assignments, test etc. and marking and recording such assignments and test;
- Taking part in general school activities;
- Participating in professional activities in the school.

In planning for teachers' workload, the interest of the teacher and the learner must be paramount. This is so because too much workload will surely affect teacher's productivity and hence reduce his morale. A teacher will be demoralized if he finds his class too large and too many scripts to mark and record. If teacher's responsibilities are of intolerable magnitude, it will result to stress and the learners are bound to suffer for it.

One major reason why teacher's workload must be planned by the school manager is to avoid stress and anxiety in the workplace. Teachers like other persons are normal human beings with complete physiological compositions. Thus, they like others are faced regularly with performance expectations from the school, family responsibilities (which include husbands/wives, children, parents, in-laws and other extended family relations). They equally have role expectations in the church, among friends, community where they live etc. So they try to strike a balance between the various role expectations of jobs, family, relationships and others. All these factors make different kinds of demand on the teacher, many of which he/she may have no control over and sometimes may be overwhelmed and unable to cope. When this occurs, stress sets in and productivity drops.

To avoid the situation of stress among teachers, the school manager therefore should be able to plan the content of the workload to avoid long hours of engagement of teachers, work overload, pressure, difficult tasks, lack of breaks, lack of variety in activities, poor physical work conditions (Mato, 2016). It might be instructive for school managers to adhere to the following while assigning workload to reduce stress among teachers:

- No one teacher should do a work that will require up to 3 persons to do;
- There should be planned work schedule (school timetable) detailing starting time, break time and ending time;
- Improved physical environment: good and well ventilated staff rooms, beautification of school environment;
- Provide social support to teachers;
- Workload should be spread to all staff;
- Involve staff in discussion in work schedules that concerns them, they may have suggestions that you may not have considered. This will encourage group participation and sense of belonging to staff;
- Encourage staff members to spend time with their families and watch movies etc; above all, they should avoid school related work during vacation and engage in other hobbies.

CONCLUSION

The paper looked at the planning of teacher's workload for effective service delivery in the school system. Planning was crucial to ascertain the demand and supply of teachers for rational workload and how to utilize the available ones for optimum service delivery. It was established that poor planning will result in not just work overload, but stress, boredom and poor level of productivity. Whereas hindrances exists that affect effective teacher utilization such as shortfall in the recruitment of teachers to man the education system, poor staffing conditions, increase in classroom population etc., planning is imperative to ensure that

teacher's efforts are directed towards genuine educational objectives and target. A major conclusion derived from this paper is that teacher's morale and productivity are likely going to drop if they perceive that their workload are far higher than others who earn similar salaries. It therefore behoves on the school manager to determine how best to use teachers for maximum goal attainment.

Recommendations

The paper makes the following recommendations:

- Workshops and seminars for school administrators and managers should be organized to educate them on how to design teacher's job specifications and workload;
- There is need for school administrators and managers to regularly constitute committees to assist in the planning for the assignment of subjects to teachers based on subject area specialization and experience;
- Teachers handling external examination classes should be exempted from other school responsibilities to reduce the workload; and
- Moral support from the school administrator in the form of social support, welfare package and show of concern to staff professional growth will help boost morale of teachers.

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The Problems and Prospects of Small and Medium Scale Enterprises (SMEs) Growth and Development in Nigeria: A Study of Selected SMEs in Delta State

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Abstract

In this study, the researcher evaluated the different paradigms of challenges, prospects and government efforts towards small and medium enterprises (SMEs) in Delta State, Nigeria. The author of this paper theoretically and empirically examined the different sides of the discussion. It provides a relatively broad literature review of the challenges, prospects and government efforts towards SMEs. Yet, it empirically evaluated the challenges, prospects and government efforts so far and the influences they have on SMEs in Nigeria. The study's research design was a survey as much as it is descriptive research design. Data were analyzed using the latest form of the statistical package for the social sciences (SPSS) version 23. Descriptive statistics (frequencies and percentages) were performed on the respondents' demographic information. T-test analysis was used to determine the influence of the tested variables on the growth and development of SMEs. Cronbach's alpha reliability analysis was used to measure the reliability of the instrument. In the study it was found that the challenges of SMEs significantly affect the growth and development of SMEs. Government efforts were found to significantly affect the growth and development of SMEs in Nigeria. However, the prospects of SMEs in Nigeria do not significantly affect its growth and development. And there were no significant differences in the opinions of the respondents based on their age and gender. Recommendations were proffered.

Keywords: SMEs, Problems, Government, Efforts, Prospects, Delta State, Nigeria.

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INTRODUCTION

Small and medium scale enterprises (SMEs) are largely viewed as the engine wire of any nation's economic growth and they are regarded as justifiable means that propel development globally. SMEs are labour intensive; as much as they are capital saving business ventures. They are capable of making people self-reliant and generating billions of new jobs globally (Abeh, 2017a,b; Kadiri, 2012). They are also observed as the key drivers to economic growth and poverty reduction (Agwu & Emeti, 2014).

SMEs are significant parts that links, strengthen and enhances the development of the countries. Their performance and growth in manufacturing, agriculture, services, etc., has been considered as the drivers and has contributed to the Nigeria economy. Sustainable growth and the increase in SMEs performance create competitiveness that opens numerous doors for employment opportunities, tangible and intangible assets (investment) in the environment (Eniola & Ektebang, 2014).

Historically, Nigeria's independence in 1960 marked a turning point in the growth and development of SMEs, which has created much of the emphasis on SMEs as panacea in the reduction of poverty and joblessness or unemployment in Nigeria as a whole. The adoption of the Economic Reform Programme (ERP) of 1986 indicated a pivotal shift from impressive, capital intensive and large scale industrial projects based on import substitution to small scale industries with enormous potentials for the development of domestic linkages for sustainable economic and industrial development (Agwu & Emeti, 2014). As such, SMEs perform very important part of the Nigerian economy (Eniola & Ektebang, 2014). Though, SMEs have developed over the years in Nigeria in spite of its challenges.

SMEs reduce the flow of rural to urban migration because SMEs can easily be set up with minimal capital and managerial skills. As much as they can easily be set up, they contribute significantly to a country's Gross Domestic Product (GDP). Majority of the SMEs in Delta State are family/sole proprietorship businesses depending on their activities. However, commercial SMEs constitute more than eighty percent of the entire number of SMEs in Delta State.

SMEs in the contexts of this study are enterprises that have the same common characteristics of ownership and management of individuals or family, and the decision-making processes are often personal. Mainly it requires little amount of capital base in general to establish SMEs, and often finds it difficult to raise needed funds for expansion.

Statement of the Problems

Nonetheless, the failure of SMEs in Nigeria to generate sufficient employment, reduce poverty in recent years has paved way for research intense interests on the challenges, government efforts and prospects of SMEs.

Purpose of the Study

The purpose of this article is to evaluate the challenges and prospects of SMEs in a sustainable and competitive advantage or disadvantage of its growing importance in Nigerian economy. At the end, some guidelines will be proffered in order to advance the growth and development of SMEs for competitive advantage and contribute to the gap in academic research on SMEs in Nigeria. Specifically, the purpose of this study is:

- To evaluate the extent the challenges of SMEs affect its growth and development in Nigeria.
- To appraise the extent of government efforts in the growth and development of SMEs in Nigeria.
- To assess the prospects of SMEs growth and development in Nigeria.
- To determine the perception of SMEs owners and their views toward the growth and development of SMEs in Nigeria.

Research Questions

In order to address the aforementioned problems, four research questions guided the study:

- To what extent do the challenges of SMEs affect its growth and development in Nigeria?
- To what extent do government efforts determine SMEs growth and development?
- To what extent are the prospects of SMEs growth and development in Nigeria?
- To what extent does the perception of SMEs owners influence their views toward the growth and development of SMEs in Nigeria?

Hypotheses

The following hypotheses directed perceptions towards SMEs problems and challenges:

- The challenges of SMEs significantly affect their growth and development in Nigeria.
- Government efforts significantly affect SMEs growth and development in Nigeria.
- The prospects of SMEs significantly affect their growth and development in Nigeria.
- There is no significant difference in the perception of SMEs owners and their views toward the growth and development of SMEs in Nigeria.

LITERATURE REVIEW

Challenges/Problems of SMEs in Nigeria

SMEs in Nigeria are confronted with several challenges. These challenges stand as barrier against effective growth and development of SMEs in Nigeria. The factors can be categorized into eight and can have devastating impacts if not properly handled. Figure 1 shows details of the challenges.

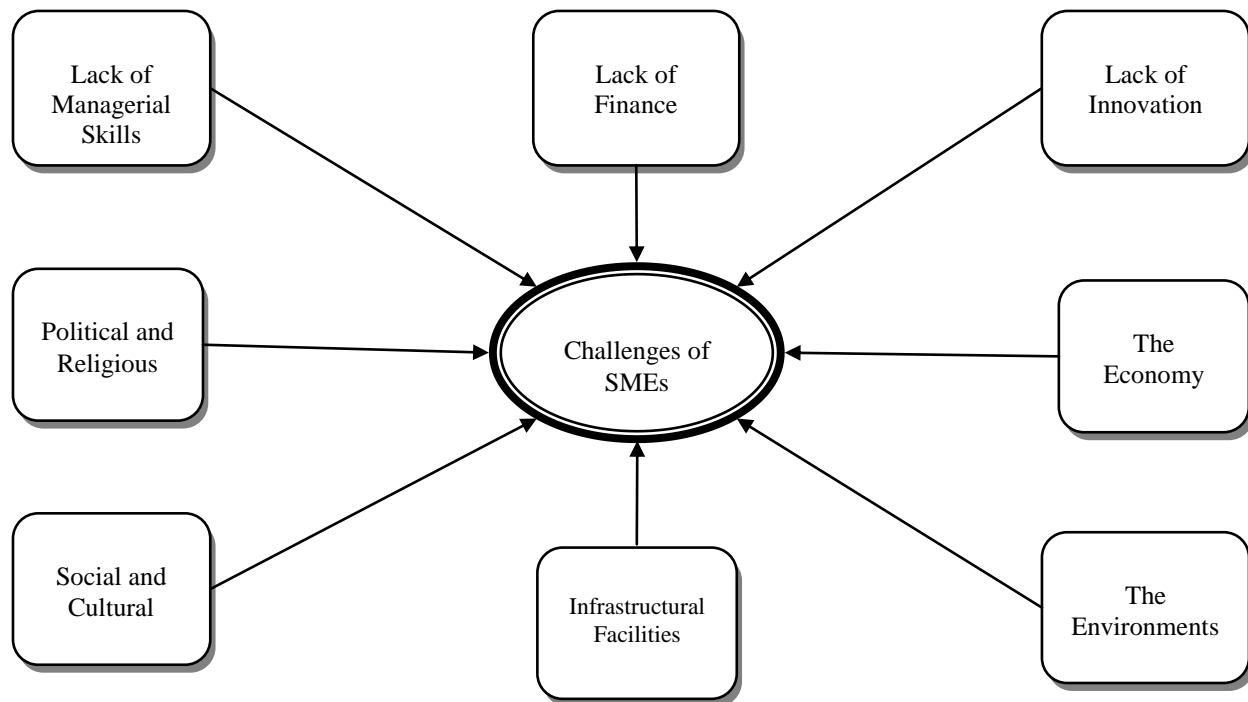


Figure 1: Some of the Challenges of SMEs in Nigeria

Lack of Managerial Skills

In running effective SMEs in Nigeria, efficient and effective managerial skills are required. Many SMEs lack the basic skills, techniques and aptitude to successfully operate a business. The managerial skills and talents necessary for planning, organizing, directing and controlling both the human and material resources are essential components of effectively running a business outfit. The study of Ololube and Uzorka (2008) showed that SMEs are unable to employ and maintain highly skilled workers because of their small sizes and the limited capital available. Skilled personnel like accountants and managers that are meant to be employed by SMEs are not engaged partly due of financial problems. This has resulted in poor accounting and financial management practices experienced by SMEs in Nigeria.

Lack of Finance

According to Ololube in Abeh (2017a), the budgetary allocations set aside to assist and that are available for SMEs growth and development in Nigeria is very small. Funds provided for SMEs are too small for proper planning for the takeoff of SMEs. The condition of the SMEs remains a thing of concern. Under-funding and systemic corruption makes the matter worse. Inadequate funding of SMEs stands as one of the major factors working against effective SMEs, planning and implementation (Abeh, 2017b). The capital base of would be entrepreneurs in Nigeria is very low because of the poverty rate and most SMEs find it difficult to access loans from banks. As a result, many of them are undercapitalized.

Lack of Innovation

According to Naylor (1999), innovation is key to SMEs strategy and a central factor for its competitive growth and development. To Lam in Abeh (2017a), SMEs are expected to introduce innovation into their business in order to create sustainable SMEs business solutions. Innovation is a process that creates knowledge, which is collected, shared and integrated. In other words, it takes the form of new technology or new product or services. Thus, innovation is related to change that can be integrated or incremental. Commonly, innovation can be considered as implementation of exploration and process that shapes outcomes and products.

Political and Religious

The present political dispensation in Nigeria since independence does not allow for favourable and conducive environment for SMEs to operate. Delays in the passing of national budgets both in the states and federal levels are a major example. Party wrangling and disagreements takes months and years to settle. Unfavourable policies, laws and delays in the implementation of the national budgets stall proper planning of SMEs in Nigeria. The list is endless. According to Ololube and Uzorka (2008), the political atmosphere in Nigeria does not favour SMEs because they bear the brunt of such situations whenever they arise. The constant change of power from one administration to another in the political his of Nigeria has militated against the success of SMEs. The persistent religious crises in Nigeria have negatively affected SMEs. Small businesses cannot afford to bribe their way towards having police and military personnel to guide their businesses. Most deaths that occur during religious crises are victims of small business owners. Politicians have failed on several occasions to address this issue as it does not affect their interest greatly, as such; efforts are not put into resolving the conflicts.

Social/Cultural

There is evidence (Ololube & Uzorka, 2008) that social factors influence the likelihood of a person becoming an SME owner or manager. The evidence according to Ololube and Uzorka (2008) include peaks in the age profile of the self-employed: the interaction of personal and social factors is illustrated by the data on ages of the self-employed. One of such studies according to Ololube and Uzorka found that SME starters were aged between 30-45 years. Most SMEs follow from social marginalization and it is more common in some ethnic groups and some parts of Nigeria. It is predominantly evidenced that the Ibo speaking ethnic group tends to venture into business more than other ethnic groups in Nigeria. In the same degree of measure, they also have the propensity to sustain and grow in their businesses. This is because they grasp every opportunity that comes their way in business. Most of the northern part of Nigeria do not allow female to partake in business activities. Rather they prefer women to be full house wives.

Economy

The economy of Nigeria is marred with corruption in all aspects and corruption has continued to pose serious menace to the survival of SMEs in Nigeria. The latest report of Transparency International's 2016 Corruption Perception Index ranked Nigeria one of the most corrupt countries in the world (Economy Watch, 2016). Corrupt practices appear to permeate all levels

of Nigeria's business and public life, from high ranking officers, who collect material inducement to disburse government approved funds to micro, small and medium scale enterprises, down to office assistants, who declare files missing if not submitted with tips (Anochie et al., 2015). The high cost of doing business in Nigeria imposes economic dimension of challenges encountered by SMEs. In the present day Nigeria, the rate of poverty has resulted in the death of most SMEs because people can no longer afford to buy products and services provided by the SMEs. A drastic improvement in the nation's economy will go a long way in resolving these problems.

Environmental

Another constraint in the growth and development of SMEs in Nigeria relate to environmental problems. Most SMEs in Nigeria and particularly in Delta State face a lot of environmental challenges. Multiple taxation from environmental and allied agencies makes the operation and smooth running of SMEs difficult. This factor affects both entrepreneurial firms and non-entrepreneurial small businesses (Eneh, 2010; Abimbola & Agboola, 2011).

The high cost in business incorporation names, legal and professional fees, business permits and licenses increase start-up costs of SMEs. The incidence of multiple taxation and levies in different forms by the federal, state and local government authorities constitute militating forces for emerging small businesses (Anochie et al., 2015).

The incessant cases of kidnapping in the Niger Delta and the insurgence by the Boko Haram's sect in the Northern part of the country have greatly affected the growth and development of SMEs in Nigeria, and has created unhealthy and insecure environment for SMEs operation.

According to World Bank Business report in Abimbola and Agboola (2011), Nigeria was ranked 108 out of 178 economies studied with regards to friendly business environment. Several sub-Saharan countries like Botswana, Ethiopia, Ghana, Kenya and South Africa have better ranking. The provision of conducive environment for the development of SMEs will advance the growth and development of Nigeria (Ololube, Uriah & Dudafa, 2014).

Infrastructural Facilities

Ololube et al. in Abeh (2017a) observed that SMEs do not operate without a number of challenges that impede their successful entrepreneurial drive for national development. Amongst the notable challenges: almost all sub-Saharan African countries' basic ICT infrastructures are inadequate. This is as a result of lack of electricity to power ICT resources, poor telecommunication facilities, and insufficient funds in general. Nigeria spends less than 12% of its annual budget on SMEs. Agboli and Ukaegbu (2006) highlighted the devastating effect of poor infrastructural facilities, including epileptic power supply, poor condition of road network and inadequate water supply on emerging businesses. In Nigeria, a large number of the population live below the poverty line, as such, average middle-income SMEs cannot afford basic technological and communication gadgets. The cost of computer related gadgets in Nigeria is three times the monthly wage of average SMEs. Thus, computer related telecommunication facilities remain less than useful for most Nigerian SMEs, as computers are still a luxury in most SMEs, and many SMEs have not had the chance to develop the skills to use them. This has made the integration of needed on-line business resources (e.g., e-mail and the world-wide-web) into

SMEs in Nigeria most difficult (Ololube et al. in Abeh, 2017a). According to Ololube and Uzorka (2008), huge amount of monies are spent on running generator sets to power equipment's used for production of goods. Transportation from the rural areas to the urban centres is as well expensive, including the installation and maintenance of bore-holes for water supply.

Government Efforts in the Growth and Development of SMEs in Nigeria

Governments in Nigeria have consistently made efforts towards the growth and development of SMEs in the country. However, in spite of these efforts, the expected results in terms of solving the challenges of facing SMEs still persist. According to Anochie, Ude and Egbo (2015), the efforts of governments can be identified as:

Small and Medium Industries Equity Investment Scheme (SMIEIS)

The Federal Government approved the setting up of SMIEIS to promote SMEs. Bankers Committee in December 1999 approved the scheme, which required setting aside 10% of their profit after tax for investment in SMEs. However, the federal government scheme has not been able to attract the expected patronage from the target group amongst the SMEs. This is evidenced in the relatively low patronage drawn from the large pool of investible funds (Central Bank of Nigeria, 2003). The setback is as a result of the lack of national spread. As at 2009, only twenty eight billion Naira (N28 billion), amounting to (67%) of the N42 billion set aside under the scheme was accessed (Central Bank of Nigeria, 2009; Anochie et al., 2015).

Bank of Industry (BOI)

The Federal Government of Nigeria in 2000 established the Nigerian Industrial Development Bank (NIDB), the Nigerian Bank for Commerce and Industry (NBCI) and National Economic Reconstruction Fund (NERFUND) to address the shortages in the finances of SMEs and Industries. Specifically, NERFUND was established to cater for SMEs in Nigeria by providing medium and long term credit to SMEs.

Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB)

These include a combination of three development financial institutions established by the Federal Government of Nigeria to cater for the needs of SMEs in Nigeria. They include: The Nigerian Agricultural Cooperative Bank (NACB) and the Peoples Bank and Family Economic Advancement Programme (FEAP). These financial institutions were merged in 2000 to form Nigerian Agriculture Cooperative Research Development Bank (NACRDB). The merged financial institutions took off in 2001 with an authorized capital base of One billion Naira (N1 billion) (Central Bank of Nigeria, 2001). The merged financial institutions were based in rural areas and provided easy-to-access credit finance facilities and agricultural inputs to rural farmers, cooperative societies and SMEs. Nonetheless, the major problem with NACRDB is that it has limited spread to its target groups, and over eighty percent of its target population have no access to their services (Anochie et al., 2015).

Microfinance Banks

The Federal Government in 2005 directed the Central Bank of Nigeria to launch Microfinance policy, regulatory and supervisory framework for Nigeria, but it was however revised in 2011. The aim of the framework was to strengthen the financial incapability of the community banks to microfinance banks and meeting their specified requirements to solve the problem of urban bias and the provision of affordable financial services to SMEs (Central Bank of Nigeria, 2011). Nevertheless, the problem/challenges of urban bias have not been successfully addressed because large segments of the targeted SMEs are actively poor in the rural areas and do not have access to microfinance services.

The National Directorate of Employment (NDE)

The National Directorate of Employment (NDE) was legally empowered by NDE Act, CAP 250 of the Law of the Federal Republic of Nigeria (formally Decree No 34 of 1989), the Directorate has responsibility to design, and implement programmes to combat mass unemployment in Nigeria. The NDE programmes include vocational skills acquisition training, employment counselling and job linkages, entrepreneurial training and enterprise creation, amongst others. The major problem of the NDE is its inability to provide post-training resources for job creation, resulting from lack of commitment by successive state and federal governments.

Small and Medium Enterprises Development Agency of Nigeria (SMEDAN)

The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) was established by the Act of 2003. SMEDAN has the mandate to stimulate, monitor, and coordinate the development of micro, small and medium enterprises (MSMEs) in Nigeria by initiating and articulating policies, programmes, instruments and support services for the development of SMEs subsectors. All the same, SMEDAN has not made any noteworthy impact on the target population because of lack of awareness (Anochie et al., 2015).

Entrepreneurship Development Centres (EDCs)

The establishment of the EDCs was aimed at providing institutional support for the development of SMEs. Additionally, entrepreneurship development centres have been established in Nigeria's tertiary institutions and entrepreneurship has become a compulsory course of study in Nigerian universities. However, the effectiveness of such academic programmes is limited by disconnects experienced between the centres and the industrial sector, who are supposed to provide practical training and experience for students (Ololube, Uriah & Dudafa, 2014).

Youth Enterprise with Innovation in Nigeria (YouWIN)

The Federal Government of Nigeria established YouWIN in 2013 in its latest efforts to develop entrepreneurship in the country. YouWIN is an innovative business plan competition aimed at job creation to encourage and support aspiring entrepreneurial youths in Nigeria to develop and execute business ideas (YouWIN, 2013). Youths between the ages of 18-45 years compete for national award of one to ten million Naira (N1million to N10 million) to execute their business

plans and ideas (YouWIN, 2013). According to Anochie et al. (2015), YouWIN is the first time where effort is being made to identify entrepreneurial skills in Nigeria. However, its sustainability is in doubt because of its nature and the political undertone associated to the programme.

Prospects of SMEs in Nigeria

The unemployment situation in Nigeria coupled with the rural-urban migration with fear-provoking turn-out of school leavers, polytechnics, colleges of education and university graduates has multifaceted the activities of the SMEs. SMEs create jobs for these groups of individuals, which conversely reduces rural urban migration. With the least amount of support and little management abilities, many unemployed graduates can start something for themselves taking advantage of the knowledge and technical skills acquired during their undergraduate studies. Successful SMEs set up through this process have the prospects of employing some of the unemployed school leavers and graduates, which in turn assist in reducing the level of unemployment in the country (Ololube & Uzorka, 2008). Under listed are some of the prospects of SMEs:

Employment Generation

In Japan, SMEs employs about 74% of workforce. In Korea and Taiwan, SMEs employs about 82% of its workforce. In the United State of America, SMEs account for 87% percent of the countries workforce. In Germany, SMEs employs about 72.6% of its labour force. Thus, SMEs generally accounts for more than 70% of the workforce of developed countries. SMEs do not only provide direct employment but also serve as avenues for self-employment for both rural and urban inhabitants. SMEs in Nigeria employ about 60% of its workforce but hardly make progress because of the numerous problems they face. To move Nigeria's economy forward, more attention should be to re-focus on encouraging the growth of Small and Medium Enterprise by empowering them through adequate funding from banks.

Wealth Creation and Poverty Reduction (WCPR)

Poverty is simply defined as the state of being poor and unable to provide basic human needs such as food, clothing, and shelter. Poverty denotes a state of need, of not having access to necessities of life that support actual dwelling. It is a state of helplessness (Asikhia, 2010). Literature (Asikhia, 2013, 2016) has shown that poverty is on the increase in Nigeria; fifteen percent (15%) of Nigerian were poor before 1965. This increased to twenty-eight percent (28%) by 1965; in 1995 it rose to sixty-six percent (66%). A recent World Bank (2014) report places Nigeria's poverty rating at seventy-two percent (72%).

According to Ojha (2016), SMEs convert the dormant and idle resources like land, labour and capital into goods and services resulting in increase in the national income and wealth of a nation. The increase in national income is an indication of increase in net national product and per capita income of the country, which invariably reduces poverty. Although most SMEs in Nigeria have personal motivation to acquire wealth, but are not distributing it, hence the low percentage of wealth that SMEs contribute to poverty reduction (Asikhia, 2016). For SMEs to be able to create wealth, government should direct financial institutions and banks, who are

supposed to provide finances to SMEs to create special cells to provide easy finance to rural SMEs (Ojha, 2016). To Eniola (2014), reduction of poverty through the promotion of SMEs plays a substantial role in the development process of any country. SME promotion may be one of the most effective poverty reduction instruments.

Promotion of Local Entrepreneurship and Indigenous Technology Development (PLEITD)

The promotion of cottage and rural industries is one of the major contributions of small business to economic development. They are the foundation of any economy because their presence in rural areas do not only help in the development of such places but also support the social and economic transformation of such areas. SMEs stimulate national resources and indigenous technology. Natural resources that are supposed to be lying waste or dormant are put into use as SMEs participate in the production of goods and services or rather buying and selling (Ololube & Uzorka, 2008). Historically, most of today's giant corporations began as very small industries, for example, Guinness of Dublin and Philips international of the Netherlands, Sonny and Honda of Japan. Therefore, Nigeria can learn from the experience of these giants and create conducive environment that will enable SMEs to adapt imported technologies, modernize their process and grow to become large corporation (Eniola, 2014).

Mitigation of Rural-Urban Drift

SMEs stand a better chance of reducing rural-urban migration. The rural populace gain useful employment as a result of the activities of the small business, consequently the incident of rural-urban migration is will be reduced. As a result, attention should be placed on how to effectively address the challenges of SMEs to enable them fulfill the prospect of reducing rural-urban migration. According to Ololube and Uzorka (2008), the presence of abundant human and natural resources available in the rural areas will be lying waste in the rural areas if not for the location of SMEs in those areas. The effective utilization of these resources assists in the economic development of a nation if properly harnessed. Therefore, the government has a great role to play in this regards by supporting rural SMEs.

Income Redistribution and Industrial Dispersal (IRID)

No matter how small, SMEs generate income as much as they also distribute income. SMEs generate income both for the citizens and the nation through their various economic activities. This is done by means of people gaining paid employment and taxes paid to government. According to Eniola (2014), SMEs often contribute to a more equal distribution of income or wealth. The SME managers and workers are not faring well in income distribution; promoting the growth of SMEs may lead to a more equitable distribution of income. SMEs contribute not just to income generation, but also partake in the activities of income distribution, which improved living standards. SMEs help spread income to most people in a nation. Subsequently the majority of Nigeria SME owners are over 68 percent and they live in rural areas, and narrowing the gap between urban and rural development and to monitor social inequities and rural migration. Promotion of the development of SMEs should continue to be a policy priority by the Nigerian government (Ololube & Uzorka, 2008).

Export Promotion

The promotion of large scale production encourages export promotion. Modern SMEs are interdependent on each other for survival. They supply the much needed raw materials to bigger industries who in turn export them. Increase in the demand for specific raw material makes it possible for economics of large scale production, which results in lowering of prices to the advantage of the consumers, and as a result of the large scale production, enough is left for export.

METHODOLOGY

Study Design

This study is a survey as much as it is a descriptive research design. The study attempts to describe the outcome of the challenges, prospects and government efforts so far and the influences they have on SMEs growth and development in Nigeria. The design identifies three group variables, which have been observed, judged or described to possess certain influences on SMEs in Nigeria (figure 2 summarizes the research design).

The research population for this study included all SMEs in Delta State, Nigeria. The population defines the limits within which this research finding is applicable. Thus, it shows the limit to which these results are generalizable unto it.

In this study, the respondents comprised 130 SMEs owners in three cities in Delta State: Asaba, Agbor and Warri. Out of the 150 questionnaires distributed only 130 questionnaires were returned representing a response rate of 86.7%.

The categories of respondents based on age revealed that the respondents were aged between 28-59 years. Information on respondent's gender hold that the male respondents were 96(73.9%), while 34(26.1%) were female. The instrument (questionnaire) used for data collection was designed by the researcher and validated by experts in the measurement and evaluation.

The purpose of the study and the importance of conducting the research and the instruction on how to complete the questionnaires were explicit in the first page. The questionnaire comprised four sections: section 1 contained information on respondents demographic data (age and gender); section 2 emphasized challenges of SMEs in Nigeria; section 3 talked about variables relating to government efforts towards promoting SMEs in Nigeria; while section 4 deals with issues of prospects of SMEs in Nigeria.

The questionnaire was fashioned along a six-point scale numbered 1, 2, 3, 4, 5 and 6. The rating system adopted followed the subsequence of: 1=Strongly Disagree (SD), 2=Disagree (D), 3=Slightly Disagree (SD), 4=Slightly Agree (SA), 5=Agree (A) and 6=Strongly Agree (SA). Section 2 consisted of 8 items and the section's Cronbach's alpha reliability analysis was .867. Section 3 contained 8 items and the section's Cronbach's alpha reliability analysis was .778. While section 4 comprised 6 items with a Cronbach's alpha reliability estimate of .817.

The statistical analyses in this study were carried out using SPSS version "23". Descriptive statistics (mean, standard deviation, percentages). *T*-test (*t*) analysis was used in testing hypotheses 1, 2, and 3. While One-Way Analysis of Variance (ANOVA) was used to determine if differences exist in respondents' opinion on the variables.

To answer the research questions, the mean results were tallied along disagree and agree rated on the basis of 1.00-1.99 (strongly disagree); 2.00-2.99 (disagree); 3.00-3.49 (slightly disagree); 3.50-3.99 (slightly agree); 4.00-4.99 (agree) and 5.00-5.99 (strongly agree).

In a two-tailed test, we “reject” on both tails of the normal curve. The critical values are those that cut off an area on each tail of the curve that is equal to $0.05/2$. Bearing in mind the t-test at $p < 0.05$ level of significance, the critical values of “t” for a two-tailed test will be those values which cut off an area equal to $0.05/2$ on both sides of the normal curve. These values are -1.96 and +1.96 respectively.

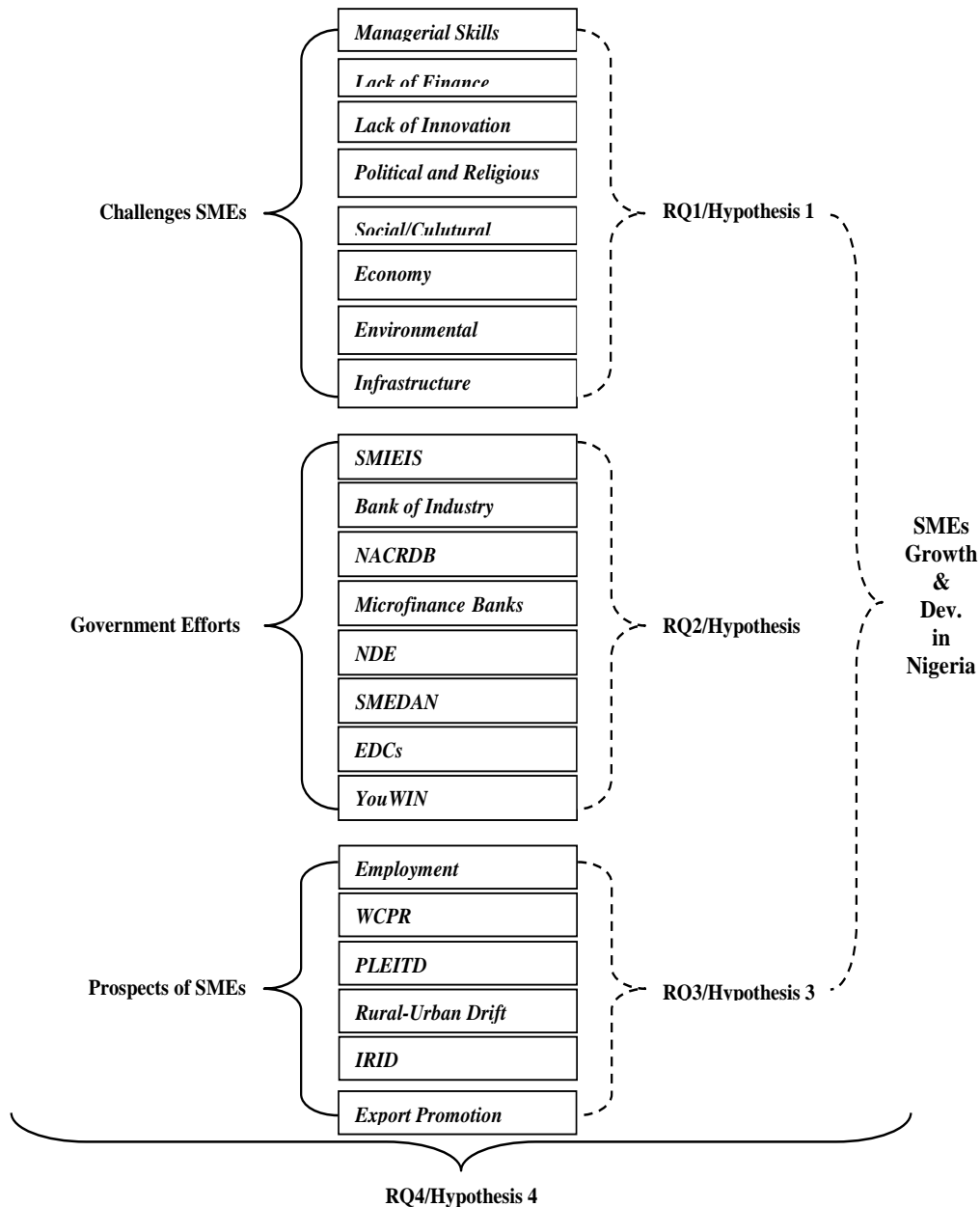


Figure 2: Research Design Summarized

RESULTS AND DISCUSSION

Research Question One / Hypothesis One (Challenges of SMEs in Nigeria)

Research question 1 and hypothesis 1 evaluated if the challenges of SMEs significantly affect their growth and development in Nigeria. Therefore, the first statistical analysis for this study began with an analysis of respondents' answers using mean and standard deviation. The results revealed the extent respondents answered to the challenges limiting SMEs growth and development. Table 1 revealed that all the respondents agreed that SMEs in Nigeria are affected by a number of challenges. A further analysis was conducted using t-test of significance and the results revealed that the challenges faced by SMEs in Nigeria have greatly affected their growth and development with the *t*-test ranging from 31.105 to 59.262 at $p < .000$, 2-tailed. The lack of managerial skills, lack of finance, lack of innovation, political and religious, social/cultural, economy, environmental challenges, and poor infrastructure according to the respondents are major challenges to the growth and development of SMEs in Nigeria. These findings are in line with Ololube and Uzorka (2008), Abeh (2017a,b), Naylor (1999), Eneh (2010), Abimbola and Agboola (2011), and Agboli and Ukaegbu (2006).

Table 1: T-test analysis of the challenges of SMEs in Nigeria

Challenges of SMEs	N	Mean	SD	df	t	Sig. (2-tailed)	Remark
Managerial Skills	130	4.5846	.75107	129	51.381	.000	Agree
Lack of Finance	130	4.8123	.88397	129	36.116	.000	Agree
Lack of Innovation	130	3.5846	.66338	129	58.173	.000	Slightly Agree
Political and Religious	130	4.9154	.89819	129	37.008	.000	Agree
Social/Cultural	130	3.8154	1.01756	129	31.546	.000	Slightly Agree
Economy	130	3.9010	1.09968	129	31.105	.000	Slightly Agree
Environmental	130	3.8420	.95154	129	33.551	.000	Slightly Agree
Infrastructure	130	5.5090	.65415	129	59.262	.000	Strongly Agree

Df=N-1; 95% Confidence Interval

Research Question Two / Hypothesis Two (Government Efforts/SMEs in Nigeria)

Research question 2 and hypothesis 2 was aimed at determining if government efforts towards the growth and development of SMEs significantly affect their growth and development in Nigeria.

The mean and standard deviation statistical analysis for this study's respondents' answers to items 9, 10, 11, 12, 13, 14, 15 and 16 revealed the extent to which government efforts towards the growth and development of SMEs affect their growth and development in Nigeria. Table 2 revealed that all the respondents agreed that Nigeria have to do more to ensure effective and sustained SMEs growth and development in Nigeria. Thus, all government effort at positioning SMEs for growth and national development has not yielded tangible outcomes. A further analysis using t-test of significance revealed that no significant affect have been made so far in a bid by the government to propel growth and development of SMEs in Nigeria through its policies and financial support. Respondents' answers are significant at $p < .000$, 2-tailed. This study's findings are in line with Anochie et al. (2015), Central Bank of Nigeria (2009), and Ololube, Uriah and Dudafa (2014).

Table 2: T-test analysis of government effort towards SMEs growth and development in Nigeria

Government Efforts	N	Mean	SD	df	t	Sig. (2-tailed)	Remark
9. SMIEIS	130	4.5462	.61141	129	66.130	.000	Agree
10. Bank of Industry	130	4.3462	.66719	129	57.183	.000	Agree
11. NACRDB	130	4.4231	.70288	129	55.528	.000	Agree
12. Microfinance Banks	130	5.4462	.70504	129	55.731	.000	Strongly Agree
13. NDE	130	4.3231	.58688	129	64.560	.000	Agree
14. SMEDAN	130	4.2769	.62276	129	59.995	.000	Agree
15. EDCs	130	5.0308	.87991	129	39.272	.000	Strongly Agree
16. YouWIN	130	3.5462	.49979	129	41.773	.000	Slightly Agree

Df=N-1; 95% Confidence Interval

Research Question Three / Hypothesis Three (Prospects of SMEs in Nigeria)

Research question 3 and hypothesis 3 was aimed at determining if SMEs have prospects that will significantly affect their growth and development in Nigeria. The mean and standard deviation statistical analysis for this study's respondents' answers to items 17, 18, 19, 20, 21 and 22 revealed the extent to which SMEs in Nigeria have prospect to growth and development of. Table 3 revealed that all the respondents agreed that Nigeria SMEs have the prospects to grow and develop if Nigeria to more to ensure effective and sustained SMEs growth and development. Thus, all prospective efforts to SMEs for growth and national development have not yielded tangible outcomes because they lack several factors that discourage SMEs prospects.

A further analysis using t-test of significance revealed that SMEs have significant prospects affects if government will propel growth and development of SMEs in Nigeria through its policies and financial support. Respondents' answers were significant at $p < .000$, 2-tailed. This study's findings are in line with Anochie et al. (2015), Asikhia (2010, 2013, 2016), Ololube and Uzorka (2008), Ojha, 2016), and Eniola (2014).

Table 3: T-test Analysis of the prospects of SMEs growth and development in Nigeria

Prospects of SMEs	N	Mean	SD	df	t	Sig. (2-tailed)	Remark
17. Employment	130	4.3769	.57419	129	67.056	.000	Agree
18. WCPR	130	4.2769	.69344	129	53.880	.000	Agree
19. PLEITD	130	4.1308	.40132	129	88.946	.000	Agree
20. Rural-Urban Drift	130	4.2846	.45298	129	32.335	.000	Agree
21. IRID	130	3.8385	1.14664	129	28.225	.000	Slightly Agree
22. Export Promotion	130	4.1385	.34672	129	37.438	.000	Agree

Df=N-1; 95% Confidence Interval

Research Question Four / Hypothesis Four (Perception of SMEs Owners)

Research question 4 and hypothesis 4 were aimed at determining if there were significant difference in the perception of SMEs owners and their views toward the growth and development of SMEs in Nigeria. One-Way Analysis of Variance was used and the analysis (Table 4) yielded that no significant differences were found in the variables and respondents' perceptions based on their gender and age. Respondents were unanimous in their perception about the challenges, government efforts and the prospects of SMEs growth and development in Nigeria.

Table 4: ANOVA analysis of respondents' perception of

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	.455	3	.152	.147	.932
	Within Groups	130.076	126	1.032		
	Total	130.531	129			
Gender	Between Groups	.233	3	.078	.438	.726
	Within Groups	22.298	126	.177		
	Total	22.531	129			

CONCLUSION AND RECOMMENDATIONS

This paper examined the contradictory perspectives of the different paradigms of challenges, prospects and government efforts towards small and medium enterprises (SMEs) in Delta State, Nigeria. This paper has guided us equally through the procedure of buildup on the challenges, government efforts and prospects of SMEs in Nigeria by enriching the academic community with latent findings from the perspective of a developing country. SMEs owners are of the opinion that they are faced with several challenges and problems. Their view portray that government should do more to encourage SMEs in Nigeria towards reaching their potentials through growth and development. To ensure quality performance from SMEs, the prospects of SMEs must be guaranteed. According to Ololube and Uzorka (2008) and Eniola (2014), several current phenomena make SMEs skill development essential. There must be rapid creation of SMEs knowledge, the complexity of SMEs, technological innovation and the need for global competitiveness.

Included is the need for SMEs skill updating, this should be directed at enhancement of SMEs in Nigeria. SMEs growth and development is based on the strength of the supports they receive from governments through effective policies and financial regulations to meet the needs of the SMEs operating in Nigeria. In this era of high global SMEs standards, greater accountability and competitiveness, it is critical that government leaders do everything necessary to improve SMEs for economic development. Therefore, Nigeria can learn from the experience of global giants and create conducive environment that will enable SMEs to adapt imported technologies, modernize their process and grow to become large corporation.

Implication for Research and Practice

This academic work has both practical and conceptual implications that can facilitate a broader understanding of the issues surrounding the challenges, government efforts (policies and directives) and prospects of SMEs in Nigeria. Internet searches and a review of literature have demonstrated that its methodological models are unique in Nigeria, hence it adds to the emerging body of knowledge in the field of SMEs. As such, this study provides empirical information and support for researchers and SMEs practitioners. This study also has implications for government, policymakers and other players involved in SMEs growth and development. It includes how SMEs can be qualitatively improved and the sustainable development of SMEs in Nigeria in particular, and Africa in general. In closing, the successful inclusion of proactive decision-making and policy implementation with regards to the challenges, government efforts and prospects can make informed contributions to achieving improved SMEs in Nigeria by establishing sustainable positive incentives for SMEs growth and development. Nevertheless,

there are limitations to this research as the opinions of 130 respondents out of thousands of SMEs owners in Nigeria cannot be considered comprehensive. As such, researchers are encouraged to use the research questions and hypotheses in this study to further investigate the theme of this study.

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Predictive Estimates of Psycho–socio–Personal Variables on Organizational Citizenship Behaviour (OCB) among Personnel of NSCDC in Southwestern Nigeria

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Abstract

Organisational citizenship behaviour (OCB) implies acting beyond the formal job description for the purpose of corporate and individual benefits. This is waning in the Nigeria Security and Civil Defence Corps (NSCDC). This scenario has been rendering the commitment of the NSCDC towards the combat of vandalism, protection of critical national assets, supervision of private guards and management of disasters to be less effective. Past studies on OCB among para-military personnel were only on the organizational factors and with no consideration of the NSCDC. This study, therefore, investigated the predictive estimates of psycho-socio-personal variables (creativity, leadership behaviour, social innovation, social intelligence, religiosity, age, job tenure, marital status, gender, educational level, organizational tenure and job cadre) on OCB among personnel of the NSCDC in the Southwest, Nigeria. The Social Exchange Theory provided the study framework, while descriptive survey design of the *ex-post facto* type was adopted. Using multistage sampling technique, a random sample of 1,696 personnel (966 males) were selected from 24 divisional offices (DOs) of the NSCDC. The DOs were randomly selected from the three area commands and three state commands respectively in Ogun (5), Osun (10) and Oyo (9) made up of officers and men. Data were analysed using Pearson product moment correlation and Multiple regression at 0.05 level of significance. The OCB of NSCDC personnel correlated positively with leadership behaviour ($r=.648$), social intelligence ($r=.339$), social innovation ($r=.548$) and job cadre ($r=.062$). There was a significant joint prediction of the independent variables on OCB. Hence, it was recommended that organizational citizenship behaviour should be encouraged among the personnel of NSCDC; and Counselling and Organisational psychologists should take into cognisance these psycho-socio-personal variables found to be significant in the effective management of the personnel of Nigeria Security and Civil Defence Corps as a whole.

Keywords: Creativity, Leadership behaviour, Social innovation, Social intelligence, Religiosity, Age, Job tenure, Marital status, Gender, Educational level, Organizational tenure, Job cadre.

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INTRODUCTION

Organizational Citizenship Behaviour (OCB) is firstly used by Dennis Organ (1983) to mean willingness to cooperate (Mehboob& Bhutto, 2012). And it is accepted as vital subject to survival of an organization and meets personal goals and needs (Bahrami, Montazeralfaraj, Hashemi&Dehghani, 2013; Unal, 2013). So far, numerous definitions of organizational citizenship behaviour have been presented. According to Organ (1988), OCB is the behaviour that is discretionary, not directly or explicitly recognized by the formal reward system; and that in aggregate promotes the effective functioning of the organization (Khaola, 2008). Helping others, loyalty, and organizational compliance are forms of OCBs (Lee, Kim & Kim, 2013). OCB is not a job requirement and is not part of a formal contract, but it's a personnel's choice (Mehboob& Bhutto, 2012; Vazifeh, Rahnama, Lotfi, &Dorosti, 2013).Also, many constructs have been developed to conceptualize the term OCB since Organs (1988) construct such as prosocial behaviour, extra role behaviour, civic organizational behaviour and contextual performance behaviour.

When the rate of turn-over among organizations is high and still increasing (Carson, Carson, Roe, Birkenmeier& Philips, 1999), it is important that managers succeed in creating an environment of commitment in order to reduce the possibility of turnover in their particular company (Gunz, 2002).

Organizational Citizenship Behaviour (OCB) reflects employees' behaviours that are beyond their formal job definition and are not required by the regular reward system (Organ, 1988). Such behaviour supports the organisation's goals. Organizational citizenship behaviour was also found to apply to an employee's attitude toward other members of the organization (Becker, 1992). It also involves caring for others in the organization and even at the worker's own expense, for example, relinquishing certain job benefits to prevent redundancies (Puffer, 1987). Expressed as employee's readiness to contribute beyond the formal demands of the job, OCB helps the work teams and the social systems operating within the organization (Bateman & Organ, 1983). It creates a positive atmosphere, encouraging others to continue to devote personal resources to the organization as an informal contribution. All this is perceived as an organizational behaviour that has a positive impact on the organizational productivity (Organ, 1990). In addition, the worker is expected to show greater flexibility and co-operation within the organization (Goulet & Frank, 2002).

In conjunction to the above, organizational citizenship behaviour leads to greater freedom of operation among the employees themselves, as they assist one another. Such behaviour should also influence the degree of the organization's flexibility within its environment, a capacity that is necessary if the organization is to fulfil its tasks in a dynamic environment. An example of higher OCB, indicating a worker's greater flexibility and willingness to work beyond the formal limits of his/her job (Matthew, et al, 2001) is his/her readiness to volunteer for team activity though this is not specified in his/her formal work contract.

In general, OCB has been described as consisting of two directions. One is behaviour to the members of the organization, for example, supporting and assisting another team member, or helping a new worker (Organ & Paine, 1999). This direction has been referred to as "OCB Altruism". The second type of behaviour is directed towards the organization as a whole, hence, treating it as an extension of one's own possessions. Example of this would include a very high work ethic beyond the formal expectations, very few absences from work and so on (Williams

&Anderson, 1991). This direction of responsible citizenship behaviour toward the organization as a whole has been termed “OCB Compliance” (Organ, 1990).

These two behavioural directions could help employees gain added recognition, since it is easily identified by organization administrators. However, as mentioned, many administrators currently have no authority to control, supervise, or reward such behaviours (Cohen & Vigoda, 1997). On the other hand, more recent research has indicated that although OCB is not a formal requirement of the job, it is very influential on work attitudes and therefore it is an element which is receiving more and more consideration (Coyle-Shapiro, 2002).

However, several factors have been identified as contributing or predicting organizational citizenship behaviour. This study focuses on the following as probable predictors of organizational citizenship behaviour. They include creativity, social intelligence, leadership behaviour, social innovation, age, gender, religiosity, job tenure, educational level, organizational tenure, marital status and job ranking/ seniority/ job cadre. Therefore this study intends to examine the predictive influence of each of these variables on Organizational Citizenship Behaviour (OCB).

Mulgan (2006) defines social innovation as ‘innovative activities and services that are motivated by the goal of meeting a social need’. Mulgan suggests that the drivers of social innovation are rooted in discontent or an apparent need; the cultural basis of social innovation can be considered a combination of exclusion, resentment, passion and commitment. Phills, Peiglmeier and Miller, (2008) present another useful definition, that social innovation is ‘a novel solution to a social problem (menace) that is more effective, efficient, sustainable or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals’. They argue that social innovation is the most appropriate concept to understand and produce lasting social change. Mumford (2003) uses the term to mean ‘the generation and implementation of new ideas about how people should organize interpersonal activities, or social interactions, to meet one or more common goals’.

Amabile, Conti, Coon, Lazenby and Herron (1996) argued that creativity by individual and teams is a starting point for innovation, and all innovations begin with the creation and development of creative idea. In other words, creativity is the seed of innovation. In the fields of strategic and marketing management, the most widely used definition of creativity focuses on the meaningful novelty of new products and their associated management products relative to conventional practice in the market domain to which it belongs. Amabile et al. (1996) argued that both dimensions (novelty and meaningfulness) must be included in the construct of creativity, because the target customers may recognize creative idea as bizarre if they are novel or unique but transfer no meaning or use for the customers. In this study, creativity is perceived as the extent to which employees’ services are perceived as representing unique and meaningfulness different from competitors/counterparts services as to the degree to which organizations’ programmes are perceived as representing novelty and being of use to the publics.

The quality of the relationship between and a leader is often called Leader Member Exchange (LMX). Another component a subordinate of leadership that is positively related to OCB is the leaders' contingent rewards behaviours, such as expressing satisfaction or appreciation for good performance (Podsakoff et al., 2010). Leadership apparently seems to have a strong influence on an employee's willingness to engage in OCBs. Though, somewhat being associated with a specific leadership style, the quality of an employee's relationship with his or her leader plays an extrarole behaviour and is keyed to better performance (Podsakoff et al., 2010).

In addition, leadership roles and dispositions play an important role in the Organizational Citizenship Behaviour in any given organization in this 21st century. Without positive daily interaction with the employees or the human side of the work, the other aspects of a leader's responsibilities will suffer (Cangeni, Burga, Lazarus, Miller & Fitzgerald, 2008). Leadership is a two-sided engagement between leaders and employees to achieve a common goal (Antelo, Henderson & St. Clair, 2010). This engagement actuates leaders to influence their employee's behaviour while simultaneously influencing their employees' perceptions. This leads to expectations of appropriate conduct that becomes ingrained in the organizational job competence (Grojean, Risick, Dickson & Smith, 2004).

Social intelligence is the capacity to effectively negotiate complex social relationships and environments. Humphrey and Einstein (2003) believe that it is social intelligence, rather than quantitative intelligence, that defines humans. In addition, these researchers also believe that social intelligence is an aggregated measure of self- and social-awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social change. A person with a high social intelligence quotient (SIQ) is no better or worse than someone with a low SIQ, but they have different attitudes, hopes, interests and desires. The original definition, "the ability to understand and manage men and women, boys and girls, to act wisely in human relations" (Thorndike, 1920, p. 40) refers to the ability of humans to interact effectively among one another. It has been applied for many years to the process that societies and large complex human groups go through to become better and grow together.

The employee's age and their perceptions towards themselves and their work are different and this phenomenon is not a new paradigm in OCB researches. The younger employees align their needs with organizational needs easily and prove to be a little more flexible as compared with their elder counterparts. In contrary, the older employees may tend to be more rigid in adjusting their needs with the organizational needs. Therefore, younger and older employees are different in their orientations toward self, others, and their work. These differences although complex, but lead to observing different important motives for OCB among different age groups of employees. Wagner and Rush (2000) explained that early years (20-34) are the years of establishment and settling down; later years (35-55) are strong sense of self and location in comparison with life and work among the peers. The study of Kashif, Khan and Rafi (2011) confirms that the age of employee has a negative and a marginally significant effect on OCB.

In terms of employee's level of education, probably fresh graduates are much welcomed in competitive agencies like NSCDC and others due to the challenge of offering the reliable services to the consumers. The results of the studies in social sciences vary with a change in context, culture and economic conditions). As it is, the researcher asserts that educational status of personnel plays a significant role in exhibiting helping behaviour in the work place.

Moreover, employee's gender is also germane in that it is evident that gender has appeared to be an important explanatory factor for the citizenship behaviour. In various studies, it has been argued that some dimensions of OCB are found in male (civic virtue) while some dimensions (altruism) are more exhibited by female counterparts (Heilman & Chen, 2005).

Additionally, it is also clear that the gender has a significantly strong relationship with citizenship behaviour. However it is also asserted by the literature that gender has more moderation effect in organizational studies. Literature provides evidences that females are more likely to exhibit OCB than males (Farrell & Finkelstein, 2007) but Farooqui (2012) study reveals that men are more likely to engage in extra role behaviours than female. The relationship may

vary with the type of the organization an employee is working for. Although, it would be interesting to note that, on all of the dimensions of OCB, men are more inclined. This may be due to the reason that there are more men in the public sector.

Employment/job tenure is defined as the amount of time that a worker has spent working for the same employer, even if the person's job within the firm has changed. It is an indicator of the stability of an employment relationship and is measured as the response to either of the following questions: "When did you start working for this employer or as self-employed?" or "How long have you been working continuously for your present employer?" For Europe, this information comes from the European Community Labour Force Survey, for the US and Japan, comparable national sources provide this information.

Fem (1963), in an encyclopaedia of religion, defines religiosity to be a set of behaviours or meanings which are connected to the actions of a religious person (p. 647). Religion is such an integral part of life and culture that the essential role it plays in human behaviour has inspired researchers to investigate the potential relationship between various forms of religiosity and social behaviour. This relationship has intrigued both earlier (Allport, 1953) and contemporary researchers (Ntalianis&Darr 2005; Lynn, Naughton & Vander Veen, 2011). For example, religious commitment and participation have consistently emerged as significant contributors in Quality of Life (QOL) indicators such as life satisfaction, happiness, and meaning in life (Poloma& Pendleton 1990). Poloma and Pendleton's comprehensive review of the literature indicated that religiosity was an important predictor of general life satisfaction, existential well-being, and overall happiness. Additionally, it has been linked with outcomes including physical health and psychological well-being (Hayward & Elliott 2009), fewer depressive symptoms (Kutcher Bragger, Rodriguez-Srednicki, & Masco, 2010) and workplace accident frequency (Gyekye&Salminen, 2009).

Organisational Tenure is a demographic variable which plays a significant role in management and psychological research (Cohen, 1993; Griffeth, Hom&Gaertner, 2000). It is often believed that employees who remain in an organization for longer period of time obtain more competency of their job, and therefore, perform at a higher level of OCB than employees/organizations with less tenure. Levinson, Oppermann, Levintow, Varmus & Bishop (1978) argued that people and/or organizations with different career and backgrounds pass through specific career stages characterized by different activities and psychological adjustments. According to this theory, it is assumed that individuals/organizations with high tenure will perform higher than those with low tenure. Sturman (2003) argued that organizational knowledge obtained through organizational tenure have unique positive effects on job performance and thereby improves the employees' OCB. Cohen (1991) postulated that since employees accumulate relevant job experience as tenure increases, their performance and OCB also grow. In a recent meta-analysis of the relationship between organizational tenure and job performance, Ng and Feldman (2010) reported that organizational tenure would be favourably related to various forms of employees' OCB and job performance. Their findings generally confirmed that organizational tenure is favourably associated with performance and OCB. In fact, there are research efforts exploring the moderating impact of tenure in job-related associations (Bradley, 2007; Moser & Calais, 2007; Shirom, Toker, Berliner, Shapira &Melamed, 2008; Wright &Bonett, 2002). This study attempts to identify organizational tenure as a possible predictor of OCB.

Organizational citizenship and the employees' marital status are two inseparable entities due to the fact that being single or married does have influence on the exhibition of helping,

altruistic, pro-social as well as loyal behaviour in an organisational context. This may be accrued to the fact that single personnel usually have time to stay beyond official working hours to perform extra role in the workplace unlike the personnel who are married and may not really have time to stay in the office after official working hour due to the fact that they are being confronted with home front responsibilities and challenges.

Job ranking is also perceived to be closely related to citizenship behaviour due to the category where the employees found themselves and their job descriptions. In essence, the researcher hypothesises that job ranking would have influence on the exhibition of citizenship behaviour in the workplace. This implies that the work category the personnel belong to count on their readiness to engage in extra role behaviour in the work place. There are basically three categories which include Corps Assistance, Inspectorate and Superintendent cadres in the service in question.

Statement of the Problem

The productivity of many organisations are declining day by day because most of the effective, committed, socially intelligent and creative employees who determine the success and survival of organisations in the 21st century are becoming weary and lukewarm, possibly because their extra role behaviours are not noticed, reinforced and rewarded by the organisation, which has dampened their morale, NSCDC is not an exception. If the issue is not properly addressed now, the security of the nation may be in further jeopardy.

The assumption of this study is that, if workers are sufficiently provided with conducive environment where their knowledge of creativity, social intelligence, social innovation, religiosity and relational and/or positive leadership behaviour are maximally explored, the Organizational Citizenship Behaviour would be enhanced. But if OCB is the totality of extra efforts beyond the formally defined role an average worker puts in, then high productivity would be boosted. In essence, it is assumed that organizational citizenship behaviour could affect workers' commitment and job performance. However, on the basis of the above, this study focuses on determining the extent to which creativity, social intelligence, leadership behaviour, social innovation, religiosity, age, gender, educational level, job tenure, organizational tenure, marital status and job cadre/ranking/seniority predict exhibition of organisational citizenship behaviour of personnel of NSCDC in the southwest, Nigeria.

Research Questions

Two research questions were formulated to guide this study:

- What are the joint contributions of creativity, leadership behaviour, social intelligence, religiosity and social innovation, including the demographic factors to Organizational Citizenship Behaviour among NSCDC staff in South West, Nigeria?
- What are the relative contributions of creativity, leadership behaviour, social intelligence and social innovation, and the demographic factors on Organizational Citizenship Behaviour among NSCDC staff in South West, Nigeria?

METHODOLOGY

Research Design

The study adopted a descriptive survey research design of ex-post facto type.

Participants

The target population was the entire staff of Nigeria Security and Civil Defence Corps in the South-West, Nigeria. About One thousand, six hundred and ninety-six (1,696) personnel of NSCDC were randomly selected for this study. The population comprised both Officers and Men with average age of 31.6. The Nigeria Security and Civil Defence Corps is divided into 37 Commands with each Command sited in the thirty-six states of the Federation and Federal Capital Territory and each state is headed by a Commandant of Corps (CC). Each state is divided into 3 Area Commands headed by Area Commander who should be of a rank of Assistant Commandant of Corps (ACC) and each Area Command covers all the divisions that statutorily fall in the jurisdiction it is designed to cover, hence, each of the Senatorial Districts. Each of the Divisional Offices is being headed by Divisional Officer who could either be Chief Superintendent of Corps (CSC) and/or Superintendent of Corps (SC) as the case may be. South-West Zone comprises six commands namely: Oyo, Ogun, Osun, Ondo, Ekiti and Lagos. In all the 6 target states which consist of 6 commands and about 137 divisions, three state commands were randomly selected (Oyo, Ogun and Osun) with three Area Commands namely Oyo Central-Nine Divisions; Ogun Central-Five Divisions) and Osun Central-Ten Divisions.

Research Instruments

Six instruments were used to collect information for this study. The scales were adapted from validated instruments and were re-validated by the authors. The reliabilities of these scales were confirmed through a statistical test of internal consistency and reliabilities analysis through a pilot study that was conducted on about 100 personnel of Nigeria Security and Civil Defence Corps (NSCDC). The instruments included Organizational Citizenship Behaviour Measure by Suzy and Paul (2009) with an alpha coefficient of 0.83; Creativity Scale by Animasahun (2007) with a Cronbach alpha of .92 and a Guttman split half reliability of 0.86; Social Innovation Scale developed by the researchers with a Cronbach's alpha coefficient of .91; Multifactor Leadership Questionnaire (MLQ-6S) by Avolio & Bass (1995) with a Cronbach alpha and Guttman split half reliability of .87 and 0.78 respectively; The Tromso Social Intelligence Scale (TSIS-IV) by Silvera, Martinussen and Dahl (2001). The Italian Version of the Tromso Social Intelligence Scale (Gini, 2004) yielded the reliability alpha coefficient of .90 and the Religiosity Measures Questionnaire developed by Rohrbaugh and Jessor (1975) has the alpha coefficient of .93.

Method of Data Analysis

Multiple regression analysis was used to analyse the data collected.

RESULTS

The results of the 2 research questions raised are hereby presented in the tables below:

Research Question One

What is the joint contribution of creativity, leadership behaviour, social intelligence, religiosity and social innovation, including the demographic factors to Organizational Citizenship Behaviour among NSCDC staff in South West, Nigeria?

Information in table 1 shows that the joint prediction of all the twelve independent variables to the dependent variable. That is, Organizational Citizenship Behaviour of NSCDC staff correlated positively with the twelve predictor variables. The table also shows a coefficient of multiple correlations (R) of 0.799 while the adjusted R square = 0.636. This means that 63.6% of the variance in the Organizational Citizenship Behaviour of NSCDC staff is accounted for by all the twelve predictor variables, when taken together. The significance of the composite contribution was tested at $p < 0.05$ using the F-ratio at the degree of freedom ($df = 12/1562$). The table also shows that the analysis of variance for the regression yielded an F-ratio of 230.03 (significant at 0.05 level). This implies that the joint contribution of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance.

Table 1: Summary of Regression Analysis of the combined prediction of Organizational Citizenship Behaviour of NSCDC staff

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.799	0.639	0.636	10.96266

Research Question Two

What is the relative contribution of creativity, leadership behaviour, social intelligence, religiosity and social innovation, and the demographic factors on Organizational Citizenship Behaviour among NSCDC staff in South-West, Nigeria?

Data in table 2 reveals the relative contribution of the twelve independent variables to the dependent variable expressed as beta weight. The partial correlation coefficients of organizational tenure, job cadre, leadership behaviour, and religiosity have negative relationship on Organizational Citizenship Behaviour among NSCDC staff. The positive value of the effects of creativity, social innovation, gender, age, educational level, job tenure, social intelligence, and marital status implies that the Organizational Citizenship Behaviour among NSCDC staff is actually determined by positive reinforcement of these eight variables. Using the Unstandardized regression coefficients to determine the relative contributions of the independent variables to the explanation of the dependent variable social innovation ($B=0.691$, $t=33.508$, $p < 0.05$) is the most potent contributor to the prediction followed by age ($B=0.389$, $t=12.767$, $p < 0.05$); gender ($B=0.274$, $t=7.692$, $p < 0.05$); educational level ($B=0.212$, $t=5.696$, $p < 0.05$); organizational tenure ($B= 0.189$, $t=4.768$, $p < 0.05$); creativity ($B= 0.147$, $t=7.031$, $p < 0.05$); job tenure ($B= 0.072$, $t= 2.369$, $p < 0.05$); social intelligence ($B= 0.037$, $t= 2.095$, $p < 0.05$); job cadre ($B= -0.038$, $t= 2.109$, $p < 0.05$); marital status ($B = 0.005$, $t = 0.280$, $p > 0.05$); leadership behaviour ($B = -0.001$, $t = 0.060$, $p > 0.05$) and finally, religiosity ($B = -0.008$, $t= 0.520$, $p > 0.05$) in that order.

Table 2: Relative contribution of the independent variable to the dependent variable (Test of significance of the Regression coefficients)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.646	2.481		2.679	.007
	Creativity	.116	.017	.005	7.031	.000
	LeadershipBehaviour	-.002	.027	-.001	-.060	.952
	Social Intelligence	.108	.052	.037	2.095	.036
	Social Innovation	.563	.017	.691	33.508	.000
	Age	.531	.042	.389	12.767	.000
	Job Tenure	.176	.074	.072	2.369	.018
	Gender	.544	.071	.274	7.692	.000
	Educational Level	.445	.078	.212	5.696	.000
	Religiosity	-.174	.334	-.008	-.520	.603
	Organisational Tenure	-.307	.064	-.189	4.768	.000
	Job Cadre	-1.053	.499	-.038	-2.109	.035
	Marital Status	.130	.464	.005	.280	.779

DISCUSSION

Research Question 1 states that what is the joint contribution of creativity, leadership behaviour, social intelligence, religiosity and social innovation, including the demographic factors to Organizational Citizenship Behaviour among NSCDC staff in South West, Nigeria? Table 1 showed that the prediction of all the twelve independent variables to the dependent variable is significant. That is, Organizational Citizenship Behaviour of NSCDC staff correlated positively with the twelve predictor variables. The table also shows a coefficient of multiple correlations (R) of 0.799 and a multiple R square of 0.636. This means that 63.6% of the variance in the Organizational Citizenship Behaviour of NSCDC staff in South Western Nigeria is accounted for by all the twelve predictor variables, when taken together. The significance of the composite contribution was tested at $p < 0.05$ using the F-ratio at the degree of freedom ($df = 12/1562$). The table also shows that the analysis of variance for the regression yielded a F-ratio of 230.03 (significant at 0.05 level). This implies that the joint contribution of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance. In other words, irrespective of the individual predictive effect, they can jointly induce helping, altruistic and pro-social behaviours in the world of work.

Research Question 2 states that what is the relative contribution of creativity, leadership behaviour, social intelligence and social innovation, and the demographic factors on Organizational Citizenship Behaviour among NSCDC staff in South-West, Nigeria? Table 2 reveals the relative contribution of the twelve independent variables to the dependent variable expressed as beta weight. The partial correlation coefficients of organizational tenure, job cadre, leadership behaviour, and religiosity have negative relationship on Organizational Citizenship

Behaviour among NSCDC staff. The positive value of the effects of creativity, social innovation, gender, age, educational level, job tenure, social intelligence, and marital status implies that the Organizational Citizenship Behaviour among NSCDC staff is actually determined by positive reinforcement of these eight variables. Using the unstandardized regression coefficients to determine the relative contributions of the independent variables to the explanation of the dependent variable social innovation (B=0.691) is the most potent contributor to the prediction followed by age (B=0.389) followed by gender (B=0.274) followed by educational level (B=0.212) followed by organizational tenure (B= 0.189) followed by creativity (B= 0.147), followed by job tenure (B= 0.072), followed by social intelligence (B= 0.037) and followed by job cadre (B= -0.038) followed by marital status (B = 0.005) followed by leadership behaviour (B = -0.001) and finally followed by religiosity (B = -0.008) in that order. The reasons for this are inexhaustible ranging from various issues earlier raised such as work motivation, managing complex social issues, positive behavioural dispositions by the leaders, in-service training and retraining, imbibing positive religious value and belief system, etc.

CONCLUSION

From the findings of the study, it is obvious that citizenship behaviour is highly indispensable to the survival and success of organizations in the global world in general and Nigeria in particular. Therefore, it is highly imperative that all the stakeholders both within and without the NSCDC should explore all the means to integrate the value/tenets of organizational citizenship behaviour into the system they belong. This will go a long way to boost productivity, job performance, commitment, loyalty and acceptability of the organization. The findings have profound policy and practical implications for the government, security operatives, organizational psychologists/administrators, security agencies, and so on. To this end, counselling and organisational psychologists should take into cognisance these psycho-socio-personal variables found to be significant in the effective management of the personnel of Nigeria Security and Civil Defence Corps as whole.

Implications of the Study and Recommendations

The study has numerous implications as the issue of organizational citizenship behaviour is highly germane to the survival of organizations in this 21st century. The factors examined play vital roles in the contemporary organizations. Creativity, that was found to be significant in the exhibition of extra-role, altruistic and pro-social behaviours in the world of work, has to be stressed by the Organizational and Counselling psychologists. That the employees have to be creative in their approach to addressing work related issues and challenges. They need be creative to break new frontiers in the world of work. The staff of the NSCDC must also crave for knowledge to be creative so as to meet up with the global standard of operations in the contemporary world.

Moreover, the staff of the NSCDC in general and in particular must keep abreast the fact that general intelligent quotient is not enough to survive in the world of work in this 21st century but they need to be able to negotiate complex social issues as well as work challenges that may arise in the course of their statutory duties, therefore emotional quotient come to play. Being socially intelligent is indispensable for success in the world of work. The organizational

leadership must also be aware of this fact and work towards imparting such knowledge into the employees as a whole.

Ability of the workers to proffer better, efficient and effective solutions to the societal and workplace challenges is also germane in the workplace. This implies that the personnel of NSCDC must be able to do extra ordinary things to surpass their counterparts in other services. The personnel need to excel other agencies through surpetition, which means that other better alternatives to solving societal and job challenges need to be adopted. Therefore the need for being socially innovative is imperative.

In addition, the leaders must be aware that they need not to exert authority on the led alone but they must be humane in the discharge of their statutory and God-given assignment. Their leadership styles should not be work-centered alone but also human-centered depending on the situation at hand. They need to be eclectic in the selection of their leadership styles as no single style is enough but all leadership styles must be explored for better performance and that result-oriented services will be achieved. They must be aware of the fact that a tree cannot make a forest; the rank and file also plays vital roles in meeting the work target as well as achieving the organizational set goals.

Leaving no stone unturned, the counselors/counselling psychologists, organizational psychologists must note that demographic constructs captured in this study can really influence the workers' ability to exhibit citizenship behaviour in the workplace. Therefore, they are also germane and should be treated as such in their dealings with the personnel in order to improve citizenship behaviour in the world of work. The reason for this assertion is adduced to the fact that these variables contributed both jointly and relatively to predicting the NSCDC staffs' citizenship behaviour in the workplace.

To this end, this study has implications for all the stakeholders in the organization as well as the society at large. They include the organizational leaders/followers, counselling psychologists, organizational psychologists, educational psychologists, administrators, policy makers, social workers/scientists, government's Ministries, Departments, Agencies (MDAs) and government functionaries and so on. This implies that all the issues raised here are germane to all and sundry in various callings and so should be noted.

The study confirms further that citizenship behaviour is highly indispensable to the survival and success of organizations in the global world in general and Nigeria in particular. Therefore, it is highly recommended that all the stakeholders both within and without the NSCDC should explore all the means to integrate the value/tenets of organizational citizenship behaviour into the system they belong. This will go a long way to boost productivity, job performance, commitment, loyalty and acceptability of the organization.

The researcher also recommends that all the demographic constructs in this study are strictly observed in the process of policy formation so as to encourage the workers to imbibe citizenship behaviour in the workplace.

Limitations

Considering the importance of the issue under discussion, it is supposed to have a wider geographical location than the present one. Also, using a path-analytical method to analyze the data could have been better. The cold attitude of Nigerians in finding time to respond to important questionnaires also affected the study. Nevertheless, the salient discovery of the study is generalisable.

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Connecting Mathematics to Real Life Problem using Instructor Quality and Availability, Mathematics Facility and Teacher Motivation for Prediction

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Abstract

The mode of instruction in mathematics education has received a lot of criticisms where many have advocated a paradigm shift from traditional method of instruction to methods that emphasises on conceptual understanding. The major aim of this study is to investigate by means of confirmatory factor analysis the factors that influence teachers' ability to connect mathematics to real life problem. The study deployed probability sampling techniques to randomly select 1,263 participants from over 80,000 students' population in the Ashanti region of Ghana. The partial least squares (PLS) linear structural equation modelling (SEM) techniques was adopted to verify goodness of fit effects among the overall model, structural model and the measurement model. The results and the findings from the study revealed that, teachers ability to connect mathematics to real life problem is significantly influenced by instructor quality and availability as well as teacher motivation ,however mathematics facility have positive but statistically have no significant influence on teachers ability to connect mathematics to real life problem. The study concluded that teachers' ability to connect mathematics to real life problem is directly influenced by teacher motivation, instructor quality and availability as well as mathematics facility availability. The study concluded further that teacher motivation and availability of mathematics facilities influence instructor quality while teacher motivation is further influence by mathematics learning facilities. The study recommended for improvement in mathematics facility, instructor quality and teacher motivation for better connectedness in teaching and learning of mathematics.

Keywords: Connecting Mathematics, Mathematics Facility, Instructor Quality, Teacher Motivation.

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INTRODUCTION

The educational criteria students need to meet for their upward progression in the educational ladder has made passing mathematics in both basic education certificate examination (BECE) and the west Africa secondary school certificate examination (WASSCE) very crucial in Ghana and many west Africa countries. The struggle students' goes through to succeed in mathematics and algebra in specific to some people is known to impact significantly on high school students education (Ketterlin-Geller & Chard, 2011). Across the world, students at different level of education require some grades in mathematics before proceeding to the other levels education.

Mathematics Teachers and Mathematics Connectedness

The mode of instruction in mathematics education has received a lot of criticisms where many have advocated a paradigm shift from traditional method of instruction to methods that emphasises on conceptual understanding. This conceptual understanding in mathematics content delivery will mean teachers of mathematics should make conscious effect to connect mathematics content to other subject areas and the immediate environment. The mathematics teachers ability to connect mathematics to real life and the immediate environment has been found to impact positively and significantly in student achievement (Rakes, Valentine, McGatha, & Ronau, 2010)

Teacher from other parts of the world have made effect by themselves to connect mathematics to real life problem as well as connecting mathematics to other subject areas. This result supports the fact that the teacher have the greatest influences of mathematics connection since mathematics textbooks used are insufficient in providing the needed connections its demands (Gainsburg, 2008). The used of real world problem in teaching mathematics has been influenced by the extent of motivation it provide to the student to engage in mathematics. Thus connecting mathematics to real life problem influence students' motivation in learning mathematics and improve their level of understanding (Gainsburg, 2008). It can be concluded that, mathematics educators need to double up the steps in connecting mathematics to real life problem since it increases their motivation, interest and their level of understanding in the subject matter.

The students' willingness and curiosity to learn may also increase as students feel what they learn has connection to their lives. This imply that, the designers of mathematics curriculum to connect to their immediate environment is crucial and requires greater insight since curriculum limited to the classroom will not improve their interest as far as it has no connections with other subject areas and the immediate environment. Stemhagen and Smith has further indicated the meaningfulness of connecting mathematics to the real life through the argument that ,mathematical knowledge should not be acquired for knowledge acquisition sake but rather, the knowledge acquired should relate to their lives (Stemhagen & Smith, 2008). Moreover, the age long problem of mathematics education where mathematics has been instructed through the traditional ways of teaching and learning has not received sufficient upgrade although many reform effort by educational experts and philosophers (Stemhagen & Smith, 2008). The expert in the field of educational theories and philosophies believes that reforms in teaching methods and strategies where curriculum content is instructed to connect with real life and other subject will influence student interest create understanding and promote meaningful growth in students' academic achievement.

The dominance nature of traditional teaching and learning by mathematics to many has accounted for the falling standard of mathematics education and urgent attention is required by educational leadership and stakeholder to turn away from the old traditional style

of instruction. In most cases, learners are seen as passive learner where learning is done on mechanical obsolete procedures. The old method of instructions in mathematics education requires pragmatist approach where instruction integrates content to real life problem to produce better understanding for students (Khairani & Sahari-Nordin, 2011; Stemhagen & Smith, 2008). The presentation of contents in the mathematics classroom is one of the traditional ways that exist in mathematics education. This old fashioned traditional mode of presenting mathematics content has given rise to real life connectivity paradigm where teaching of mathematics shifted towards real life applications. The mathematics education community stresses the importance of connecting mathematics content to real life and further encourage mathematics educators to frequently incorporate real life problem in the classroom instruction (Gainsburg, 2008; Palm, 2008). The lack of connectivity of mathematics to real life problem has also been blamed on examination oriented nature of the curriculum which does not encourage thinking (Cooper & Harries, 2002).

Teacher Motivation, Mathematics Facility and Instructor Quality

Building on the advice of (Ganyaupfu, 2013; Peters, 2013) to reform curriculum delivery from teacher centred to learner centred approach will require that the teacher is motivated delivery the content. The students ability to comprehend with the content taught greatly depends on the teachers ability deliver in a way that ignites students interest, relates content to prior knowledge, connect content to real life problem as well as their course areas (Bradford, 2005; Carpenter, 2006; Kao, Lin, & Sun, 2008). This integration in the mathematics curriculum will promote learning, motivate students and enhance students' achievement in mathematics. The relevance of what students learn is expressed in how meaningful they see the content learnt (Gaspard et al., 2015). The teachers' ability to help them connect more to the curriculum further enhances the understanding and interest in the subject matter. The teacher motivation in teaching mathematics may require some level of input from both the central government and the immediate school leadership. The school leadership ability to provide the necessary teaching and learning materials for mathematics instruction will motivates teachers to deliver content and enhanced connectedness to real life and other subject areas (Blase & Blase, 2000; Robinson, Lloyd, & Rowe, 2008). The teachers' ability to connect mathematics to real life problem would give students some level of personal meaning, relevance, as well as renewed perception. This will help relates mathematics learning to students' personal interest, goals, and needs that motivates students to greater involvement in the learning process that facilitates greater achievement (Firmender, Gavin, & McCoach, 2014; Kupermintz, 2003).

The availability of learning facility has been a problem in many field of study in most Africa country and Ghana is no exception. The issue of infrastructure and necessary facilities has been raised by (Levin & Thurston, 1996; Philson, 1999) as factors that affect implementation of successful online learning. This shows how lack of mathematics facility can militate against teachers' ability to connect mathematics to real life problem. The teaching and learning materials needed by mathematics teachers to enhance teaching and learning if not available will affect the teachers' classroom delivery and student interest and performance. The mathematics teaching facilities such as information communication and technology tools such as mathematics software help connect mathematics better to other subject areas and real life problem. The further motivates teachers to deliver since teaching and learning can be made easier when these facilities exist as well as improves students interest in mathematics (Clark, 2008). The teacher motivation is not only generated from the central government ,parents or educational leaders, however, Good attitude shown by

students in school could motivate/encourage teachers which positively affects teaching practices (Tella, 2007).

The quality of teacher training received count in the content delivery of the mathematics curriculum. The teachers level of education in the content and availability of quality subject area teachers have great influence on the teachers ability to connect mathematics to real life and other subject area. In most cases, in Ghana unqualified and untrained teachers teach mathematics due to unavailability of qualified trained mathematics teachers and this has somewhat negative effect on mathematics performance the students (Shymansky & Aldridge, 1982).The quality of instructors have unique influence on student understanding, motivates students and delivers students from anxiety (Cave & Brown, 2010; Van De Gaer, Pustjens, Van Damme, & De Munter, 2008). This manifest sometimes in the way they answer students question when they require clarification on content learnt. A trained qualified teacher does not answer students questions angrily, takes time to clarify issues that boils on students understanding of the content learnt, gives better and sufficient explanation when students ask questions (Jackson & Leffingwell, 1999)

The expansion of mathematics connectedness literature and further expansion on what influences mathematics teachers ability to connect mathematics to real life problem has called for this study. There exist a gap in connecting mathematics to real life and other subject areas especially in Africa and this study seeks to contribute its findings in bridging the gap.

Research Objective

The present study generally seeks to model students' perceived mathematics teachers' ability to connect mathematics to real life problem based on teacher oriented factors. The rational for the study was to investigate the determinants of Mathematics teachers' ability to connect mathematics to real life problem and other course areas. The results of the study attempted to provide evidence for the need to integrate mathematics to real life problem as well as providing empirical evidence for determinants of teachers' ability to connect mathematic to real life problem. The study proposed the following specific objective:

- To predict teachers ability to connect mathematics to real life problem and the immediate environment using mathematics facility and availability of qualified instructors;
- To ascertain the influence of teacher motivation and availability of mathematics facility on instructor quality and availability; and
- To establish the influence of mathematics facility on mathematics teachers' motivation for teaching mathematics.

Research Questions

The research questions below were posed to help further achieve the stated objectives:

- Does teachers' ability to connect mathematics to real life problem and the immediate environment influenced by availability of mathematics facility as well as qualified instructor availability?
- Is quality of mathematics instruction and availability of qualified mathematics teachers influenced by mathematics facilities available as well as teacher motivation?
- Does teachers motivation to teach mathematics influenced by availability of mathematics facility?

Hypotheses

The study tested the following hypotheses to help respond to the research questions asked:

- H1: Teachers ability to connect mathematics to real life problem and the immediate environment is not predicted significantly by availability of mathematics facility and availability of qualified instructors.
- H2: Quality of mathematics instruction as well as availability of qualified mathematics instructors is influenced significantly by teachers' motivation as well as availability of mathematics facility.
- H3: Mathematics teachers' motivation to teach mathematics is significantly influenced by the availability of mathematics facility.

METHODS

Participants and Data Collections

The present study used 1,263 participants, who are in the public senior high school (SHS) in the Ashanti region of Ghana. The participants who are in SHS1 (200), SHS2 (298) and SHS 3(712).The participants were drawn from three grade of schools, grade A(554),grade B(546) and grade C (156).The study included both male (551) and female (700).The study used self-designed questionnaire instrument for measuring teacher motivation, instructor quality and availability, mathematics connection and mathematics facility. The questionnaire instrument was administered to participants. The participants were told that participation in the study was voluntary and their responses would be kept anonymous. The full questionnaire instrument is made up of 84 items and some demographic characteristics. The student were made to rate on five point scale ranging from strongly agree to strongly disagree. The study used purely quantitative approach to research to analyse the data obtained from the survey. Partial least square structural equation model (PLS-SEM) was adopted for the analysis of data obtained. The results generated from the data are presented in the section below.

RESULTS

The present study estimated the measurement using Smart-PLS 3.0 (Ringle, Wende, & and Becker, 2015; Wong, 2013) using PLS algorithm for $n=1,263$ as well as the quality criteria established by (Hair, Hult, Ringle, & Sarstedt, 2014; Hair, Ringle, & Sarstedt, 2011; Wong, 2013).The results of the outer model estimations are presented in Figure 2 for the initial model and the final model in Figure 3.The assessment of PLS-SEM models using reflective scales and model items was presented for confirmation of validity and reliability vis-à-vis the predictive ability of the model to predict mathematics connectedness(MACO), instructor quality and availability (IQA) and teacher motivation (TM).

As indicated in Figure 2 and Figure 3 the coefficient of determination R square values of 0.156 and 0.179 and 0.08 represent the explanatory power of latent variables as low. The results from the measurement model are standardized loads of the reflective construct. The reflective model was evaluated using based on the reliability and validity of the constructs. The composite reliability was used to estimate the internal consistency of the constructs. The results in Table 1 shows that the value of the composite reliability for MACO, IQA, TM and MF constructs exceeds 0.7 showing internal consistency in the constructs of the model. The results in Table 1 further present's complete analysis of results indicating the Cronbach's alpha, and Average variance extracted (AVE). The measurement of validity of reflective

measurement model focuses on the convergent validity and discriminant validity. For convergent validity, the value of AVE should be greater than 0.5 for all construct, however, for this study, the teacher motivation construct has AVE value less than 0.5 as shown in Table 1 indicating that all construct except teacher motivation demonstrated sufficient degree of convergent validity meaning all construct explains more than half of the variance in comparison to their corresponding indicators (Hair et al., 2011) as indicated in the Table 2.

The study further assessed the internal model using bootstrapping algorithm with 5000 cases. The results are shown in Figure 3 and Figure 4. The values of the external measurement model and the structural model as shown on the arrows represent the values of the student T-test of latent variables and the test of latent variables and their indicators. The R-square is the key determinant of structural models and the significant level of the path coefficients. The study yielded R^2 value for instructor quality and availability (IQA), Mathematics connections(MACO) and teacher motivation (TM) as 15.5%,17.9% and 8.1% as indicated in Figure 4. The p-values for the endogenous and their respective t-values are indicated in Table 5. The variance inflation factor (VIF) of the constructs measurement are found in Table 3 thus confirming the causal relationships, exploratory power of the structural model and the statistical power of the model and absence of significant effect of multicollinearity. In assessing the level of significant of the path coefficient the bootstrap was used and the construct with T critical values 2.58 and 1.96 for two-tailed and one-tailed at 1% and 5% level of significance respectively as shown in Table 5. The study showed that except for the values of math facility -> math connection, with T-value not statistically significant, the rest of the values were significant at 1% as indicated in Table 5 and Table 6.

DISCUSSION

The influence of mathematics facility and availability of qualified instructors on teachers' ability to connect mathematics was assessed. The results showed a direct relationship between mathematics facility availability and teacher ability to connect mathematic to real life problem. This indicates that, the extent to which mathematic facilities are made available to aid in the teaching and learning process in mathematics the better it will aid the mathematics teachers' ability to connect mathematics to real life problem. This suggest further that provision of needed teaching and learning aids will help improve teachers ability to connect mathematics to real life problem. The results is consistent with other authors(Levin & Thurston, 1996; Philson, 1999) with the views that issues of infrastructure and necessary facility has effects on implementation of successful online learning .

The effect of available qualified instructors has contributed directly and significantly to the instructors' ability to connect mathematics to real life problem. The results suggest that the level of instructors' knowledge the content being taught will determine the instructors' ability to connect the mathematical concepts to real life problem. The result also indicates that as qualified mathematics teachers are trained and recruited to teach at various levels of education, their level of connecting mathematics to other subject areas and their immediate environment could be improved .The result is consistent with the studies in (Crosnoe et al., 2010; Darling-Hammond & Snyder, 2000; Ruzek et al., 2016) which posits that teacher quality is the largest factor that impact student learning. The result from the structure equation model indicated that the instructor quality and availability is the strongest predictor of teachers' ability to connect mathematics to real life problem and our immediate environment. The results is consistent with the study by (Cave & Brown, 2010) which indicated that professional development of the mathematics instructors significantly improves student mathematics achievement. The study further confirms the works of (Cave & Brown,

2010; Van De Gaer et al., 2008) in consistent finding that suggest that mathematics instructor quality is the largest factor that impact students learning.

The further investigation to ascertain the influence of teacher motivation and availability of mathematics facility on instructor quality and availability revealed that direct relationship exist between teacher motivation and availability of qualified mathematics instructors. The result indicates that the more mathematics teachers are motivated the more available they will be in the service for teaching and learning of mathematics. Furthermore, the study also indicated that availability of mathematics facility directory influenced availability of qualified instructors for teaching and learning of mathematics. The results implies that, although teachers may love to impart knowledge but if teacher are not sure of material and tools needed for smooth delivery of their services they may not as well be trained. The availability of qualified instructors depend directory and significantly on availability of mathematics facility for smooth delivery of instructions.

To establish the influence of mathematics facility availability on mathematics teachers' motivation for teaching mathematics, the study advanced the argument that teachers will be motivated if teaching and learning aid is made available. The more these facilities are made available to the teacher will some way raise their motivation for the teaching and learning of mathematics. The integration of technology aid instruction in mathematics can complement the teachers' effort to advance students interest. The teacher motivation will increase as the needed tools and equipment needed for smooth implementation of mathematical instruction are made available.

CONCLUSION

The study modelled mathematics teachers' ability to connect mathematics to real life problem and other subject specific areas. The study made the following conclusions and recommendations as a contribution to expand the existing literature. The section below presents the major conclusions and recommendations from the study.

For this study self- designed questionnaire instrument was analysed and the items related to the four factors named, teacher motivation, Mathematics facility, instructor quality and availability as well as teachers ability to connect mathematics to real life problem are studied. The study summarised its conclusions as follows:

- Availability of qualified mathematics instructors positively and significantly influences teachers' ability to connect mathematics to real life problem and other subject areas;
- The ability for school leadership to provide the needed mathematics facilities for the teaching and learning of mathematics will positively and significantly affect the quality of instruction delivered by the mathematics teachers;
- The availability of mathematics facility positively influences teachers' ability to connect mathematics to real life problem and other subject areas; however, the contribution is not significant at 0.5% alpha level;
- The availability of mathematics facility positively and significantly affects teacher motivation to teacher mathematic;
- The extent to which the teacher is motivated to teach mathematics positively and significantly influences the teachers' quality of instruction; an
- Teacher motivation positively and significantly affects the teachers' ability to connect mathematics to real life problem and other subject areas.

Recommendations

The study findings established the need for mathematics teachers' to connect mathematics to real life problem and other subject areas and recommended for central governments and stakeholder of mathematics education to field quality instructors, motivates mathematics teachers and provide mathematics teaching and learning facilities help the mathematics real life connection paradigm shift. Although the study found greater significance for above mentioned constructs further work is necessary for purposes of solidifying the literature of mathematics connectedness. The study recommended for improvement in mathematics facility, instructor quality and teacher motivation for better connectedness in teaching and learning of mathematics. Moreover, mathematics teachers are also reminded to adopt different teaching methods and strategies that will also contribute to the quest of mathematics connectedness

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Appendices

Table 1: Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Instructor quality	0.907	0.911	0.928	0.682
Math connection	0.677	0.718	0.804	0.514
Math facility	0.747	0.765	0.839	0.567
Teacher motivation	0.393	0.396	0.709	0.450

Table 2: Discriminant Validity Fornell-Larcker Criterion

	Instructor quality	Math connection	Math facility	Teacher motivation
Instructor quality	0.826			
Math connection	0.382	0.717		
Math facility	0.339	0.172	0.753	
Teacher motivation	0.288	0.285	0.285	0.671

Table 3: Outer VIF Values

Indicator variables	VIF
IQA1	2.027
IQA2	2.500
IQA3	2.660
IQA4	2.574
IQA5	2.183
IQA7	2.105
MACO1	1.158
MACO2	1.449
MACO3	1.517
MACO4	1.318
MF3	1.445
MF4	1.419
MF5	1.664
MF6	1.383
TM1	1.106
TM2	1.047
TM3	1.064

Table 4: Fit Summary

	Saturated Model	Estimated Model
SRMR	0.082	0.082
d_ULS	1.028	1.028
d_G	0.289	0.289
Chi-Square	1,763.588	1,763.588
NFI	0.776	0.776

Table 5: Path Coefficient Mean, STDEV, T-Values, P-Values

Path coefficient	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Instructor quality -> math connection	0.325	0.327	0.031	10.411	0.000
Math facility -> instructor quality	0.280	0.281	0.030	9.270	0.000
Math facility -> math connection	0.008	0.007	0.030	0.252	0.801
Math facility -> teacher motivation	0.285	0.287	0.035	8.260	0.000
Teacher motivation -> instructor quality	0.208	0.209	0.034	6.178	0.000
Teacher motivation -> math connection	0.189	0.190	0.030	6.267	0.000

Table 6: Heterotrait-Monotrait Ratio (HTMT) Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Math connection -> instructor quality	0.472	0.473	0.037	12.795	0.000
Math facility -> instructor quality	0.396	0.396	0.033	11.925	0.000
Math facility -> math connection	0.221	0.233	0.032	6.938	0.000
Teacher motivation -> instructor quality	0.459	0.460	0.049	9.444	0.000
Teacher motivation -> math connection	0.527	0.531	0.058	9.042	0.000
Teacher motivation -> math facility	0.573	0.577	0.056	10.276	0.000

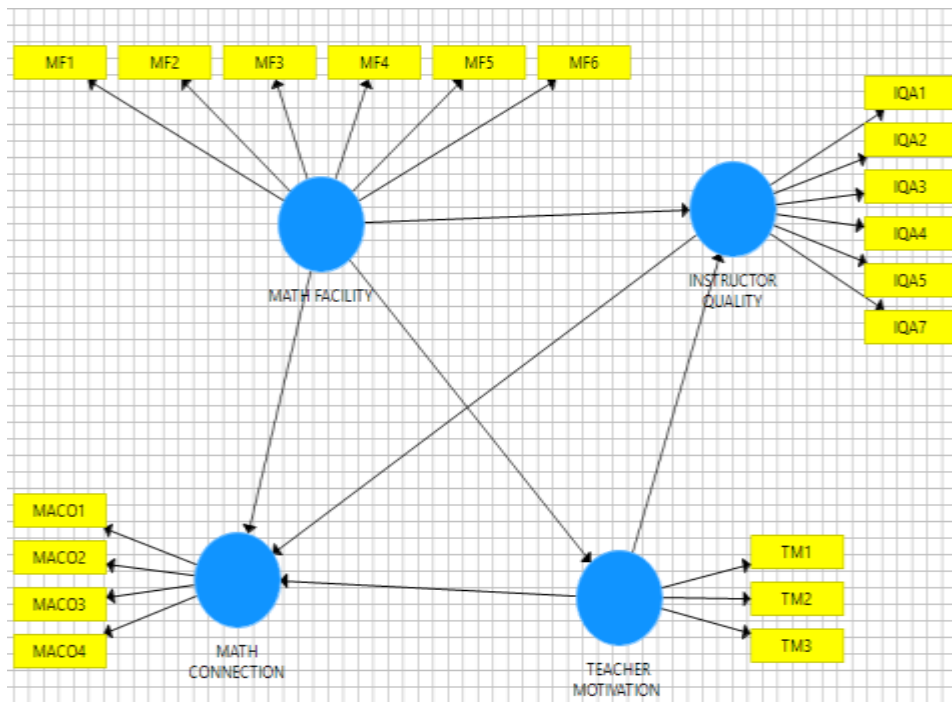


Figure 1: Conceptual model for teacher mathematics connectedness

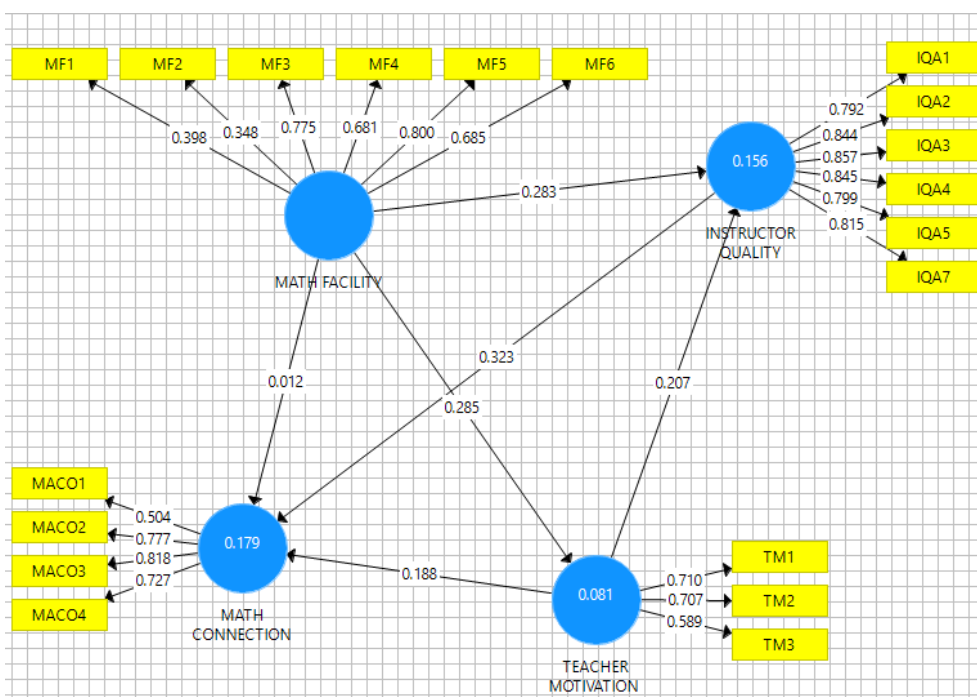


Figure 2: Empirical model for teacher mathematics connectedness

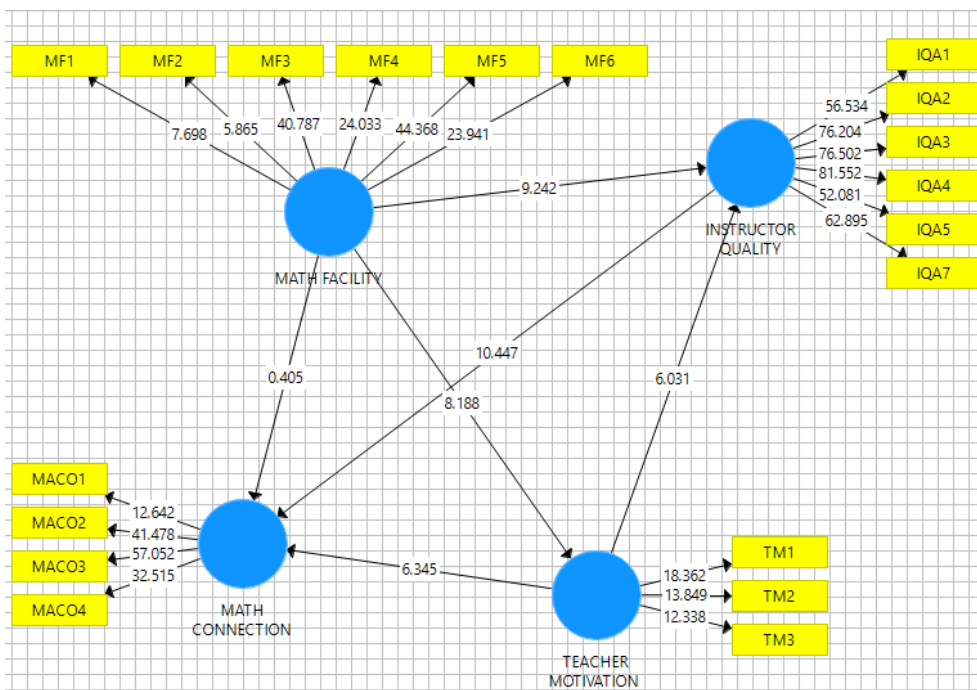


Figure 3: Bootstrap empirical model for teacher mathematics connectedness

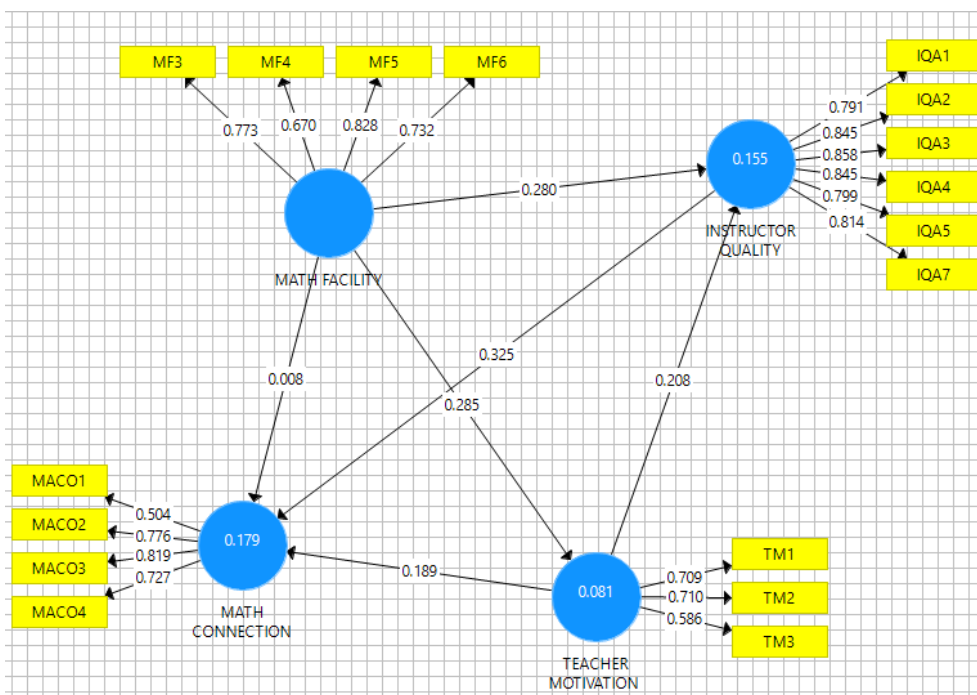


Figure 4: Modified empirical model for teacher mathematics connectedness

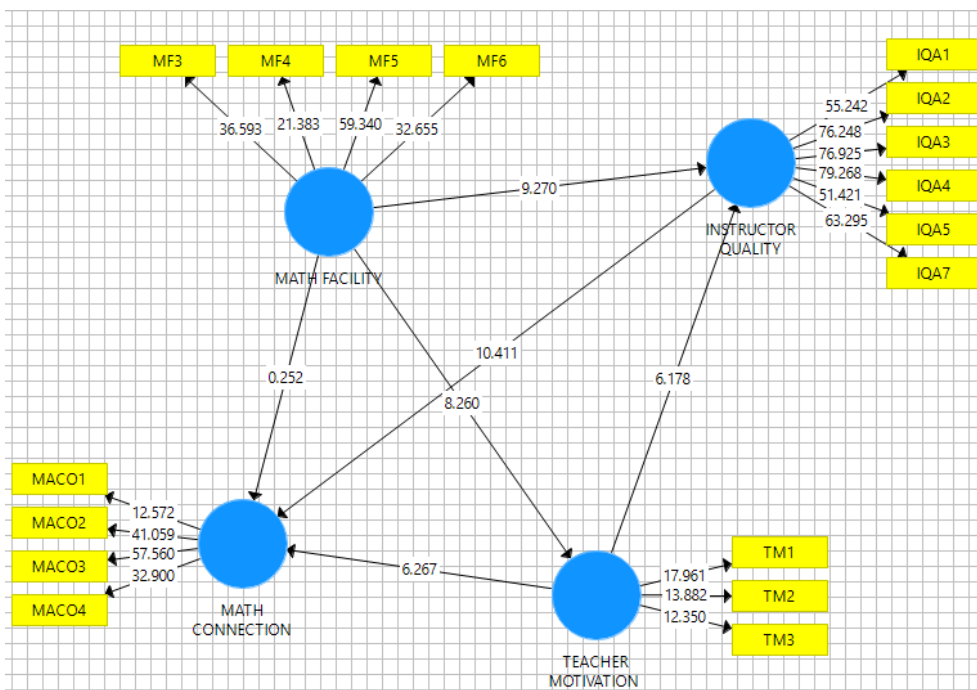


Figure 5: Bootstrap modified empirical model for teacher mathematics connectedness



Administrators In-service Needs in Higher Education in South-South Nigeria

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Abstract

The main purpose of this study was to determine the in-service education needs of administrators for human resource management in higher education in South-South geopolitical zone of Nigeria. In an attempt to focus the study properly, two (2) research questions were formulated to guide the study. Descriptive statistics was used for data analysis. A sample size of 277 was used. The questionnaire used was developed by the researcher and validated by experts in instrument validation. The instrument consisted of two parts, 'A' and 'B'. Part 'A' of the instrument sought information on the demographic data of the respondents such as: Ownership status of college (Federal/State colleges); officers' position (Principal officer/Dean/Head of department) years of administrative experience (more experience/less experience); gender (male/female) and educational qualification. Part 'B' of the instrument sought information on in-service education needs of the administrators of Colleges of Education on staff appraisal, compensation and motivation. These were presented in two clusters and the response options were formed on a four-point Likert-type scale response. The results of the study revealed that administrators agreed that they need in-service education to improve on their competency for human resource appraisal. As much as they also agreed that they need in-service education to improve their competency for human resource compensation and motivation. Based on these findings, it was recommended that compulsory in-service education for all categories of higher education administrative staff is important, and Ministries of Education should provide funds for the training of higher education administrators for effective human resource management.

Keywords: Human Resource, Management, In-service needs, Higher Education, Appraisal, Compensation, Motivation, Nigeria.

Reference to this paper should be made as follows:

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INTRODUCTION

No higher education system the world over grows above the quality of its human resources, and the accomplishment of the goals of establishing higher education depends solely upon effective management of such higher education sector. Success in these institutions involves the organisation and coordination of work force. According to Ololube (2013), educational management is the effective mobilization of the available human and material resources towards achieving educational goals. It involves adequately coordinating events such as strategic planning, organizing, and the control of available resources to achieve desired outcomes (Wali & Ololube, 2016). Effective management of higher education is considered real if the charted goals are accomplished and through watchful and systematic management of resources is faster and efficient. According to Ndiomu in Wali and Ololube (2016), resources are described as related and they are the invisible hands of employees (intelligence, sound memory, wisdom, knowledge, social harmony and power).

Human resources are division of an educational system that focuses on activities relating to staffing. These activities normally include recruiting and hiring of new staff, orientation and training of current staff, staff appraisal, compensation and benefits, and retention. Human resources on the other hand, are the totality of knowledge, skills, abilities, capacities and aptitudes of the workforce as well as their values and attitudes (Ankur, 2009). Human resources are the collective of knowledge, skills and abilities of employees in the educational system. Onah (2003) argued that human resources include all the skills, judgement, abilities, knowledge, and wisdom of employees in an organization.

To this end human resource management (HRM) is part and parcel of organizational management. Its purposes is the maintenance of improved human relations in an organization through the development, application and evaluation of policies, procedures and programmes relating to human resources aimed at optimizing their contribution in the realisation of organizational objectives (Ulrich in Wali & Ololube, 2016). HRM is concerned with people at work and their relationship. It is the management of an organization's work force, or human resources responsible for attraction, selection, training, assessment, appraising, compensation and motivation of employees (DeGaff, 2010).

In the contexts of this study, human resource management in higher education is to set higher education business of research, teaching and learning activities directed at effectively and efficiently using human talent to accomplish higher education institutional goals. Thus, HRM is an important aspect of the higher education management which is concerned with the process of planning, selecting, coordinating and directing its workforce (Ololube, 2013).

The management of higher education programmes and staff (teaching and non-teaching) rests in the hands of its administrators, classified as principal officers, Deans of schools/faculties and heads of academic and non-academic departments. Specifically, the principal officers is comprised of the Vice chancellors, Deputy Vice Chancellors, Rectors, Deputy Rectors, Provost, Deputy Provost, Registrar, Bursar, Librarian, Directors of Units and Planning officer.

Following the aims of ensuring effective utilization and maximum development of human resources, there is need to carry out a study on in-service education needs of administrators of human resource management in higher education. The management of higher Education in Nigeria is characterized by obsolete personnel administration style and some of the administrators found in these institutions are non-professionals in higher education management (HEM) and are usually appointed on the basis of number of years in service or political

inclination. Similarly the continual changes in educational policies coupled with technological innovations tend to render most administrators incompetent in respect of HRM. Thus, there is need to update the HRM competencies of the administrators in the south-south geo-political zone of Nigeria. Specifically, the study was aimed to evaluate the human resource appraisal, compensation and motivation in higher education in south-south Nigeria.

Research Questions

This study was guided by the following research questions:

- What are the in-service education needs of administrators for human resource appraisal in higher education in South-South Nigeria?
- What are the in-service education needs of administrators for human resource compensation and motivation in higher education in South-South Nigeria?

LITERATURE REVIEW

Theoretical Framework

David McClelland learned Need Theory

Learned theory of needs was developed by David McClelland and his associates in 1962. David McClelland posits that certain needs are learned and socially acquired as the individual interacts with his environment. In other words, McClelland believes that many needs are acquired from culture and some may be learned through training. According to McClelland, if one want to find out what is on a person's mind, one should not ask him because he can't always tell one, rather one should study his fantasies and dreams. If one does this over a period of time, one will discover themes to which his mind returns again and again. These themes can be used to explain his action. The degree to which an individual is motivated by the various needs differ from person to person.

In the strength of the above, he developed the Thematic Appreciation Test (TAT) which consisted of a series of pictures to which he requested his respondents to write stories about the characters in the pictures. The result is his identification of the three categories of human needs achievement, power and affiliation.

Need for Achievement (n-ACH): This is the desire for productivity and to reach desirable goals. It is the drive to excel, to achieve in relation to a set of standards, to strive to succeed.

Need for Power (n – PWR): This means the individual's desire to influence and control others and the social environment. In other words, it is the need to make others behave in a way that they would not behave otherwise.

Need for Affiliation (n-Aff); this is defined as the desire for positive relationships with others. It is the desire to interact socially with others

In applying McClelland theory in higher education management, all the three drives, achievement, power and affiliation, are of special relevance to management, since all must be recognized to make an organized higher education work well. More so, any organized higher education and every department of it represents group of individuals working together to achieve goals. The theory implies that higher education administrators should study their staff to discover their needs and try to satisfy them because the non-satisfaction of such needs can lead to apathy.

In this present study, the McClelland theory guides to determine the in-service needs of administrators in human resources in higher education in South- South Nigeria.

Scientific Management Theory

The first management theory is popularly referred to as Frederick Taylor's Scientific Management. Frederick Taylor started the era of modern management. He advocated the systematic training of workers as the best practice rather than allowing their personal discretion in their tasks. He further believed that the workload would be evenly shared amongst the workers and management with management performing the science and instruction and the workers performing the labour, each group doing the work for which it was best suited. Alongside Taylor's postulates is Gilbreth's motion study. Gilbreth was particularly interested in how he could reduce the unnecessary motion resulting from bricklaying at a construction site. He proposed that each worker should be involved in doing his or her own work, prepare for the next higher level, and training their successors. The element of the theory that is related to the present study is the need for training of workers for greater efficiency. In this present study, the in-service education needs of the administrative staff of higher education will be examined.

Behavioural Science theory

The key scholar under this category is Elton Mayo. The origin of behaviouralism is the human relations movement that was a result of the Hawthorne experiment conducted from 1927-1933. The Hawthorne studies attempted to determine the effects of lighting on worker productivity. When these experiments showed no clear correlation between light level and productivity the experimenters then started looking for other factors.

The factors that were considered when Mayo was working with a group of women included rest breaks, no rest breaks, free meals, no free meals, more hours in the work-day/work week or fewer hours in the work day/work week. With these changes, productivity improved. The experiment proved four things. First, work satisfaction and hence performance is basically not economic depending more on working conditions and attitudes, communications, positive management response and encouragement, and working environment. Second, it rejected Taylorism and its emphasis on employer self-interest and the claimed-over-riding incentive of monetary rewards. Third, improvements in working environments (e.g., new welfare/rest facilities), and expression of thanks and encouragement as opposed to coercion from managers and supervisors. Fourth, the influence of peer group is very high, hence, the importance of informal groups within the workplace.

These results showed that the group dynamics and social makeup of an organization were an extremely important force either for or against higher productivity. The outcome caused the call for greater participation of the workers, greater trust and openness in the working environment, and a greater attention to teams and groups in the work place. The administrator's role in ensuring these identified work ethics demands a sound knowledge of human resource management, which can be achieved through in-service education of the administrators. In this study, the in-service education needs of the administrators in colleges of education for the management of human resources will be investigated.

CONCEPTUAL EXPOSITION

Human Resource Performance Appraisal

The term appraisal means different things to different people. Appraisal in this study has to do with those formal processes for observing, collecting, recording and using the performance of human resource (staff), who in this case are lecturers and non-tutorial staff (junior and senior) who are in the services of higher education in south east and south-south of Nigeria.

To Arvey and Murphy (1998), it is a formal structured system for measuring, evaluating, and influencing an employee's job-related attributes, behaviours and outcomes. Onah (2003) sees it as the process of determining how well employees do their job compared with a set of standards and communicating that information to those employees. From the employees and their unions' point of view, it is frequently seen as a means of maximizing the financial rewards for individual workers' effort. Peretomode and Peretomode (2002) see it as the systematic examination, evaluation and description of employees' performance as to how well they are doing or have done their jobs.

Employee performance appraisal is carried out within a practical context, which is essentially the day-to-day business of the organization. What is being assessed in the first instance is the employee's performance in carrying out the general duties of his or her role, together with any specific targets that have been set. Also, appraisal may be used to assess a person's suitability for promotion, either generally or with a specific job in mind. In the appraisal situation, individuals are entitled to ask what aspects of their job are being assessed and against what criteria. An individual also wants to know the process through which the appraisal will be carried out, and what opportunities they themselves will have to contribute to it. In most cases, the employee's immediate manager conducts the appraisal, but for some management posts the appraisal may involve the manager's own staff and colleagues, where 360 appraisals is employed. A basic model of appraisal which sets out the cyclical nature of the process around the employee's expected work outputs and the criteria, or standards, against which the assessment will be made (Cole, 2002).

The 360° performance Appraisal or Multisource Assessment is the latest attempt to improve performance appraisal (PA). Increasingly, it has found favour with growing number of organisations. Unlike traditional performance appraisals, which typically come from the superiors to the subordinates. The 360° appraisal uses feedback from "all round" appraisers. Superiors, subordinates, peers customer (and perhaps a self-appraisal as well) provide input for performance appraisal process. Such feedback can obviously be used for the development of managers' leaders and others. Indeed, it is most often intended to serve a development role. But in some organisations, it is being used as inputs for evaluating performance in order to determine compensation adjustments and other more traditional administrative performance process purposes (O'Reilly, 1993; Onah, 2003). Siesson (1995) summarized the purpose of employee appraisal as:

- To enable the organization to share out the money, promotions and perquisites apparently 'fairly' i.e. evaluation;
- To discover the work potential, both present and future, of individuals and departments, i.e. auditing;
- To construct plans for manpower, departmental and corporate planning, i.e. succession planning;

- To discover learning needs by exposing inadequacies and deficiencies that could be remedied, i.e. training;
- To ensure that employees reach organisational standards and objectives, ie. Controlling;
- To develop individuals through advice, information and shaping their behaviour with praise or punishment, ie. Development;
- To add to employees' job satisfaction through understanding their needs, ie motivation; and
- To check the effectiveness of personnel procedures and practice, ie validation (p. 230)

Behind these operational purposes lie more significant theoretical issues. An examination of an organisation's employee appraisal scheme can show a great deal about how the organisation 'sees' its staff and how it should be managed and developed. So the overall broad purpose of employee performance appraisal can be theories about people at work, and how they contribute to those theories. In practice, the format of an employee appraisal scheme is perhaps determined more by how senior managers who design the system see the causes of work performance than by specific objectives for the scheme.

In supporting the above assumptions, Drucker in Onah (2003) feel that to appraise a subordinate and his performance is part of the manager's job. Indeed, unless he does the quarterly discharge his responsibility for assisting and teaching his subordinates. Drucker's view as a whole is that managers are responsible for achieving results. These results are obtained from the management of human, materials and financial resources, all of which should be monitored.

Monitoring means setting standards, measuring performance and taking appropriate action (Cole, 2002). In respect of people, this entails taking action to improve performance by means of training and development. Cole, thus sees them as promoting the cause of Theory X, that is, a management style that assumes that people are unreliable, unable to take responsibility and therefore require close supervision and control. Whenever the argument is more about practicalities than managerial philosophy, the main issue is not of performance appraisal, but of fairness and accuracy.

Appraisal Process

Employee performance appraisal is a continuous and flexible process that involves managers and those whom they manage acting as partners within a frame work that sets out how they can best work together to achieve the required results.

As Cole (2002) puts it, any systematic approach to performance appraisal will commence with the completion of an appropriate appraisal form. This preparatory stage will be followed by an interview, in which the manager discusses progress with the member of staff. The result of the interview is some form of agreed action, either by staff member alone or jointly with his or her managers. The action generally materialises in this shape of a job improvement plan, promotion to another job or to a salary increase.

Grobler, Warnich, Carrell, Elbert and Hatifield (2005) highlighted some specific steps or guidelines to be followed by employers while developing a Performance Appraisal (PA) system to include:

- Determine performance requirements: The administrators must determine what skills, outputs and accomplishments will be evaluated during the each appraisal. This may be

derived from specific job descriptions or they may be a uniform set of employee requirements included in all PAS’;

- Choose an appropriate appraisal method: several methods may be used to appraisal performance, no one method is best for all organisations.’ The manner in which a supervisor conducts the PA is strongly determine by the method. Within an organisation, different appraisal methods may be used for different groups, such as production, sales and administrative employees;
- Train Supervisors: A critical step in the PA process is training supervisors (or other raters) so that they prepare fair and accurate appraisals and effectively communicate the evaluation to the employee. Unfair ratings may result in charges of discrimination, loss of employee moral and productivity, or inaccurate appraisals, which lead to poor compensation or staffing decisions;
- Discuss methods with employees: Prior to the appraisal interview, supervisors should discuss with employees the method that will be used. This discussion should specify which areas of performance are evaluated, how often, how the evaluation takes place and its significance to the employee (e.g. promotion, pay or to meet some broad goals or policies);
- Appraise according to job standards: PA should evaluate the employee’s work according to predetermined work requirements. Comparison with specific requirements indicates what the employee has or has not done well. The supervisor’s feelings about the employee should not affect the appraisal. Feelings cannot be evaluated; they are only mental constructs and may be biased;
- Discuss appraisal with employees: The supervisor should discuss the appraisal with the employees, allowing employees to discuss areas of agreement and disagreement. The supervisor should emphasize positive work performance, those areas in which the employee has meet or exceeded expectations as well as areas that need improvement;
- Determine future performance goals: that is setting goals for the employee’s future appraisal period as to give the employee direction for continued or improve performance.

Methods and Instruments for Appraising Performance

The various methods and instruments for conducting appraisal range from simple to complex methods and instruments. They are categorized by Grobler et al. (2005) as: rating scales, comparative methods, critical incidents, Essay, MBO and Combination methods.

Rating scales: This includes graphic and non-graphic scales. Graphic rating scale rates the employee – rate on some standard or attribute of work. The rating is often done on some 1 – 3 or 1–5 Likert type scale with 1 representing ‘very unsatisfactory’ and 5 representing ‘excellent’. The marked points on the scale are added together and divided by the total member of factors or job characteristics or items to get the employee’s overall rating.

Graphic rating scales are popular with managers because they can be filled out quickly and require little training (Grobler et al., 2005). It also has a number of flaws. Technically, some supervisors are more liberal than others and give liberal ratings, while their conservative counterparts give conservative grading. Yet others run away from the extreme grades and rate most employees’ average. Another disadvantage associated with graphic rating scale is the descriptive words such as ‘initiative’ cooperation; ‘adaptability’ ‘outstanding’ ‘average’ used. These words have different meanings to different ratters. They are also subjected to different

interpretations. Another drawback is the fact that while separate characteristics are grouped together, the ratter is given one box to check (Mathis and Jackson, 1992; Peretemode & Peretomode, 2002).

Monographic rating scale: This method contains a brief description of each point on a scale rather than simply low or high points of a scale (as it is found in graphic scale). The ratter can give a more accurate description of the employee's behaviour on a particular attribute because a description clarifies each level of the rating scale.

All in all, graphic and monographic rating scales are quick, easy and less difficult for supervisors to use than many other methods of performance appraisal. Also, decision makers find rating scales to be satisfactory for most evaluative purposes because they provide a mathematical evaluation of the employee's performance, which can be used to justify compensation or job changes and to validate selection instruments. Rating scales are disadvantageous as ratters can easily make halo or central-tendency errors (since everyone can quickly be rated very highly or average on most items) (Grobler et al., 2005).

Comparative Methods

This involves ranking, forced distribution and paired comparison. Ranking method requires the ratter to simply list his entire subordinate from highest (best) to lowest (worst) in one total listing in the order of their relative performance with ten employees, they are ranked 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th – best to poorest.

Force distribution: involves comparing subordinates, ranking them along a scale in such a way that a certain percentage of subordinates are ranked above the mean (average) performance and the other given percentages are ranked average, below average and unsatisfactory.

Paired comparison: This involves formal and systematic comparison of each employee of a rating group with every other employee in the group one at a time to produce the overall ranking. Nwachukwu (1988) described this method as:

Two employees are compared at a time and the better of the two is noted then two others are compared as before. This procedure is employed until all the employees have been compared-it is characteristics, which are being compared (p. 261).

The number of comparisons can be calculated using formula $N(N - 1)/2$, where N is the number of people rated. Therefore, for 20 employees 190 comparisons would be necessary i.e.

$$20 \frac{(20-1)}{2} = 190$$

Critical Incidents

Normally, several employees and supervisors compile a list of actual job experiences involving extraordinarily good or bad employee performance. Outstandingly good or bad job performances separate the better employees from the average employees and the poor employees from the average employees. Thus, the emphasis is on specific actions as critical examples of excellent or poor behaviour (Grobler et al., 2005).

This method is time consuming. It forces the superior to monitor the activities of his subordinates in order to describe what he did or failed to do.

Essay Method

This method is sometimes called free-form appraisal method (Peretomode & Peretomode, 2002). The technique requires the manager or supervisor or appraiser to write a short essay describing each employee's performance during the rating period. The ratter is usually given a few general headings under which to categorize comments. The intent of this method is to avoid restricting the ratter as other methods may do. The drawbacks of the essay method are:

- The quality of the ratings depends on the writing ability of the ratter since some supervisors communicate in writing better than others do; and
- The method is very time consuming and difficult to quantify or express numerically for comparative purposes (Peretomode & Peretomode, 2002).

Management by Objectives (MBO)

MBO refers to a formal procedure in which each manager "pair", that is, a subordinate at any level and his immediate superior, periodically reach mutual agreement on specific and measurable goals or objectives which the subordinate is expected to attain in the up going period – perhaps the next quarter or the next year. A written record is made of these objectives. At the end of the period, the management pair meets again to conduct a "performance review of the subordinate's activities. The typical MBO process as highlighted by Grobler et al. (2005) to include: goal setting, action planning (see Ololube et al., 2016), self-control and periodic review.

Goal setting: Goal setting lies at the heart of the MBO process. With MBO, the goal setting process begins with the formation action of long-range objectives, through the organisational objectives, departmental goals and finally individual goals. Long range objectives are developed through thoughtful consideration of the basic purpose or mission of the organisation (Peretomode & Peretomode, 2002).

Departmental goals are specific and short termed in nature. These specific objectives must be supportive of the overall purpose (long-range objectives), as well as the departmental objectives, the goals should be expressed as specific and quantifiable targets.

At the individual goal-setting, goals are mutually set by the employee and his manager. The individual participation in goal setting is one of MBO's major strengths as there is general agreement that participation in decision making strengthens employee motivation and commitment. MBO concentrates on setting measurable goals as opposed to vague or subjective goals. In the context of MBO, characteristics of good goals include:

- A specific description of what is to be accomplished and how the accomplishment of a goal will be measured;
- Target dates for goal accomplishment; and
- The amount of resources (time and money inclusive) to be used in accomplishing the goal (Grobler et al., 2005, p. 292).

Action planning: Goals specify what is to be achieved, while action specifies how goals are to be achieved. In essence, the action plan constitutes a road map for accomplishing the goals. Action

plans are important because they provide direction as well as a mechanism (milestone) for measuring accomplishment toward goals (Ololube et al., 2016).

Self-Control: A primary assumption of MBO is that employees will accomplish their goals if given management and organisational support. Inherent in this assumption is that those who are being appraised with MBO possess fairly high level of motivation, commitment and achievement drive.

Periodic review: This involves a mechanism for periodically measuring progress toward goals. A review process is to discuss problems that an employee may be experiencing in reaching goals.

The advantages of the MBO method are: both the supervisor and the employee participate in the appraisal process. The focus of the appraisal process is on specific goals and not on broad personality traits such as dependability or cooperation (Grobler et al., 2005).

Other advantages of MBO method is that goals and objectives are determined before the appraisal period begins. In other words, previously discussed methods of appraisal take place after the employee's performance has occurred. Since the MBO process gives employees direction before the appraisal period begins, it is developmental in defining the direction employees should take and the expected level of achievement.

In application to education, MBO sees an organisation such as the college of education, as a social system which has subsystems within it. This implies that a head of college of education must realize that his college is a system; made up of sub-systems, each of which must make definite contributions to the attainment of the overall goals of the college.

Before the beginning of a new session or term the Provost of the college, with the mutual cooperation of the staff members especially his Deputy, Deans, Directors, and Heads of Departments, state in behavioural terms, the objectives the college intends to pursue which must be in line with national and state educational objectives. Within the framework of the set college objectives, the Deans of faculties, Directors of institute, Departmental heads and their assistants would formulate the objectives of each faculty, institute and department after which the individual staff states his own objectives.

Combination Methods

This is a combination of two or three performance appraisal method into an employer's overall performances. For instance, the essay and MBO approaches can be added to a rating scale approach for a fuller, perhaps more effective, performance appraisal system. In Colleges of Education, especially in south-east and south-south of Nigeria, each faculty, department and unit has appraisal committees. These are feeder committees to appointment and promotion committee of the college. The head of the unit (Deans of faculty Directors of the Unit or Head of the administrative department) is the chairman of the unit appraisal committee. The faculty officer or administrative staffs is the statutory secretary of the feeder bodies.

By this procedure personnel unit appraisal panel or committee is vested with the power to conclude their appraisal exercises and send the recommendation to the appointments and promotions committee which is the higher committee. The higher committee (appointments and promotions committee) is also empowered to approve or disapprove on behalf of the council the recommendations of the lower committee. The secretary of this committee will process and send the recommendations to the registrar for presentation to the council. The registrar who eventually is the secretary to the council and a member council committee (Appointment and Promotions)

subsequently relays the decisions of these bodies to the Deputy Registrar Establishment for implementation.

Human Resource Compensation/Motivation

Compensation, according to Stall (1995) is the monetary payments (wages, salaries, emoluments, bonuses) current and deferred used to reward employees. The above definition seems to be too narrow, since it equates compensation with only monetary income. Compensation is more than monetary income. Compensation can best be described as all rewards direct financial payments plus indirect payments (benefits) plus incentives individuals receive in an organisation plus non-compensation rewards – all those aspects of the pleasant work environment that serve to enhance their sense of self-respect and esteem by others (Cascio, 1995; Mathis & Jackson, 1992; Peretomode & Peretomode, 2002). In other words, it refers to all forms of financial returns and tangible services and benefits employees receive as part of employment relationships (Howard, 1997; Milkorich & Newmann, 1999).

In another development, Grobler et al. (2005) observed that the term compensation is often used interchangeable with wage and salary administration. They refer compensation not only to extrinsic rewards such as salary and benefits but also to intrinsic rewards such as achieving personnel goals, autonomy and more challenging job opportunities. The term wage and salary administration according to them refers strictly to the monetary rewards given to employees.

Peretomode and Peretomode (2002, p. 145) and Grobler et al. (2005, p. 383) avers that the purpose of compensation in organisations is:

“To attracts competent employees; to retain and hold employees in the organisation; to motivate employees; to positively influence the attitudes and behaviour of employees; to enhance the performance of the organisation; to control labour cost; and to comply with federal or state labour law legislation”.

It is quite possible therefore, that one way which workers can achieve improvement in productivity is through the establishment of rewards system or compensation policies and programmes that motivates. A compensation system that motivates is one which the workers perceive to be fair, equitable, rewarding and capable of performance (Banjoko, 1990). It implies that, if we wish to create an organisational culture in which productivity is a driving force, the compensation system must be explicitly and consistently designed and executed in order to reinforce productivity improvements.

Ani (1990) saw compensation system as being used as an inducement for people to join an organisation and stay in it. He pointed out that workers might leave the organisation because of the compensation system elsewhere or takes a partial leave by means of strike or slows down when they are dissatisfied with their benefits. According to them, management’s typical strategy with regard to employee benefits is designed to keep the organisation adequately manned, rather than to make optional use of the talents and potentialities of its manpower.

Vroom as cited in Ani (1990) discussed circumstances where compensation system would be expected to have maximum positive effect on performance. They include: where, the workers sees a clear relationship between his performance and the benefits he will derive, where workers

economic motives are strong, where the workers pre-existing motivation to perform his job is high, and where social pressure to restrict output is not created.

In the same vein, Lawler as cited in Peretomode and Peretomode (2002) identified four factors of effective compensation and reward systems as to be:

- Enough or adequate rewards to fulfil basic needs;
- Equity with the external labour market;
- Equity within the organisation; i.e. equitable rewards for employees contribution to organisational goals; and
- Treatment of each member of the organisation in terms of his or her individual needs (p. 141).

It therefore follows that compensation system serve dual roles, that is, functioning for the good of the organisation and functioning for the good of the employees. To the employees, compensation system like medical, insurance, profit sharing, travel and subsidized loans and discounts on organisational products and services makes employees feel special and appreciate (Alonge, 1990). He equally gave a lot of benefits that cost little or nothing such as small gifts for special occasions, like birthday, wedding; free tea or coffee and snacks; create a pleasant work environment, be receptive to suggestions and advise, publish an in-house newsletter, make meetings meaningful.

Alonge (1990) further advised that the compensation package should be kept competitive and more advised on how to handle the delicate and sensitive problem of compensation, to that he said:

“You should consider paying a little above the prevailing rates. You will save money in the long run by encouraging employees and keeping them from jumping to rival companies for a few Naira more (p. 25)

Metagoals of Compensation and Reward Systems

Cascio (1992) states that no organisation or firm exists in a vacuum. They exist within societies and communities. Just as they impact on their environment so also their immediate and external environment influences them and their activities. Consequently no organisation can afford to ignore the effects of external influences on its compensation and reward system. Some of the very important influences on compensation and rewards systems are: Federal and state legislation and regulations, Unions and Collective bargaining, and Labour market conditions.

In higher Education, pay is the basic compensation an employee receives. It is the money that staff receives for performing a job. This could be in salary or wage. Salary is a fixed regular payment made monthly to employees, while wage is a regular daily or weekly payment made or received for work or services.

METHODOLOGY

The study presented the research methods that were employed in the study. It described the following: Design of the study; Area of the Study; Population of the Study; Sample and Sampling technique; Instrument for data collection; validation of the Instrument; Reliability of the Instrument; Method of data collection and Method of data analysis.

The Design of the Study

The design of the study was a descriptive survey study. According to Ali (2006), a descriptive survey study describes what exists or the present status of what is being investigated in its natural settings and no manipulation of any variable. The design is appropriate for the study because it involved collection of data from administrators in higher education in order to determine their in-service education needs for the management of human resources in higher education.

Area of the Study

The study was conducted in South-South zone of Nigeria. The South-South zone is one of the six geopolitical zones of the Federal Republic of Nigeria. The South-South zone comprises six states, namely; Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. In South-South geo-political zone, there are three (3) Federal Colleges of Education and four (4) State Colleges of Education. The Federal Colleges of Education (FCE) include: Federal College of Education Obudu, in Cross River State; Federal College of Education (T), Asaba in Delta State and Federal College of Education (T) Omoku, in Rivers State. The State Colleges of Education in South-South geo-political zone include: College of Education, Agbor; Akwa Ibom State College of Education, Afaha-Nsit; College of Education Ekiadolo; and College of Education, Warri, Delta State. In all, there are seven (7) Colleges of Education in the area of study.

The South-South geo-political zone has a unique feature of housing many oil companies, Federal and State Colleges of Education. Also, the zone is noted for constant conflicts and crises in the colleges as reported in News Watch (2009, July 8). These attributes were considered as good justification for choosing the area of study.

Population of the Study

The population of the study included all the 277 Colleges of Education administrators in the South-South geo-political zone (Personnel Department of Colleges of Education in South-South, 2011). The administrators in Colleges of Education are made up of college Principal officers (Provost/Deputy Provost; Registrars, Bursars, Chief Librarians, Directors of Works, Directors of Health Services and Directors of Planning); The Deans of Schools and the Heads of departments. In South-South zone colleges of Education, the population size included Principal officers (56); Deans of schools (64) and Heads of departments (157). The population was considered appropriate for the study because they were the most likely group to provide the required information needed for the study as the college administrators.

Sample and Sampling Technique

Due to the small size of the population of the administrators in Colleges of Education in South-South geo-political zone (277), there was no sampling. Instead, the entire population was studied as it was manageable.

Instrument for data Collection

The instrument used for data collection was a questionnaire developed by the researcher called College of Education Administrators In-Service Education Needs Questionnaire (CEAIENQ). The instrument consisted of two parts, A and B. Part A of the instrument sought information on the demographic data of the respondents such as: Ownership status of college (Federal/State colleges); officers' position (Principal officer/Dean/Head of department) years of administrative experience (more experience/less experience); gender (male/female) and educational qualification.

The part B of the instrument sought information on in-service education needs of the administrators of Colleges of Education on staff appraisal, compensation and motivation. These were presented in two clusters and the response options were formed on a four-point modified likert-type scale response of Highly Required (HR); Moderately Required (MR), Slightly Required (SR) and Not Required (NR) (for competencies required). In answering the research questions, the mean score of each item and cluster mean were compared with the real limit of numbers. Similarly, the real limits for competency possessed were 3.50-4.00 (Highly Possessed), 2.50–3.49 (Moderately Possessed), 1.50–2.49 (Slightly Possessed), 0–1.49 (Not Possessed).

Validation of the Instrument

The instrument was face-validated by three experts; in Education Administration and Planning and two in Measurement and Evaluation from the University of Nigeria, Nsukka. These experts were given initial drafts of the instrument. Also given to them were the purpose of study and research questions. The experts were requested to scrutinize the items of the instrument in terms of relevance and appropriateness for the collection of data to address the research questions and hypotheses formulated for the study. The experts also scrutinized the instrument in terms of ambiguity, language structure, and the suitability of rating scale. The comments of the experts were used in modifying the instrument for final data collection.

Reliability of the Instrument

The reliability of the instrument was established for the different clusters of the instrument as well as the entire instrument. To determine the reliability, copies of the instrument was administered to thirty (30) randomly sampled Colleges of Education administrators from two Colleges of Education in South East zone of Nigeria. The colleges in the South-East geo-political zone were chosen for reliability testing since the study was not carried out in the zone. The data collected from the trial testing was tested for reliability using Crombach Alpha. The internal consistency reliability coefficients obtained is 0.816. This indicated that the instrument was reliable.

Method of Data Collection

Six research assistants, one from each state were employed by the researcher for the purpose of administration and collection of the questionnaire to the respondents. The research assistants

were instructed by the researcher on how to administer the questionnaire if question arises. The research assistants distributed the copies of questionnaire to administrators (Principal Officers, Deans and Heads of Departments of higher education in the South-South geo-political zone of Nigeria. The research assistants also waited and collected the copies of the questionnaire when they had been filled by the administrators.

Method of Data Analysis

The data collected from the respondents were analyzed using descriptive statistics Mean (\bar{x}), standard deviation (SD).

RESULTS and DISCUSSION

Research question 1

What are the in-service education needs of administrators for human resource appraisal in higher education in South-South Nigeria?

Table 1: Mean and standard deviation of the responses of the administrators to the in-service education required and possessed for human resource appraisal (N=277)

S/N	Items	Required		Possessed		Needed (R – P)	Remarks
		Mean	Std Deviation	Mean	Std Deviation		
1	Developing procedure for appraisal of staff.	2.68	0.99	2.49	1.01	0.18	Needed
2	Developing instrument for appraisal of staff.	2.71	0.96	2.47	0.94	0.25	Needed
3	Knowledge of appraisal report writing technique	2.67	0.95	2.52	0.95	0.15	Needed
4	Developing and interpreting valid criteria for promotion of staff	2.64	0.95	2.51	0.92	0.14	Needed
5	Ensuring reliability of instrument for promotion of staff	2.74	0.95	2.49	0.90	0.25	Needed
6	Establishing objectivity in staff appraisal	2.67	0.97	2.58	0.95	0.09	Needed
7	Management of staff potentials for effective appraisal and promotion	2.72	0.96	2.51	0.90	0.21	Needed
8	Development of manpower inventory planning of staff	2.66	0.98	2.51	0.93	0.15	Needed
9	Appropriate weighting/scoring of appraisal items for promotion	2.65	0.98	2.55	0.96	0.10	Needed
Overall		2.68	0.58	2.51	0.52	0.17	Needed

Table 1 shows mean and standard deviation of the responses of the administrators to the in-service education required and possessed for human resource appraisal. The result revealed that

the administrators agreed that all the items are required for human resource appraisal. This is because each of them has a mean greater than 2.50. Therefore, they needed in-service training in all items for human resource appraisal. From the result, the difference between the required and possessed is positive for all items, which revealed that administrators needed in-service training for human resource appraisal.

Research Question 2

What are the in-service education needs of administrators for human resource compensation and motivation in higher education in South-South Nigeria?

Table 2: Mean and standard deviation of the responses of the administrators to the in-service education required and possessed for human resource compensation and motivation (N=277)

S/N	Items	Required		Possessed		Needed (R – P)	Remarks
		Mean	Std Deviation	Mean	Std Deviation		
10	Determination of compensation strategies	2.79	1.03	2.41	1.05	0.38	Needed
11	Identification of motivation procedures.	2.74	1.02	2.44	0.98	0.30	Needed
12	Determination of staff performance output.	2.65	0.94	2.53	0.93	0.12	Needed
13	Identifying ways to motivate deserving staff.	2.64	0.98	2.52	0.95	0.11	Needed
14	Identifying motivation needs of staff.	2.66	0.97	2.45	0.96	0.21	Needed
15	Evaluation of level of work output for compensation.	2.72	0.97	2.50	0.93	0.22	Needed
16	Designing appropriate compensation system.	2.66	0.96	2.49	0.97	0.17	Needed
17	Determination of types of motivation suitable for deserving staff.	2.62	0.98	2.49	0.96	0.13	Needed
18	Compensation of salaries, allowance and bonuses of staff regularly.	2.68	1.05	2.58	1.02	0.10	Needed
Overall		2.68	1.07	2.49	0.53	0.19	Needed

Table 2 shows the mean and standard deviation of the responses of the administrators to the in-service education required and possessed for human resource compensation and motivation. The result revealed that the administrators agreed that all the items are required for human resource compensation and motivation. This is because each of them has a mean greater than 2.50. Therefore, they needed in-service training in all items for human resource compensation and motivation. From the result, the difference between the required and possessed is positive for all items, which revealed that administrators needed in-service training for human resource compensation and motivation.

CONCLUSION

This investigation has evaluated the in-service education needs of administrators for human resource appraisal, compensation and motivation in higher education in Nigeria. The well-articulated literature review and the empirical data highlighted the roles and the need for appraisal and compensation/motivation on staff training and development. The evidence from the study have practical and theoretical implications for administrators of higher education, tertiary education Governing Councils, staff and researchers. The study revealed that higher education administrators in Nigeria require the need for in-service education for HR appraisal, compensation and motivation. Since most administrators in higher education institutions in Nigeria lack the adequate competencies required for HRM, there is the need for in-service education to bring them up-to-date with best global practices.

In spite of the limitations of this study, it is necessary to establish that in-service education needs of administrators in higher education in Nigeria need to be adequately examined by further studies. The following suggestions are made for further studies:

- The research should be conducted on in-service education needs of administrators of the entire levels of higher education (universities, polytechnics etc.) for human resource management using academic staff, in addition to the administrators as respondents. This will provide a comprehensive view of staff in-service education needs.
- Further studies on the same or related topic should expand the scope to include private tertiary institutions of higher education. This will provide a wide view on the in-service education needs of the administrators in Nigeria.

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Principals' Managerial Techniques as Correlates of Teachers' Service Delivery in Public Secondary Schools in Rivers State

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Abstract

This study investigated principals' managerial techniques as correlates of teachers' service delivery in public secondary schools in Rivers State. Two research questions and two hypotheses guided the study. The study adopted a correlational design with a population of two hundred and forty-seven (247) public senior secondary school principals and six thousand eight hundred and fifty (6,850) teachers. 300 vice principals constituted the sample size. The data was collected using questionnaires titled "Principal Managerial Techniques Questionnaire" (PMTQ) and "Teachers' Service Delivery Questionnaire" (TSDQ). The instrument was validated by experts in the validation of research instruments. The reliability yielded index of 0.96 and 0.75 respectively. The research questions and hypotheses were answered and tested through Pearson Product Moment Correlation Coefficient (r) at 0.05 alpha level. The finding revealed among others that there was positive relationship between principals' instructional supervisory techniques and teachers' service delivery in public secondary schools. Recommendations were proffered.

Keywords: Principals, Managerial Techniques, Teachers, Service Delivery, Principals, Instructional Supervisory, Motivational Techniques.

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INTRODUCTION

The administration of secondary schools in Nigeria rests on the shoulders of the principal who is the leader, controller and custodian of both academic and extra-curricular activities of the school. The principal is the chief executive of the school, who provides instructional leadership by coordinating curricular, co-curricular programmes and also responsible for the general administration of secondary schools. As instructional leaders, principals are responsible for the supervision, monitoring, assessment, evaluation and dissemination of current information on academic and modern teaching techniques to teachers leading to effective teaching and learning process. As school managers, principals are expected to effectively guide and control administrative process for the purpose of achieving predetermined secondary education objectives as enshrined in the National Policy on Education (FRN, 2014).

The secondary education is designed to prepare students for higher education and useful living in the society. The attainment of this objective rests on the managerial ability of the school principal who is the instructional leader, motivator, co-ordinator, adviser, planner, and supervisor of school activities. Babayemi (2006) opined that principals owe it a duty to modify the attitude of the staff and motivate them to put in their best at achieving educational goals. The quality of managerial ability of principals to a large extent determines their successes or failures in the school system. The principals provide teachers with basic managerial techniques for effective teaching and learning to take place geared towards changing the behavioural pattern of the learner. The managerial techniques are support services provided by managers or chief executives of organization to improve the performance of staff. It implies the provision of enabling work environment for workers to render their services effectively. Ololube (2013) affirm that managerial techniques in secondary school revolve around putting in place all enabling environment by the principals' to boost teachers' morale commitment and professional development.

Asodike, Kaegon, Olawolu and Amadike (2012) opined that supervision is using experts knowledge and experience to oversee, evaluate and cooperatively improve the conditions and techniques of instructional programmes in teaching and learning process. Principals are expected to be instructional supervisors, motivators, co-ordinators and above all, instructional leaders. As an instructional supervisor, the school principal obtains and makes available materials for teachers to visit classrooms, observe his teachers teaching, and supervise the school. Ayeni (2012) puts it that most principals accorded desired/attention to monitoring of teachers attendance, preparation of lesson notes and adequacy of diaries of work, which improve their teaching performance in the schools. Kotride, Yanos and Annai (2014) asserted that school principals are in a better pace to provide constant and adequate feedback to the teachers on their instructional task performance to ensure periodic review and improvement of teaching and learning process.

Through motivation, the principal guides and encourages the teachers to work to increase productivity. Oyewole and Alonge (2013, p. 296) sees motivation as an inner state that energizes, activates a person and directs his behaviour towards achieving a goals. Motivation in the school is hinged on how satisfied or dissatisfied teachers are with their jobs. Kyte (2011) observed that the idea and willingness of organizational members to work together towards the achievement of organizational goals is an essential characteristic of organization in general. It is only through highly motivated staff programme that can facilitate student learning in certain directions; if teachers are well motivated, they will be happy to put in more effort on their jobs and better

results will be attained through the students. Motivation is valuable in predicting effects of organizational actions and in directing behaviour to achieve the goals of secondary education.

The school exist and will continue to exist primarily to inculcate desirable knowledge to students and anything that will enhance effective teaching and learning is of great importance to the educational managers. The relevance of motivation is crucial to the long term growth of any educational system around the world. The principal, being the school manager is seen as one who combines all efforts in the school system towards the realization of set objectives, and this can be achieved through the co-operation and support of his teachers. Consequently, the teachers have to be motivated to be in the right frame of mind to deliver qualitative instruction to the students. Akpan (2014) observed that in schools where the principals were able to reconcile the needs and aspirations of the teachers, with the needs of the school, students tended to achieve better academic performance than in those schools where principals did not show enough concern for both the welfare of the teachers and the needs of the school.

A study conducted by Ololube (2006, 2007) on teachers' job satisfaction and motivation for school effectiveness found that teachers are motivated by both the context and content, i.e., job security and working conditions, the work itself, reaching one's potential and personal growth. This shows that teachers are satisfied if these factors are present in their teaching job. The utmost satisfaction that teachers enjoy is a function of the degree of needs derived or experienced in the profession. It may not be easy to measure or quantify the level or rate of job satisfaction in teaching. However, teachers no longer believe that their "reward is in heaven", and from all indication, they would like to enjoy their reward on earth. The scholar contended that good salaries and allowances as well as condition of service which include sponsorship of staff development programmes are the internal and external factors that stimulate teachers' productivity. This implies when teachers are effectively motivated in this context, they will perform creditably towards quality service delivery aimed at learners' behavioural change.

Abraham (2013) asserted that a well-motivated teacher move enthusiastically towards the achievement of effective teaching and learning, process aimed at learners' behavioural change. To achieve this, there must be a harmonious relationship between the principals' managerial techniques in the area of instructional supervisor, motivation and teachers' service delivery. This requires knowledge, skill and expertise on the part of the principals and teachers for instance, most teachers in Nigerian secondary schools and Rivers State in particular, need to be properly guided, directed and controlled so as to get them put adequate effort towards the realization of predetermined educational goals. The principals on their part need to set up standards and formulate policies and plans for effective and efficient management of human and material resources in the school system for the attainment of coveted educational goals. It is against this backdrop this study investigates principals' managerial techniques as correlates of teachers' service delivery in public secondary schools in Rivers State.

Statement of the Problem

The secondary school system is designed to prepare students for future education and make them become useful individuals in the society. The attainment of these lofty goals hinges on the effective managerial techniques by the principal geared towards effective teaching and learning process. The principal co-ordinates the human and material as well as physical resources through their various managerial techniques, instructional supervision, motivation, and so on in the school system to achieve the desired educational objectives. In spite of the awareness of the

goals of secondary education by the principals' and teachers, it is highly surprising to observe incidences of unacceptable behaviour, examination malpractices, absenteeism, lateness to school, teachers doing private business at official time, drug addiction, loitering of teachers and students, and teachers' salaries are not promptly and regularly paid. These show that all is not well with our post primary education and has affected the effective instructional delivery. Thus, one is forced to ask questions such as: are the principals' motivating the teachers through instructional supervision and leadership for effective teachers' service delivery? Are the principals' providing the enabling working environment for teachers' service delivery? Which managerial techniques do the principals adopt leading to teachers efficiency?

Specifically, the concern of this study therefore, is to examine principals' managerial techniques as correlates of teachers' service delivery in public secondary schools in Rivers State.

Aim and Objectives of Study

The main aim of this study is to investigate principals' managerial techniques as correlates of teachers' service delivery in public secondary schools in Rivers State. The specific objectives of this study are to:

- Determine the relationship between principals' instructional supervisor and teachers' service delivery in public secondary schools in Rivers State.
- Examine the relationship between principals' motivational techniques and teachers' service delivery in public secondary schools in Rivers State.

Research Questions

The following research questions guided the study:

- What is the relationship between principals' instructional supervisory techniques and teachers' service delivery in public secondary schools in Rivers State?
- What is the relationship between principal motivational techniques and teachers' service delivery in public secondary schools in Rivers State?

Hypotheses

Based on the above research questions, the following null hypotheses were tested at 0.05 significant level:

- There is no significant relationship between principals' instructional supervision and teachers' service delivery in public secondary schools in Rivers State.
- There is no significant relationship between principals' motivational techniques and teachers' service delivery in public secondary schools in Rivers State.

METHODOLOGY

The study adopted a correlational research design with a population of 247 principals and 6,850 teachers totaling 7,097. 300 vice principals constituted the sample size. Purposive sampling

technique was employed. The data were collected using questionnaires titled “Principal Managerial Techniques Questionnaire” (PMTQ) and “Teachers’ Service Delivery Questionnaire” (TSDQ). The instruments were validated by experts in the validation of research instruments. The reliability index was 0.96 and 0.75 respectively. The research questions and hypotheses were answered and tested using Pearson Product Moment Correlation Coefficient (r) at 0.05 alpha level. The researchers and three trained research assistants administered the instrument to the respondents.

RESULTS

Research Question One: What is the relationship between principals’ instructional supervisory techniques and teachers’ service delivery in public secondary schools in Rivers State?

Table 1: Correlation results indicating relationship between PIST and TSD

Variable	n	$\sum x^2$	$\sum y^2$	$\sum xy$	r	Result
PIST	300	76.9	79.46	79.99	0.99	Positive Relationship
TSD						

PIST: Principals’ Instructional Supervisory Techniques

TSD: Teachers’ Service Delivery

Data from table 1 shows that the calculated coefficient of 0.99 represents positive correlation at a very high magnitude of relationship between principals’ instructional supervisory techniques and teachers’ service delivery in public secondary schools in Rivers State. This result therefore affirmed existing positive relationship between understudied variables. Thus indicating that principals monitoring of teachers attendance, checking teachers lesson notes, proper recording of scheme of work, adequate provision of instructional materials, close supervision of teachers positively enhances teachers’ service delivery.

Research Question Two: What is the relationship between principals’ motivational techniques and teachers’ service delivery in public secondary schools in Rivers State?

Table 2: Correlation results indicating relationship between PMT and TSD

Variable	n	$\sum x^2$	$\sum y^2$	$\sum xy$	r	Result
PMT	300	70.14	79.46	74.16	0.98	Positive Relationship
TSD						

PMT: Principals’ Motivational Techniques

TSD: Teachers’ Service Delivery

The computed coefficient of r-value of 0.98 as reflected in table 2 indicates positive correlation at a very high magnitude of relationship between principals’ motivational techniques and teachers’ service delivery in public secondary schools in Rivers State. This result therefore revealed positive relationships between the variables. This result shows that principals encouraging welfare schemes, recommending teachers for promotion, principals teaching the

students directly, making open commendation of teachers, show of love/care for teachers, proper remuneration of teachers and appointment of teachers to duty post have positive result on teachers' service delivery.

Hypotheses

Ho₁: There is no significant relationship between principals' instructional supervision and teachers' service delivery in public secondary schools in Rivers State.

Table 3: Analysis of relationship between principals' instructional supervisory techniques and teachers' service delivery

Variables	n	r	r-crit	df	p	z-cal	z-crit	Remark	Decision
PIST	300	0.99	±0.500	298	0.05	3.82	1.96	Sig.	Rejected
TSD									

The data in Table 3 shows that the null hypothesis tested at 0.05 level of significance was rejected. This implies that the hypothesis presenting r-value 0.99 and z-cal 3.82 greater than r-crit ±0.500 and z-crit 1.96 respectively clearly revealed that the subsisting relationship between PIST and TSD was significant. This shows that there is a significant relationship between PIST and TSD in public secondary schools in Rivers State.

Ho₂: There is no significant relationship between principals' motivational techniques and teachers' service delivery in public secondary schools in Rivers State.

Table 4: Analysis of relationship between principals' motivational techniques and teachers' service delivery

Variables	n	r	r-crit	df	p	z-cal	z-crit	Remark	Decision
PMT	300	0.98	±0.500	298	0.05	2.66	1.96	Sig.	Rejected
TSD									

In table 4, the null hypothesis tested at 0.05 level of significance was rejected. This shows that the hypothesis presenting r-value 0.98 and z-cal 2.66 greater than r-crit ±0.500 and z-crit 1.96 respectively clearly revealed that the subsisting relationship between PMT and TSD was significant. This indicates that there is a significant relationship between PMT and TSD in public secondary schools in Rivers State.

DISCUSSION

The findings in this study revealed that the way principals' instructional supervisory techniques enhance teachers' service delivery in public secondary schools include: monitoring of teachers' attendance, checking teachers lesson notes, proper recording of scheme of work, adequate provision of instructional materials, close monitoring of teachers class attendance on daily basis, close supervision of teachers activities and adopting internal supervision techniques to help

teachers adapt to the changing needs of education system. The test for hypothesis one shows that, there is a significant relationship between principals' instructional supervision and teachers' service delivery in public secondary schools. In line with the findings, Ayeni (2012) was of the opinion that most principals' accorded desired attention to monitoring of teachers attendance, preparation of lesson notes and adequacy of diaries/scheme of work, which improve their teaching performance in the school. This finding synchronizes with the findings of Kotride, Yanos and Annai (2014) who stated that school principals' should provide constant and adequate feedback to the teachers' on their instructional task performance to ensure periodic review and improvement of teaching and learning process. Asodike, Kaegon, Olawolu and Amadike (2012) endorsed this findings contending that for effective supervision to take place, expert's knowledge and experience are used to oversee, evaluate and cooperatively improve the conditions and techniques of instructional programmes leading to effective teaching and learning process. Principals involvement in instructional supervision enhances the quality of teachers' service delivery.

The findings equally revealed that the ways principals' motivational techniques influence teachers' service delivery in public secondary schools in Rivers State include: encouragement of staff welfare schemes, recommending staff for promotion exercises. Principals teaching the students directly helps to stimulate effective teachers' service delivery, making open commendations for teachers spur them for higher performance, showing love and care to teachers boosts their morale for efficiency, adequate remuneration of teachers enhance their performance, appointment of teachers to duty post improves their devotion to duty.

The test of hypothesis two shows that there is a significant relationship between principals' motivational techniques and teachers' service delivery in public secondary schools in Rivers State. In line with the findings, Oyewole and Alonge (2013) showed a significant relationship between instructional performance of principals and the motivation of the teachers; and a significant relationship between administrative role performance of principals of large schools and small schools and the motivation of their teachers. Therefore, there is need for principals to pay more attention to their role performance because it has significant influence on the motivation of teachers. Abraham (2013) and Ololube (2006) endorsed this finding by asserting that a well-motivated teacher moves enthusiastically towards achieving effective teaching and learning geared towards change in the learners' behavioural pattern.

CONCLUSION

Based on the findings, this research concluded that principals' of secondary schools in Rivers State need to adopt the various managerial techniques that can improve teachers' service delivery which include among others instructional supervisory techniques and motivational techniques. All these when effectively adopted would enhance instructional delivery in public secondary schools.

Recommendations

The researchers recommended the following:

- Principals should adopt proper instructional supervisory techniques to enhance teachers' service delivery in public secondary schools by proper monitoring of teachers attendance,

checking teachers lesson notes, adequate provision of instructional materials and maintaining effective guidelines to teachers for productivity.

- Principals should possess proper motivational techniques to enhance teachers' instructional delivery by encouraging staff welfare schemes, recommending staff for promotion exercises, making open commendations for teachers and showing love/care for teachers to boost their morale positively. Principals to pay more attention to their role performance as it has direct/significant influence on the motivation of teachers.
- Government should regularly pay teachers' salaries as well as promoting deserved teachers for effective teaching and learning process.

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Factors Hindering Effective Production and Utilization of Teacher-Made Instructional Materials in Teaching Senior Secondary Chemistry in Federal Capital Territory, Abuja, Nigeria

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Abstract

The study was designed to investigate the factors hindering effective production and utilization of teacher-made instructional materials for teaching senior secondary school chemistry in Federal Capital Territory (FCT), Abuja. Four research questions and one hypothesis guided the study. A descriptive survey design was used. The population consisted of 121 chemistry teachers of public senior secondary schools in FCT, Abuja. There was no sampling, rather the entire population served as the subjects. The instrument for data collection was 26-items structured questionnaire titled factors hindering effective production and utilization of improvised instructional materials questionnaire (FHEPUIIMQ, $r = 0.85$). Data collected were analysed using mean, standard deviation and t – test at 0.05 level of significance. The finding of the study revealed that inadequate training, poor funding, lack of functional workshops, lack of supervision of chemistry teachers, poor motivation, large class size were among the factors hindering effective production and utilization of teacher-made instructional materials in teaching chemistry. The results also showed that gender had no significant influence on the mean responses of teachers on the factors hindering effective utilization of teacher-made instructional materials for teaching chemistry. Recommendations were made among others; chemistry teachers should attend seminars, workshops and conferences to improve their knowledge and skills on production and utilization of teacher-made instructional materials.

Keywords: Hindering, effective production and utilization, teacher made, improvisation, instructional materials

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INTRODUCTION

The primary aim of education is to make learners capable of being responsible, productive and useful member of the society. That is why Nigeria Government sees education as an instrument per excellent for individual and national development. It is therefore important to give education a solid foundation through effective teaching and learning. This will ensure that knowledge, skills, attitudes and appreciations are built through classroom interaction pattern of the teacher and the learners. But, Megbo and Saka (2005) pointed out that effective teaching cannot be fully accomplished without the use of instructional materials. Agina (2005) defined instructional materials as concrete or physical objects which provide sound, visual or both to the sense organs during teaching. Abimbola and Udonsoro (1997) defined instructional materials as two or three dimensional aids used by a teacher in order to save students from wondering in imagination and to keep their understanding. Agbulu and Wever (2011) pointed out that instructional materials are important because they help both teacher and students to overcome physical limitations during lesson presentation among others. Giginna and Nweze (2014) while citing Onwudinor and Onwudiafor (1999) emphasized on the importance of instructional materials as follows: Concretizing abstract concepts, stimulating students' attention and interest, arousing students' curiosity and promoting students' active participation in the classroom.

In spite of the importance and emphasis that chemistry teachers should select and use instructional materials in the teaching and learning chemistry, research reports have shown that chemistry teachers teach without using instructional materials. The commonest reason, they give for this is that already made ones are not available in the schools (Ezeliora, 1999; Eriba, Ogbeba & Ityo, 2015). The teachers' view was supported by the assertion of National Teachers Institute (2011) that most of the instructional materials used for teaching and learning in schools are expensive and not readily available. This situation has worsened in the present days due to economic recession and high exchange rate of dollar to naira that makes it impossible for many schools to purchase enough instructional materials. Therefore, chemistry teachers and students have been called upon to improvise the necessary instructional materials.

Bomide (1985) defined improvisation as an act of using instructional materials obtainable from the local environment designed either by the science teacher or with the help of local personnel's to enhance instruction. Adebimpe (1997) defined improvisation as a way of widening inquiry, curiosity creativity and productive application of intellect in the local application of universality of science. In line with the last definition, Ezekannagba and Ifeakor (2000) while citing Ikeagu (1999) observed that improvisation help students and teachers to: participate in creative and analytical thinking; acquire problem solving and manipulative skills, acquire scientific attitudes among others. Olagunju (2000) summarized the reasons for improvisation as follows:

- Fulfill science education objectives;
- Substituting alternative where standard equipment are not available;
- Reducing cost;
- Promote creative and technical skills;
- To meet the high demand of coping with large class;
- Conserve foreign exchange earnings from improvisation of equipment.

Achimugu (1995) defined improvisation as the teacher-made teaching material used by him or her to facilitate instructions. The focus of this study is on teacher-made instructional material. The inability of teachers to produce, select and use teacher-made instructional materials is a great dis-service to science education. Based on the above premises, this study was designed to investigate the factors hindering effective production and utilization of teacher-made instructional materials in teaching and learning chemistry in secondary school in Federal Capital Territory, Abuja.

Problem of the Study

Many chemistry education researchers have stressed the benefits of improvisation of instructional material and the ease with which these improvised materials can be produced or obtained (Achimugu 1995, Ezeliora 1999). Chemistry teachers have been called upon to make and use them. It is disheartening to note that chemistry teachers are almost ignorant of how to produce or obtain the instructional materials. Very related to this issue is that chemistry teachers find it difficult to use teacher - made instructional materials in teaching chemistry (Eshiet 1996). The availability and adequate provision of instructional material are important but more important is the extent to which teachers utilize these materials in the classrooms to improve the teaching-learning process. Therefore, the problems hindering teacher's effective utilization of teacher-made instructional material need to be giving a closer study. Hence the need to investigate factors that hinder effective production and utilization of teacher-made instructional materials in the teaching of chemistry.

Purpose of the Study

The general purpose of this study is to ascertain the factors hindering the effective production and use of teacher - made instructional materials in teaching chemistry in senior secondary school in FCT, Abuja. Specifically, the study sought to find out:

- Factors hindering the effective production of teacher - made instructional materials for teaching chemistry in senior secondary schools;
- Factors hindering the effective utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools;
- Measures that could be employed to improve the utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools;
- The roles of gender on the factors hindering effective utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools.

Research Questions

- What are the factors hindering effective production of teacher - made instructional materials for teaching chemistry in senior secondary schools?
- What are the factors hindering effective utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools?
- What measures could be employed to improve the utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools?

- To what extent do gender influence chemistry teachers on the factors hindering effective utilization of teacher - made instructional materials in teaching chemistry in senior secondary schools?

Hypothesis

- Ho: There is no significant difference in the mean rating of male and female teachers on the factors hindering effective utilization of teacher - made instructional materials in teaching chemistry in senior secondary schools

METHODS

A descriptive survey design was used for the study. The study was carried out in senior secondary schools in Federal Capital Territory, Abuja. The target population was the entire 121 chemistry teachers in (47 males and 74 females) in 66 public senior secondary schools in FCT, Abuja. There was no sampling as the entire population of chemistry teachers was studied. The instrument used for data collection was structured questionnaire tagged: Factors Hindering Effective Production and Utilization of Instructional Materials Questionnaire (FHEPUIMQ). The questionnaire consisted of four sections. Section A sought information on personal data of the respondents; Section B sought information on factors hindering effective production of improvised instructional materials; Section C sought information on factors hindering effective utilization of improvised instructional materials and section D sought information on measures that are could be employed to enhance chemistry teachers' utilization of improvised instructional materials. The instrument was a four point rating scale of strongly Agree (SA) = 4, Agree (A) = 3, Disagree (DA) =2 and Strongly Disagree (SD) = 1 for positive statements. The questionnaire was validated by two specialists in chemistry education and another two specialists in educational measurement and evaluation. Their comments and suggestions led to the emergence of the final copy of the questionnaire. The instrument was trial tested on 30 chemistry teachers from senior secondary schools from Kogi State that were not part of the study. The result was used to determine the reliability of the instrument using Cronbach Alpha technique and reliability index of 0.85 was established. This value was considered high enough and reliable for the study. Face to face method of administration of questionnaire was adopted with the help of six trained research assistants (one research assistant per area council) to ensure a 100 percent return. Mean and standard deviation were used in answering the research questions while t – test was used in testing the hypothesis at 0.05 significance level. The criterion means value was 2.50 and items with mean values of 2.50 and above were regarded as significant/agreed while those with mean values less than 2.50 were regarded as insignificant/disagreed.

RESULTS

The results were presented according to the research questions and the hypothesis as seen on tables 1, 2, 3, 4 and 5 below.

Research Question One

What are the factors hindering effective production of teacher - made instructional materials for teaching chemistry in senior secondary schools?

Table 1: Mean Ratings and Standard Deviation of Chemistry Teachers on Factors Hindering Effective Production of Teacher - Made Instructional Materials for teaching chemistry

S/N	Questionnaire Statements	Mean	SD	Decision
1.	Shallow knowledge of teachers on how to produce improvised materials	2.66	0.52	Agreed
2.	Increasing rate of the cost of materials used for the production	2.89	0.40	Agreed
3.	Lack of knowledge of the available local materials	1.54	0.62	Disagreed
4.	Lack of needed tools for improvisation	3.11	0.55	Agreed
5.	Teachers' lack of interest on the arts of improvisation	2.37	0.70	Disagreed
6.	Poor motivation of teachers	3.14	0.42	Agreed
7.	Teachers are scared of the messy and unsafe nature of improvisation of instructional materials	2.00	0.63	Disagreed
8.	Unwillingness of the school principals to spend money on improvisation of instructional materials	3.01	0.42	Agreed
9.	Producing improvised materials are energy and time consuming	2.93	0.68	Agreed
10.	Lack of cooperation among teachers themselves and among them and the local resources person	1.94	0.80	Disagreed

From table 1, six items (1, 2, 4, 6, 8 and 9) were rated above 2.50, which imply that the teachers agreed with the statements as factors that hinder effective production of improvised instructional materials for chemistry instruction. However, the four items (3, 5, 7 and 10) were rated below the cut-off mean of 2.50 which implies that the teachers disagreed with the item statements as factors that hinder effective production of instructional materials for chemistry education.

Research Question Two

What are the factors hindering effective utilization of teacher - made materials for teaching chemistry in senior secondary schools?

Table 2: Mean Ratings and Standard Deviation of Chemistry Teachers' Responses on the Factors Hindering Effective Utilization of Teacher - Made Instructional Materials for Chemistry Instruction

S/N	Item Statement	Mean	SD	Decision
11	Growing students' population resulting to unmanageable class size.	3.46	0.67	Agreed
12	Voluminous nature of syllabus and pressure to cover it.	3.61	0.71	Agreed
13.	Teachers are weighed down by heavy work loads	3.15	0.65	Agreed
14.	Improper functioning of teacher - made instructional materials.	2.11	0.79	Disagreed
15.	Lack of technical skills and knowledge required for the usage of teacher - made instructional materials	2.84	0.54	Agreed
16	Lack of interest in teaching profession.	2.18	0.71	Disagreed
17	Nonpayment of inducement allowance (ie science allowance) to chemistry teachers	3.11	0.65	Agreed
18	Inadequacy of qualified chemistry teachers	2.56	0.86	Agreed
19	Lack of precision of the teacher - made instructional materials.	2.75	0.94	Agreed
20	Lack of maintenance and care of teacher - made instructional materials.	2.16	0.77	Disagreed
Grand total mean/ standard derivation		3.06	0.80	Agreed

From table 2, the mean rating of items 11, 12,13, 15, 17, 18 and 19 were above the mean of 2.50. This implies that the teachers agreed with the statements on the questionnaire as the factors hindering the effective utilization of teacher made instructional materials in teaching chemistry. However, items 14, 16, and 20 have mean rating values below the criterion mean of 2.50. This shows that the teachers disagreed with the statements on the questionnaire as the factors hindering the effective utilization of teacher made instructional materials in teaching chemistry. The grand mean of 3.06 indicates that the teachers agreed with the majority of the items as factors hindering the effective utilization of teacher made instructional materials in teaching chemistry.

Research Question Three

What measures could be employed to improve the utilization of teacher - made instructional materials for teaching chemistry in senior secondary schools.

Table 3: Mean Ratings and Standard Deviation of Chemistry Teachers' Responses on Measures That Could be Employed to Improve the Utilization of Teacher -Made Instructional Materials

S/N	Measures	Mean	SD	Decision
21	Provision of well-equipped workshops	2.72	1.06	Agreed
22	Provision of adequate fund to purchase materials for improvisation.	3.35	0.83	Agreed
23	Re-training of chemistry teachers on the knowledge and skills in improvisation.	3.54	0.80	Agreed
24.	Motivation of chemistry teacher such as payment of science allowance	3.38	0.75	Agreed
25	Strict supervision of chemistry teachers on the production and utilization of instructional materials in teaching.	2.79	1.0	Agreed
26	Employment of qualified chemistry teachers.	2.51	0.9	Agreed
Grand mean/Standard deviation		3.35	0.98	Agreed

In table 3, the items which chemistry teachers agreed to be the factor that hinder effective utilization of teacher-made instructional materials for teaching chemistry were 21, 22, 23, 24, 25 and 26. The grand mean of 3.35 implies that the teachers agreed with the items as measures that could be employed to improve the utilization of the instructional materials.

Research Question Four

To what extent does gender influence chemistry teachers on the factors hindering effective utilization of teacher made instructional materials?

Table 4: Overall Mean and Standard Deviation Scores of Male and Female Teachers on Factors Hindering Effective Utilization of teacher made Instructional Materials in Teaching Chemistry

Gender	Number of Subjects	Mean	Standard deviation
Male	47	2.80	0.70
Female	74	2.66	0.76

From table 4, the male teachers have the overall mean of 2.80 while the female counterparts have the overall mean of 2.66. This means that gender to some extent has influence on chemistry teachers' responses on factor hindering effective utilization of teacher – made instructional materials in teaching in favour of male. However, the subsequent analysis of supportive hypothesis shall show whether the difference is significant or not.

Hypothesis

Ho₁: There is no significant difference between the mean rating scores of male and female teachers on the factors hindering effective utilization of teacher – made instructional materials for teaching chemistry in senior secondary schools?

Table 5: T – Test Analysis on the Mean Response of Male and Female Teachers on Factors Hindering Effective Utilization of Teacher – Made Instructional Materials for Teaching Chemistry

Group	N	X	SD	Df	t-cal.	t-table
Male	47	2.80	0.70	119	1.63	1.98
Female	74	2.66	0.76			

From table 5, t-calculated (1.63) is less than t-critical (1.98) at 0.05 level of significance. And as such, the null hypothesis was not rejected. It shows that gender had no significant effect on chemistry teachers' responses on the factors hindering effective utilization of teacher-made instructional materials in teaching.

DISCUSSION

From table 1, the study showed that ineffective production of teacher - made instructional materials for chemistry teaching were as a result of: shallow knowledge of teachers, increasing rate of the cost of materials, lack of needed tools; poor motivation of teachers; unwillingness of the school principals to spend money; and time consuming nature of improvisation. The findings of this study on the shallow knowledge of teachers is in agreement with the finding of Uka (2007) who discovered that inadequate training of teachers in subject matters leave them with lack of inventive potentials to produce and use the necessary facilities to concretize their lessons.

The finding of this study on table 2 revealed that chemistry teachers agreed that factors that hinder effective utilization teacher - made instructional materials include; unmanageable class size, pressure on teachers to cover the syllabus, teachers' heavy workloads, lack of skills and knowledge required for the usage, lack of incentives for teachers, inadequacy of qualified chemistry teachers and lack of precision of the teacher-made instructional materials. This finding collaborates with the findings of Igwe, Ariba and Ibe (2013) who also revealed that lack of exposure to knowledge, time constraints, unavailability of right tools and prevalence of large classes in most schools among others are major factors hindering effective improvisation and use of improvised teaching materials. The finding on lack of motivation of teachers affirmed the view of Ngwoke (1997) who pointed out that lack of motivation hinders response and would stifle the creativity and the innate potentials of teachers with the negative answer that "*I cannot do it*". The implication is that chemistry teachers apart from their monthly salaries should be paid

science (inducement) allowance in order to bring out the best from them in all aspect of teaching and learning processes.

The result of this study on table 3 shows that certain factors such as provision of well-equipped workshops, adequate fund to purchase materials, retraining of chemistry teachers; motivation of teachers, implementation and employment of qualified chemistry teachers enhance the production and utilization of teacher – made instructional materials for chemistry education. This finding is in conformity with the finding of Onwuachi (2011) who reported that the provision of: well-equipped laboratories, sufficient fund, in-service training, attendance to workshops/seminars and motivation of science teachers are the strategies for effective utilization of material resources for teaching and learning of science subjects.

The result of this study in table 4 shows that there was difference in mean responses of male and female chemistry teachers on the factors hindering effective utilization of teacher-made instructional materials in teaching chemistry with the males having higher mean scores than their female counterparts. But further analysis on table 5, revealed that the observed difference was by chance, as there was no significant difference between the male and female teachers in their responses on the factors hindering effective utilization of teacher - made instructional materials. This implies that there is unanimity in the responses of teachers on factors hindering effective utilization of teacher-made instructional materials in respective of the gender type. Obviously, this confirms that male and female teachers face similar constraints that hinder them from effective utilization of teacher - made instructional materials for teaching and learning chemistry in senior secondary schools.

CONCLUSION

The findings of this study have provided the basis for the researcher to draw the conclusion that certain factors such as poor funding, lack of needed tools, poor motivation of teachers, inadequate training, large class size, lack of skills and knowledge, lack of supervision, lack of motivation, lack of qualified teachers among others hinder effective utilization of teacher - made instructional materials for teaching and learning chemistry. The researchers also concludes that factors that hinder effective utilization of teacher-made instructional materials by chemistry teachers are not gender based as there was no significant difference in the mean responses of male and female teachers on the level of production and utilization of instructional material for chemistry instruction. Conclusively, all stakeholders in chemistry education are called upon to intensify efforts towards the production and utilization of teacher made instructional materials for effective teaching and learning of chemistry in senior secondary schools in FCT, Abuja.

Recommendations

Based on findings of this study, the following recommendations were made:

- Chemistry teachers are encouraged to attend seminars, workshops and conferences in order to improve their knowledge and skills in handling the production and utilization of instructional materials;
- Training of student–teachers should be reviewed to emphasize knowledge and skills related to the production and use of instructional materials;

- Adequate fund should be provided for the procurement of tools and materials needed for production of teacher-made instructional materials;
- Functional workshop for improvisation of instructional materials should be provided in all the senior secondary schools in FCT, Abuja;
- Stakeholders (Government at various levels and school principals) should ensure that chemistry teachers are adequately motivated to carry-out their professional duties such as improvisation of instructional materials.

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Institutional Activities and Accreditation of Higher Education Academic Programmes in the Era of Economic Recession in Cross River State, Nigeria

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Abstract

This study investigated Institutional Activities and Accreditation of Higher Education Academic Programmes in the Era of Economy Recession in Cross River State. To facilitate this, three research questions and correspondents hypotheses were formulated to guide the study. Literature review of the institutes were based on convocation, annual award ceremony and alumni support. The design adopted for the study was correlation design, and the population comprises of 82 Heads of Department, 12 Deans of Faculties, and 1 Coordinator of programmes, 2 Directors. Population census was employed to select the sample size of 132 respondents. The instrument used for the study was a modified four point Likert scale questionnaire titled (Institutional Activities and Accreditation of Higher Education Academic Programmes Questionnaires "IAAHEAPQ") was used to elicit information. Data were analyzed using Standard Deviation to analyzed data, and was tested at 0.05 level of significant and conclusion was made according to the findings that institutional activities such as: Donations from convocation ceremony, Support from Alumni, and Donations from Annual award relate significantly with the accreditation of academic programmes in the era of economic recession in universities in Cross River State.

Keywords: Institutional activities, Accreditation, Higher education, Academic programmes, Economic recession.

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INTRODUCTION

Academic programmes are situated in between the university management and service consumers; they are the directing force use in stratifying students in various universities in Nigeria. No institution can function effectively without streamlining the academic structure for the institution to follow in other achieve its' goals. Institution of higher learning is solely dependent on academic excellence but the probability of applauding success is on credibility of these programmes in various universities. The challenges of accreditation of various programmes in the universities especially in the era of recession is alarming hence, institutions managers' needs to bring out various strategies and modules in arresting the persistent and alarming challenges in the area of poor funding that leads to non-availability of facilities like; equipment, lecture halls, competent teaching personnel, availability of resource room, laboratories to mention but few. This has in other way round hinders the smooth accreditation of academic programmes in various universities in Cross River State. Accreditation of academic programmes in the universities has to do with the universities management acceptable standard and recommended process, principles and practices in running programmes.

In Nigeria, accreditation programmes for higher education is handled by National University Commission (NUC) to ensure that all universities are fully participated in the accreditation exercise for procurement of standard maintenance of quality services. According to Council for Higher Education Accreditation (CHEA, 2012), postulates that many of the universities have faded away from their previous glory and as such the nature of graduates they produce, do not match with others graduates from other institution when placed in competitive market. This may be as a result of inadequate funding to compete favourably with others universities in the world. Accreditation of academic programmes in various institution were meant to help university's' management plan of action, this is because it gives management bearings and choice of selection of discipline by students. The accreditation is an important exercise that helps in directing students' programmes and instilled professional skills. This could be achieved through quality evaluation in Higher education to ensure effectiveness of an accreditation programme in bridging the gap between quality skills development and quality service delivery. This is in congruent with the federal government's objective with the introduction of single treasuring account aimed ensuring that funds is appropriately spent to carter for the purpose. Many universities in Nigeria are faced with the challenges of funding. Probably, this may be why Daily Trust Paper (2016) lamented on the accreditation crisis faced by Nigerian universities by listing the names of Nigerian Universities and courses that has not been accredited accumulating up to 150 in 37 universities in Nigeria.

Universities academic programmes may said to be functional, if required standards of management running of academic programmes in various universities are being met. It is an avenue aimed at structuring procedures and practices to attain quality process in other to ensure smooth running of higher educational institutions. Many universities also could not maintain the service quality, and as such faces declined in the students' enrolment (NUC, 2009). During accreditation period, facilities are assessed and inspected, programmes are keenly observed and evaluated by accreditation team to ascertain if the existed procedures and standards are met and then accreditation status is issued and granted by the agency. In recent past, Government of Federal Republic of Nigeria (2012) initiated (TET Funds) in assisting higher institutions in ensuring that quality services are provided to suit with the demand for manpower in the labour market. This measure is to ensure quality service delivery and development of skilled graduates.

It is also to help various universities during accreditation exercise, yet the accreditation challenges in the Nigerian universities still persist. The management still finds it difficult to make adequate provision for needed facilities and this may lead to why Universities finds it difficult to meets the basic requirement on accreditation exercise (NUC, 2009)especially, during the economic recession round the globe.

Statement of the Problems

In recent past, accreditation of academic programmes has become a major challenge in universities system. As pointed out by the Daily Trust (2016) about 150 programmes in 37 universities have not been accredited. This may be connected with the economic recession in the country round the world, and as a matter of fact causing spontaneous increase in the price of goods and services, and affecting national budgets as well as causing a reduction in budget. This specifically affects accreditation of universities, hinders smooth running of higher education by thwarting adequate provision of adequate funds and facilities both in teaching/learning aspects and causes a declined in students' enrolment in various universities.

Despite the effort by the Federal Government in instituting TET-Fund to assist higher educational institutions in ensuring provisions of quality service delivery, the challenges of accreditation still persist. It is against these backdrop, the researcher intent to examining some of the avenues in which institution and their various managers could use in order to conquer accreditation challenges such as; Convocation activity, Alumni meeting, and annual award.

Hypotheses

The following hypotheses were used to guide the study:

- There is no significant relationship between free donations from Convocation ceremony and accreditation of higher education academic programme in the era of economic recession.
- Support from Alumni does not significantly relate with accreditation of higher education academic programme in the era of economic recession.
- Donations at annual award Ceremony does not significantly relate with accreditation of higher education academic programme in the era of economic recession.

LITERATURE REVIEW

Institutional activities are those academic and non-academic programmes organize by an institutions as to create and demonstrates quality evidence of excellence service delivery, and sometimes an avenue use in sourcing for funds from corporate organisation, companies, Government and well-meaning individual. During these time, it is expected that management of the institutions develop and keep relationship with individual and host communities in order to attend to some issues affecting the institutions in terms of facilities and other related issues regarding co-existent of academic programmes which has become a major challenge according to Daily Trust (2016) who eluded on the Accreditation crisis in universities. According to the paper, pointed out the failure of some Nigerian universities academic programmes in receiving accreditation status, has gotten to riot equilibrium scale with those with accreditation status. The

report further buttress that more than 37 universities are currently running 150 unaccredited academic programmes or courses.

Convocation ceremony have to do with activities organize by the institutions for the purpose of presenting her skillful and develop manpower products to the labour market. During these time, the university management addresses challenges and other related issues affecting the institutions in terms of contributions of the universities to the nations as it was said by Chief Obasanjo during in his lecture at the 41st Convocation Ceremony of the University of Nigeria, University of Nsuka (2017) stated that education as the major agency for both personal and national socio- economic development. He opined that investing in human capital development is critical to the long term productivity and growth at both micro and macro levels. He asserted that the state of education in Nigeria continues to dominate our national discourse. Education plays pivotal role as well funded in terms of provision of adequate facilities. According to Thomas (2011) Different institutions of learning, like universities use convocation ceremony to send forth graduates from their respective institutions and also to source for funds through free will gifts from well-meaning personalities .Ahmed(2015)in a study on public and private higher education financing in Nigeria, stress at the financial status of the universities to examined whether there is adequate or inadequate funds to Nigerian universities using secondary data from 2019-2011 session, inferential and descriptive statistics. According to the researcher, the study revealed that higher institution education not adequately funded. This implies that accreditation of academic programmes in Nigerian universities is thwarted because ill-funded institutions lack facilities, experts and action plan guiding the various programmes.

Support from Alumni is a group of people who have graduated from school or university coming together to form a formidable body or a strong union with the aim of helping an institution to grow. Wikipedia.org/wiki/Alumni-association(2017).This group of people or association often organize events, call for newsletters, magazines and raise funds that helps the institutions to manage her affairs in achieving their respective purpose. They are often organized in the universities, departments and Faculties levels.

Annual award Ceremony refers to programmes often organize by the institutions to showcase their outstanding achievement with staff and students, alumni, friends, industry partners and host communities. It has to do with institution showcasing of her proud heritage and celebration of anniversary. In centenary celebration, performance, displays and installations, art and history are often displayed at the event and the contributions of different persons and recognitions of personalities (University of Western Australia, 2013). During this time, issues affecting smooth running of the institutions effectiveness such as factors hindering accreditation of academic pgrammes are discussed

METHODOLOGY

This study on Institutional Activities and Accreditation of Academic Programmes in Higher Education was conducted in Cross River State Nigeria. Geographically, Cross River States in among the 6th state in south-south geo-political zone. Specifically, there are two universities in Cross River States namely; University of Calabar, Calabar which is owned by Federal Government and Cross River University of Technology owned by State. Population census was employed to select the sample size of 132 respondents' which comprises of head of departments, deans of faculties, coordinator of programmes and directors of institutes made up the population of the study of which 96 from university of Calabar (UNICAL) and 36 from Cross River

University of Technology, (CRUTECH). Descriptive research design was adopted. Data was collected using a questionnaire titled “Institutional Activities and Accreditation of Higher Education Academic Programmes Questionnaires (IAAHEAPQ)” was used for data collection. The instrument had two parts A and B part. Part A comprised of demographic variables such as; name of institution and type of programme, while part B contained 24 items 4 of each measuring the three independent variables and dependent variable. Expert in measurement and Evaluation validated the instrument, while Cronbach alpha reliability test was used to carry out trial testing, the result ranged from 0.71-0.89 coefficient which was taken to be reliable. Collection of data was done by the researchers. The total of 120 questionnaires were retrieved representing 91%. Data collected were analyzed using Standard Deviation.

Table 1: Description Statistics of the Total Respondents Used for the study, minimum scores, maximum scores, mean and standard deviation

Variables	N	Min	Max	Mean	Standard Deviation
Convocation Activities	120	5.00	24.00	17.8500	3.41930
Alumni Support	120	8.00	24.00	17.5000	3.78631
Annual Award Ceremony	120	10.00	24.00	17.6167	2.86733
Accreditations of Academic Programmes.	120	9.00	24.00	18.9917	3.12619

RESULTS

The result of the three hypotheses tested in this study is presented below.

Hypothesis 1

There is no significant relationship between free donations from Convocation Ceremony and accreditation of higher education academic programme in the era of economic recession.

Table 2: Summary of Mean difference on the differences between Free Donations from Convocation Ceremony and Accreditation of Higher Education Academic Programme in the Era of Economic Recession

Variable	N	X	SD	r	P-value
Convocation Ceremony	120	17.8500	3.41930	.242	.008
Accreditation of Academic Programmes	120	18.9917	3.12619		

*P< .05. df =118

The result of the table above indicates that the calculated r-value of .242 representing the observed relationship between free donation from convocation ceremony and accreditation of academic programmes in universities in Cross River State was significant at p-value of .008 at .05 level of significance with 118 degree of freedom. With this outcome, the null hypothesis was rejected. Thus, there is a significant influence on free donation from Convocation Ceremony and Accreditation of Academic Programmes in universities in Cross River State.

Hypothesis 2

Support from Alumni support does not significantly differ with accreditation of higher education academic programme in the era of economic recession.

Table 3: Summary of Data of Means difference on the differences between Support from Alumni Support and Accreditation of Higher Education Academic Programme in the Era of Economic Recession

Variables	N	X	SD	r	P-value
Alumni support	120	17.5000	3.78631	.369	.000
Accreditation of Academic Programmes	120	18.9917	3.12619		

*P<. 05, df = 118.

The result of the table above indicates that the calculated r-value of .369 representing the observed relationship between supports from Alumni and accreditation of academic programmes in universities in Cross River State was significant at p-value of .000at .05 level of significance with 118 degree of freedom. With this outcome, the null hypothesis was rejected. Thus, there is a significant influence on support from Alumni and Accreditation of Academic Programmes in universities in Cross River State.

Hypothesis 3

Donations at annual award ceremony does not significantly differ with accreditation of higher education academic programme in the era of economic recession.

Table 4: Summary of data and Means differences on the differences between Donations from annual award Ceremony and accreditation of higher education academic programme in the era of economic recession

Variables	N	X	SD	r	P-value
Annual Award Ceremony	120	17.6167	2.86733	.456	.000
Accreditation of Academic Programme	120	18.9917	3.12619		

*P<. 05, df = 118.

The result of the table above indicates that the calculated r-value of .456 representing the observed relationship between Donations from annual award ceremony and accreditation of academic programmes in universities in Cross River State was significant at p-value of .000 at .05 level of significance with 118 degree of freedom. With this outcome, the null hypothesis was rejected. Thus, there is a significant influence on donations from centenary ceremony and accreditation of academic programmes in universities in Cross River State.

DISCUSSION OF FINDINGS

The outcome of hypothesis one showed that, there is a significant influence on free donation from Convocation Ceremony and Accreditation of Academic Programmes in universities in Cross River State. This facilitates the rejection of null opinion in favour of alternate hypothesis.

The finding from hypothesis one showed that free donation made from convocation significantly influence accreditation of academic programmes in an era of economic recession in universities in Cross River State. This indicated that universities who gives cognizant to schools activities such as convocation ceremony, stand a chance of receiving more supports that will aids accreditation of various academic programmes in various universities around the globe if manage properly. In a competitive world of today, institutions of higher learning needs to streamlines structures in harmonizing real live situation to different schools programmes, embed practical solving paradigm in various programmes , make provision for adequate facilities, make provision for skills/ experts in the respective fields. These parameters can only be conquer only by funds either from federal government or with funds generated from schools activities like convocation ceremony.

The findings are supported by the study of Ahmed (2015) public and private higher education financing in Nigeria, when the researcher stress at the financial status of the universities can affect the success of the academic programmes. The study revealed that higher institution education was found not adequate funded. This leads to non-competitiveness of Nigerian universities in the international level. This is because the funding system of universities in Nigeria is poor, hence leads to poor outlook, and non-accreditation of Academic progrmmes. Funding of universities in Nigeria will help increase the number of academic programmes in various universities and also carter for illiteracy.

The study also revealed that support from Alumni significantly influence accreditation of academic programmes in the era of economic recession in Cross River State. This is in agreement with Wikipedia (2017) and business dictionary (2017), who sees alumni as a group of people who have graduated from school or university coming together to form a formidable body or a strong union with the aim of helping an institution to grow. This will help universities in achieving their predetermined objectives and also meet the basic requirement of accreditation team.

The result of the last findings revealed that donations from annual award ceremony significantly influence the accreditation of academic programmes in the era of economic recession in Cross River State. This implies that universities with the supports from donations during annual award programs, universities stand a chance of yielding a better outcome during accreditation exercise. The inability for academic programmes not to be accredited by Nigerian Universities Commission is also dependent on the various universities to stand a test of universities bench mark in terms of facilities, student performance and experts' competency. This findings is in line with the reports from Daily Trust (2016)who eluded on the Accreditation crisis in universities. According to the paper, lamented on the failure of some Nigerian universities academic programmes in receiving accreditation status, has gotten to riot equilibrium scale with those with accreditation status. The report further buttress that more than 37 universities are currently running 150 unaccredited academic programmes or courses. This may be as a result of inadequate facilities and non-availability of funds and needed man-power resources. The implication of this study is that institutional activities may be of important when management

attach keen interest on convocation ceremony, support from alumni and annual award ceremony, these will go a long way in helping accreditation of academic programmes.

CONCLUSION

Drawing from the findings of the study, it was reached to the conclusion that institutional activities such as: Donations from Convocation Ceremony, Support from Alumni support, and Donations from Centenary ceremony relate significantly with the accreditation of academic programmes in the era of economic recession in universities in Cross River State.

Recommendations

- University management should give adequate attention to institutional activities. The parameters will assist greatly in helping institutions to achieving institutional objectives.
- Accreditation of academic programmes has become more challenging in the competitive economic recession, hence institutional managers should endeavor to beam their searching light towards building their relationship with well-wishers and host community, as these will fastened the rate of growth and development in institutional needs and during accreditation of Programmes.
- Convocation ceremony, Alumni and Centenary Ceremony should be considered as medium through which academic programmes objectives can be actualize. This is because Fund realize from these activities may also help the universities management in solving such alarming challenges without the intervention from government.

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Overview of Agricultural Education in India: A Review

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Abstract

The present article is a review of works by different authors; inclusive education system during ancient period and development takes place thereafter. It includes the historical invasion, transformation as well as existing situation of agricultural education in India. As a matter of fact, present system of education in India needs certain reforms, which address the social, economic and regional issues relevant to local demands. Such, policy definitely will help the particular country as well as other countries. Therefore, efforts being made to bring out the present situation of education in India and its scope and importance in the development of society.

Keywords: Agricultural, Education, Demands, Ancient period.

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INTRODUCTION

Agrarian economy of the country is backbone of the rural India, where agricultural sector is providing employment to the 45.1% population of the rural area, which constitute about 51 % of total work force of India and contributed only 13.9% to the GDP (Anonymous, 2014), which was 59.0% of the total GDP during 1951. This decline trend of the agricultural sector in GDP raised the eyebrow of every intellectuals of the country and forces to rethink about the policy and plans as well as existing agricultural education system in the country. It is also important that there were only 27 Universities during 1950 and presently we have about 799 Universities governed 39,071 colleges inclusive 213 agriculture colleges, enrolled about 3,32,72,722 students,

which includes 79.90%UG students in the country (Anonymous, 2015,a and Anonymous, 2016a).

Looking towards the scenario of colleges and students, the situation of farmers is reverse. Considering these facts and existing global situation, we have to rethink about our agricultural policy including course curriculum, marketing system, market intelligence, export / import of agricultural produce, use of e-tools in agriculture and IPR related issues, where issues relevant to farmers as well as local needs of the population should be address. The conservation of natural resources like water and ITK adopted in cultivation of crops, animal husbandry practices and post-harvest technologies in the country shall be given proper place and existing agricultural education system must focus on these issues and shall be revitalized considering the issues relevant to climate change, productivity of our animals and crops, post-harvest technologies and activities of entrepreneurship development in this sector. Therefore, existing agricultural education system required necessary modifications, should be incorporated accordingly in the policy as well as in the syllabus.

Education System during Pre-independent India

(a) Ancient Period

The historical evidence shows beginning of civilization in India at around 6500B.C. and is the earliest urban site of the period in the world. This also shows the earliest site of domestication of animals, evolution of agriculture, arts and crafts. The education system in ancient India was based on *shishya guru parampara* and shishya (pupils) and guru live together in the ashram known as “*Gurukul*” and taught the different subjects free of cost, but after completion of education, shishya have to give guru dakshina. At the same time shishya help the guru for all day to day chores of ashram. The age of coming to ashram was around 6 to 8 years and shishya remains in the ashram (away from the house / village) and imparted knowledge of religion, scriptures, philosophy, literature, warfare, statecraft, medicine, astrology and history by the *guru* i.e.brahmin or *guruvandini* to the selected boys and girls of higher caste (varn or social groups i.e.kshatriya or brahmin) of the society and rest has to learn from the parents about their traditional occupation and remains “Brahmachari” till the age of 25 years, thereafter they enter into grasth ashram followed by vanprasth and sanyas ashram.

During this period India was the main centre of learning, where most important universities of ancient India were Takshshila / Taxila (being the first university of world established in seventh century B.C.), Vikramshila University and Nalanda University (built in 4thA.D).These institutions were considered to be the best of its time in the subcontinent and an honour to ancient Indian educational system. The students from countries like China, Japan, Korea, Jawa, Sumatra, Mongolia, Bokharo and Tibet used to come here for higher studies. The education of this time were either vedic or buddhist have its own type of teaching and learning.

The vedic education system and budhist education system remains from 1000 BC to 600 BC and 600 BC to 1200 AD, respectively in India, where objectives of vedic education were development of physical, moral and intellectual powers of individual, consequentlyBuddhist education spread in other countries also and remains continue till Islamic invaders.During this perioddifferent universities were developed / established in the country in addition to Taxshila, Nalanda and Vikramshila, which are given below and there were 4,003 pupils and 600 teachers at Nadia during the year 1618 (Purnima (2016).

- » Ballabhi University
- » Nadia University

- » Jagadalla University
- » Odantpuri University

(b) Education System during Gupta Empire

It is evident from the literature that during the period of Gupta empire (320 to 550 CE), centers of learning increased in the cities like: Taxshila (now in Pakistan), Varanasi and Nalanda (Buddhist centre), due to increasing the population. At that time Taxshila and Nalanda centre of education were popular among the students of China and Central Asia and these Buddhist institutions of higher learning continued to function well into the common-era and attended by students from these countries.

(c) Education system after invasion of Muslim ruler in India

Historical evidence suggested that Islam has its origin between 570 A.D. and 632 A.D. and first Muslim state was founded in India during 711 and Mohammad Bin Qasim, was the first invader. He attacked on India in Sindh during 715 A.D. and thereafter such attacks were continue in the different parts of India, but severity of such invasion were very low, which increased during 11th century and thereafter. During this period Hindu education was continue on the pattern of ancient period and some of the established Universities like Taxshila, Nalanda and Vikramshila, suffered a decline on account of the onslaughts of Muslim invaders, while other important institutes were established, are given in Plate 1.

However, during 10-11th centuries India established proper system of science and technology, while, during 12th century, invasions from India's northern borders disrupted traditional educational institutes, along with other establishments. Similarly, after introduction of Islam in India; the traditional method of education increasingly came under Islamic influence also and students from Bukhara and Afghanistan came to India to study the humanities and science. Education system as foreign armies raided During the journey of transformation and invasion in India, first college named as Saint Paul's College, Goa was established in 1542, where variety of the subjects were taught free of charge. They used the printing books and established one of the biggest libraries of Asia, and first Printing Press was mounted over there. In this direction Banaras Sanskrit College, was established in 1791 to impart education relevant to Hindu religious and other subjects, where medium of instruction was Sanskrit. The Hindu learning center were (i) Pathshala (here students send at the age of five years for learnt reading, writing and arithmetic along with their religious instructions); (ii) Private School and (iii) College (places of higher learning and students taught Sanskrit language and literature, while other subjects included in the curriculum were poetry, grammar, astrology and astronomy, philosophy, medicine, history, geography, puranas and vedas).

Sr No	Milestone in Education in Pre Independent India	Year of Establishment
1	Saint Paul's College, Goa	1542
2	Jesuit College, Chaul, Goa	1580
3	Established East India Company	1599
4	Laid Foundation Stone of Madrasa at Calcutta by Warren Hastings (1 st Governor General of India)	1780
5	Banaras Sanskrit College	1791
6	Fort William College, Calcutta	1800
7	Introduced English Education in India	1835
8	Madras Medical College	1835
9	Madras Veterinary College	1835
10	Council of Education was formed	1842
11	Thomason College (now IIT Roorkee) was established	1847

Plate 1: Period of Establishing the Institutes of Learning in India

However, Muslim rulers started different types of educational institutes like (i) Primary Schools (*maktabs*), where students were taught reading, writing and basic Islamic prayers; (ii) Secondary Schools (*madrasas*), where advanced language skills, Koranic exegesis, prophetic traditions, Islamic law (*sharia*) and related subjects were taught and usually attached to mosques. These Islamic schools were for boys only, while Muslim girls of affluent families studied at home. However, Mughal empire ruled India since 1526 and remains until the end of their political presence in 1848. During this period court language was Persian, and elite boys could attend Persian schools to learn literature, history, ethics, law, administration and court protocol. Other subjects, such as medicine, mathematics and logic were also part of the curriculum of Islamic learning centers during this period.

(d) Education system after invasion of British ruler in India

The British rule established in India during 1848, after Mughal period and remains till 1946. During this period educational activities given priority and different institutes were established in the colonial India. The University of Bombay / Madras / Calcutta were established in 1857 and number of centre of learning / education were established are given in Plate 2. Gradually, traditional system of education i.e. "*gurukuls*", were replaced by number of English medium schools by Britishers' and literacy rate in India rose from 3.2 percent in 1881 to 7.2 per cent in 1931 and 12.2 per cent in 1947. At that time, there were 21 universities and 496 colleges in the country, while there were only 4 universities and 67 colleges in 1882 (Anonymous, 2016).

Sr No	Milestone in Education in Pre Independent India	Year of Establishment
1	St. Anne's College, Bandra, Bombay	1855
2	University of Bombay / Madras / Calcutta were established	1857
3	Government College, Lahore	1864
4	Islamic School DarulUloom, Deoband was founded	1866
5	University of Punjab, Lahore	1882
6	Indian Education Commission	1882
7	Women's Christian Medical College, Ludhiana, Punjab	1894
8	University Education Commission	1902
9	Indian University Act	1904
10	Resolution of Education Policy passed by GoI	1912
11	Muhammadan Anglo-Oriental College founded in 1875 and became the Aligarh Muslim University	1920
12	Medical College, Calicut, Kerala	1942-43

Plate 2: Establishing the Institutes of Learning in India during British period

Education System in Post-independent India

The existing education system is based on the pattern of 10+2+3 system of education, which was recommended by Kothari Commission in 1965 and till now, we are following it. Higher education system in India is imparted through 39,071 colleges affiliated to / constituent of 799 universities and 11,922 stand-alone institutions in India (Anonymous, 2015a; Anonymous 2016a). In addition to these, there are several institutions imparting specialized knowledge and technical skills. Since education is a state subject and state governments are free to open new university, while University Grants Commission (UGC) is an authority, which dispenses grants to the universities, but its formal sanction is not necessary to open a university. Since independence, higher education sector has witnessed a tremendous increase in the number of Universities / University level Institutions and Colleges. However, number of Universities has increased 30 times from 27 in 1950 to 799 in 2016. The sector boasts of 119 Central Universities + Institute of National Importance and Others 334 State Universities, 177 State Private Universities, 124 Deemed to be Universities, 51 Institutions of National Importance (established under the Acts of Parliament) under the Ministry of Human Resource Development (inclusive 16 IITs, 30- NITs, and 05-IISER) and four Institutions (established under various State legislations).

Sr No	Milestone in Education in Pre Independent India	Year of Establishment
1	Appointment of University Education Commission (Radhakrishnan Commission)	1949
2	Establishment of University Grants Commission	1953
3	Passing of UGC Act	1956
4	National Council of Educational Research and Training (NCERT)	1961
5	National Policy on Education	1968
6	National Service Scheme enforced	1969
8	National Policy of Education	1992
9	National Knowledge Commission was constituted	2005
10	Prof. Yash Pal Committee	2009

Plate 3: Establishing the Institutes of Higher Learning / Land Mark Event in India after Independence

Source ; Anonymous (2016) History of education in the Indian subcontinent. Web-site: https://en.wikipedia.org/wiki/History_of_education_in_the_Indian_subcontinent

http://content.inflibnet.ac.in/data-server/eacharya/documents/548158e2e41301125fd790cf_INFIEP_72/79/ET/72-79-ET-V1-S1__1_.pdf

The number of colleges has also registered 79 times with just 500 in 1950 to 39,071 during the year 2016. Taking the advantage of constitutional provision many state governments in the country have opened a large number of universities during the recent past. These degree granting institutions are classified here as below:

- (i) Central Universities
- (ii) State Government Universities
- (iii) Deemed Universities
- (iv) Affiliating Universities Other Universities
- (v) Independent University
- (vi) Open Universities
- (vii) Specialized Universities

The state wise number of Universities established in India are depicted in Table 1, which shows that Rajasthan and Uttar Pradesh each have (64) highest number of Universities, followed by Tamil Nadu (58) Karnataka (51) and Gujarat (49), while the rest of the Universities are spread in other states of the country.

Table 1: State wise list of Universities in India (as on 31st Dec., 2015)

State	Central Universities / Institute of National Importance / Others	State Universities	Deemed Universities	Private Universities	Total
Andhra Pradesh	2	21	5	0	28
Arunachal Pradesh	2	0	1	5	8
Assam	4	11	0	3	18
Bihar	5	16	1	0	22
Chandigarh	1	1	1	0	3
Chhattisgarh	3	12	0	7	22
Delhi	12	6	12	0	27
Goa	1	1	0	0	2
Gujarat	3	26	2	18	49
Haryana	2	13	5	16	36
Himachal Pradesh	3	4	0	17	24
Jammu & Kashmir	3	8	0	0	11
Jharkhand	2	9	2	2	12
Karnataka	2	26	15	8	51
Kerala	4	12	2	0	18
Madhya Pradesh	7	18	3	13	41
Maharashtra	4	20	21	0	45
Manipur	3	0	0	0	4
Meghalaya	2	0	0	8	10
Mizoram	2	0	0	1	3
Nagaland	2	0	0	2	4
Odisha	4	12	2	3	21
Puduchery	3	0	1	0	4
Punjab	5	8	2	8	23
Rajasthan	4	20	8	32	64
Sikkim	2	0	0	5	7
Tamil Nadu	9	21	28	0	58
Telangana	5	13	2	0	22
Tripura	2	0	0	1	3
Uttar Pradesh	8	26	10	20	64
Uttarakhand	4	9	3	8	24
West Bengal	6	23	1	0	30
Total	119	334	127	177	757

Source: Anonymous (2015a)

All these Universities are running different higher educational programmes, which are classified here as below:

Post-secondary Education:	B.A. / B.Sc. / B.Com	3 years
Professional UG Courses	Professional Courses viz : B.Sc. (Agri), B V Sc. & AH, B Sc. (DT), MBBS, BDS, BHMS, BAMS, B Tech, BE etc.	4 to 5.5 years
Professional UG+PG Courses	Integrated Bachelors and Master's programs	5 years
Post-graduate Education	Master's programs viz : M Sc (Agri), M V Sc, MD,MS, M Tech, ME, etc M.Phil. + Ph.D.	2 years 2 - 5 years
Post Bachelor's and Master's Diploma / Certificate programs		1 -3 years

Status of Agricultural Education

The need of agricultural education and research in India arise before independence, where Report of the Famine Commission-1880, suggested that agricultural laboratories should be established in each province of the country (Singh, 2012 *locit*). Thereafter report of the Dr. J. A.Voelcker's from UK on Improvement of Indian Agriculture (1891), suggested the role of agriculture chemist in India, while organized agricultural research systems in India was initiated with the establishment of a camel and ox-breeding farm at Karnal in 1829, a bacteriological research laboratory for veterinary science at Poona in 1889 and the Imperial Agricultural Research Institute (IARI) at Pusa in 1905. While fact is that before all these developments Imperial Department of Agriculture was established in 1881 and thereafter teaching of agriculture was started in some schools in the country and some of these were converted into colleges. In continuation to this journey of development of modern agriculture in India began with the establishment of Agriculture Colleges in the important province of the country, having modern laboratories, class rooms, and agriculture farm, where these agriculture colleges were established at Saidapet in 1878, Kanpur in 1893, Coimbatore and Lyallpur in 1906 and Poona and Nagpur in 1907, with a mission to develop the education and research related activities in agriculture, in the areas of Botany, Chemistry, Entomology and Agronomy. In the beginning, these colleges were affiliated to the traditional universities and running the diploma course and later on introduced the degree courses.

Sr No	Milestone in Agricultural Education in India	Year
1	Established Department of Agriculture	1871
2	Established Agriculture Colleges at Kanpur, Nagpur, Pune and Coimbatore	1893-1907
3	Established Veterinary Colleges : Bombay, Madras and Calcutta	1886-1903
4	Established Pusa Institute	1903
5	Royal Commission was constituted	1926
6	Established Indian Council of Agricultural Research, New Delhi	1929
7	First Education Commission was set up	1948
8	First Indo-American Team on Agriculture Education (Damale Committee)	1955
9	Second Indo-American Team of Agriculture Education (M.S.Randhwa Committee)	1959
10	Established First Agricultural University	1960
11	Ralph W. Cummings Committee	1960
12	Approved Model Act for SAU	1994
13	Fourth Dean's Recommendations were implemented	2004

Table 2: State wise list of Agricultural Universities in India (as on 31st Dec., 2015)

Sr No	State	Agricultural Universities	Sr No	State	Agricultural Universities
1	Andhra Pradesh	3	13	Madhya Pradesh	2
2	Assam	1	14	Maharashtra	6
3	Bihar	2	15	Manipur	1
4	Chhattisgarh	1	16	Nagaland	1
5	Delhi	1	17	Odisha	1
6	Gujarat	5	18	Punjab	3
7	Haryana	3	19	Rajasthan	5
8	Himachal Pradesh	2	20	Tamil Nadu	4
9	Jammu and Kashmir	2	21	Telangana	2
10	Jharkhand	2	22	Uttar Pradesh	7
11	Karnataka	7	23	Uttarakhand	1
12	Kerala	3	24	West Bengal	4
Total					69

Source: https://en.wikipedia.org/wiki/List_of_universities_in_India

By the year 1947, India had 17 colleges of agriculture with annual enrollment of about 1500 students, while at present we have 213 agriculture colleges in the country having about 37,955 students of UG and 10,999 students of PG under different courses in the universities. However, first agricultural university was established at Pantnagar in 1960 and at present there are 69 SAU's (inclusive agriculture and allied sciences (composite) – 16, agriculture alone – 32, animal science universities-13, horticulture universities – 04, fisheries alone – 03 and dairy alone – 01) working in the country. These SAU's includes four SAU's of Gujarat viz: SDAU, AAU, JAU and NAU.

However, earlier there were eleven colleges including all faculties of agricultural science in the state, while presently we have 30 colleges running the UG and PG degree courses and 20 colleges running the diploma courses in the state. This journey of agricultural development initiated in Gujarat during 1938 by establishing the Institute of Agriculture Science at Anand, which became constituent of Gujarat Agricultural University in 1972 after its establishment. Further, it is said that states have established a Veterinary University also during recent past. All these SAU's were established on the Land Grants College of USA and this existing system needs to be redefined, considering the present global situation inclusive: climate change, marketing intelligence, application of ITK, issues relevant to IPR and clean energy, conservation and utilization of water, conservation of biodiversity, empowerment of farm women, farm size and cropping pattern system etc. in the country.

The contribution of private institutions in agricultural sector in developing the trained human resources is also significant, which is visualized from the number of agriculture colleges in the country, that earlier there were 51 agriculture colleges affiliated to general universities and now these are about 54. These colleges functions outside the SAU system and turn out the graduates and post graduates. The majority of these colleges are in the state like Uttar Pradesh (32), Rajasthan (05), Uttarakhand (3), West Bengal, Tamil Nadu, Madhya Pradesh Tripura and Gujarat have 02 each and Punjab, Puducherry, Andhra and Goa have one each, while 159 non grant / private colleges are affiliated various SAU's, which are spread in the state of Maharashtra (123), Chattisgarh (16), Rajasthan (14), Tamil Nadu (05), Gujarat (02) and Uttar Pradesh (01). Some of these private colleges don't have proper infrastructure and easy admission process, caused concern for providing quality higher agricultural education. Since, it is a state subject, as

enshrined in the constitution of India and become challenging for policy makers to maintain uniform standards. Then possibilities of setting up accreditation system to improve the quality of education will help us in future.

Modernization of Agricultural Education System

The Famine Commission -1880 suggested that every province of the country should have agriculture labouratory, was the real beginning of development of this sector, thereafter country made steady progress, which might be further speedup after its evaluation and new module of agricultural education shall be developed considering various factors viz: climate change, marketing intelligence, application of ITK, issues relevant to IPR and clean energy, conservation and utilization of water, conservation of biodiversity, empowerment of farm women, farm size and cropping pattern system etc., to make this occupation profitable and farmers of the country feel proud rather than they should suicide. The steady declining in the population of farmers from 71.9 % in 1951 to 45.1% in 2011 (Table 3) shows that our system or present situation is not favorable for farmers of the country.

Table 3: Population and Agricultural Workers (in million)

Year	Total Population	Average Annual Exponential Growth Rate (%)	Rural Population	Agricultural Workers		
				Cultivators	Agricultural Labourers	Total
1951	361.1	1.25	298.6 (82.7)	69.9 (71.9)	27.3 (28.1)	97.2
1961	439.2	1.96	360.3 (82.0)	99.6 (76.0)	31.5 (24.0)	131.1
1971	548.2	2.20	439.0 (80.1)	78.2 (62.2)	47.5 (37.8)	125.7
1981	683.3	2.22	525.6 (76.9)	92.5 (62.5)	55.5 (37.5)	148.0
1991	846.4	2.16	630.6 (74.5)	110.7 (59.7)	74.6 (40.3)	185.3
2001	1028.7	1.97	742.6 (72.2)	127.3 (54.4)	106.8 (45.6)	234.1
2011	1210.6	1.50	833.5 (68.8)	118.7 (45.1)	144.3 (54.9)	263.0

Source: Anonymous (2014)

Hence, existing system required modifications, to make this occupation economically viable, by considering different modules of farming, where existing global situation shall be taken into consideration rather than country alone, while in education system, we shall have more skilled development courses to make this occupation more skilled orientated rather than traditional. The situation of farmers in the country is very panic, which is to be given a new shape.

Hence to change the existing conditions of the stakeholders in the country, we must have new education policy as well as market policy, where we must have more skilled development courses separately for lower level as well as higher level, so that students in future can established their own enterprises and stakeholders should not have any market restrictions throughout country. Therefore, existing courses as well as skilled development courses along with other courses for agriculture, veterinary and home science faculties.

Enrolment of Students in India

(a) Enrolment of students according to field of study

The status of higher education in India is visualized from the number of students and infrastructure facilities. Presently, India is the third largest country of the world in education after USA and China, where 2,96,29,000 students were enrolled during 2012-13, which includes regular students (2,60,96,292), students under distance learning mode (35,32,730) and foreign national students' about 35,178 (Anonymous, 20156,a) However, details of the students according to the subject of study reported by Choudaha (2012) is depicted in Table 4, under the different courses, which shows that maximum number of students were enrolled in Arts (37.09%) and minimum were in Agriculture (0.45%) and Veterinary Science (0.14%). At the same time observations of Tiwari (2014) about students v/s teacher ratio in higher education was another important aspects of education which was only 24:1, respectively under different colleges. Hence, our efforts must be, to make agriculture occupation as profit making as well as eco-friendly. At the same time carbon conservation in the soil must be improve to maintain the environment conducive for biodiversity conservation in the country.

Table 4: Enrolment of students in India according to field of study, 2012-13

Sr No	Field / Subject of Study	No of Students Enrolled (000)	Percent of Total
1	Arts	7,539	37.09%
2	Science	3,790	18.65%
3	Commerce & Management	3,571	17.57%
4	Engineering & Technology	3,262	16.05%
5	Education	733	3.61%
6	Medicine	716	3.52%
7	Law	373	1.83%
8	Agriculture	97	0.45%
9	Veterinary Science	28	0.14%
10	Others	218	1.07%
	Total	20,327	100%

Source :Choudaha (2012)



(b) Overall enrolment of students in India

It is a matter of consideration that total students enrolled during the year 1950-51 were only 4.0 lakhs including 50,000 girls, whereas corresponding value during 2010 were 275 lakhs including 120 lakhs girls. The corresponding estimated values would be about 320.17 and 139.92 lakhs respectively during the year 2020-21; and 365.33 and 159.83 lakhs respectively during the year 2030-31 (Table-5). These estimated values are based on the number of students enrolled in 1950-51 and annual growth attained till 2010-11. Therefore, we have to manage the resources by considering these values, where we have to increase the number of institutes, as well as intake capacities of existing institutes.

Table 5: Number of Students (lakh) Enrolment in Higher Education

Sr No	Year	Boys	Girls	Total
1	1950-51	3.5	0.5	4.0
2	1970-71	26.0	7.0	33.0
3	1990-91	34.0	15.0	49.0
4	2010-11	155.0	120.0	275.0
5	2020-21 (P*)	180.25*	139.92*	320.17*
6	2030-31 (P*)	205.50*	159.83*	365.33*

Source: Tiwari (2014)

(c) Requirement of College and Universities

It is natural that increasing in population, leads to increase the demands of resources, where in education we have to consider that existing institute should increase their capacity without compromising the quality and new institute should be established. Under present circumstances, it is necessary that we will require about 47,234 colleges and 940 Universities till 2030-31 (Table 6), if growth of these institutes remains same as that it was since 1950-51 to 2016. Based on these realities, we have to mobilize our resources to face the future challenges to meet the requirements of our growing population in the country.

Table 6: Number of recognized College / Universities in India

Sr No	Year	Number of Colleges	Number of Universities
1	1882	67	04
2	1901	145	05
3	1922	167	14
4	1847	496	21
5	1950-51	578	27
6	1970	3277	82
7	1990	5748	184
8	2010	32974	621
9	2016	39,071	799
10	2020 (P*)	41,404*	820*
11	2030 (P*)	47,234*	940*

Source: Tiwari (2014); Anonymous (2015a); Anonymous (2016) and Anonymous (2016a)

At the same time, we have to consider the global changes and we have to make modifications in our education system. Therefore, after considering these aspects, we realized that knowledge of education system in India and abroad is must. Considering these facts and we all must know these realities, a brief comparison of the *Indian Standard Classification of Education: Fields of Education* (In SCED-F) 2013 and *International Standard Classification of Education: Fields of Education and Training* (ISCED-F) 2013 is summarized for the subjects relevant to agricultural education, which will be helpful for the students as well as educationists of our country. The brief of these fields of education is given here as under (Table 7)

Table 7: As International Standard Classification of Education: Fields of Education and Training (ISCED-F) has been revised from 2013; the comparison has been done with ISCED-F 2013 instead of ISCED-F 2011

Sr No	Indian Standard Classification of Education: Fields of Education (In SCED-F) 2013		International Standard Classification of Education: Fields of Education and Training (ISCED-F) 2013	
	Code	Broad Field/ Detailed Field	Code	Broad Field / Narrow Field / Detailed Field
1	51	Agriculture	08 081	Agriculture, forestry, fisheries and veterinary Agriculture
2	5101	Agriculture	0811	Crop and livestock production
3	5102	Forestry	082 0821 081 0811 0811	Forestry Forestry Agriculture Crop and livestock production Crop and livestock production
4	5103 5104 5507	Horticulture Sericulture Dairy Technology	0721 071	Food processing Engineering and engineering trades
5	5510	Food Technology	0721	Food processing
6	58	Fisheries Science	08	Agriculture, forestry, fisheries and
7	5801	Fisheries Science	081 0831	veterinary Agriculture Fisheries
	59	Home Science	07,09,1 0	Engineering, manufacturing and construction, Health and welfare, Services Manufacturing and processing, Health, Personal services
	5901 5902 5903	Food Technology Home Science Nutrition	072,091 ,101 0721 1011 0915	Food processing Domestic services Therapy and rehabilitation
	13	Science	05 051	05 Natural sciences, mathematics and statistics 051 Biological and related sciences
	1301 1302 1303 1304 1307 1308 1311	Bio-Chemistry Bio-Science Bio-Technology Botany Environmental Science Genetics Life Science	0512 0511 0511 0511 0521 0511 0511	Biochemistry Biology Biology Biology Environmental Science Biology Biology
	61 6101	Journalism and Mass Communication Journalism and Mass Communication	03 032 0321	Social sciences, journalism and information Journalism and information Journalism and reporting
	64	Management	04 041	Business, administration and law Business and administration

6401	Agri-Business Management	0413	Management and administration
6409	Human Resource Management	0413	Management and administration
6411	Marketing Management	0414	Marketing and advertising
65	Marine Science/ Oceanography	07	Engineering, manufacturing and construction
6501	Marine Science/ Oceanography	071	Engineering and engineering trades
		0716	Motor vehicles, ships and aircraft
68	Veterinary and Animal Sciences	08	Agriculture, forestry, fisheries and veterinary
6801		084	Veterinary
6802	Dairy Science		Veterinary
	Veterinary and Animal Sciences	0841	Veterinary
		0841	Veterinary

Status of Students and Indebtedness of Agriculture Households

The students coming from rural area have back ground of farming, ease them to study in the farm university, resulted that about 50% students in SAU's are coming from rural area across the country (Joshi,2011), where proportion of girls students in farm universities is about 25% and under SDAU it was about 21.93% during 2012-13 under UG courses. These students are supporting the farmers directly or indirectly to continue their occupation. However, looking towards the status of farmers, it is realized that their numbers are declining and students coming from rural area are also not interested in doing the farming, where one of the major reason might be indebtedness of the farmers, which is shown in the Table-3 and 8. It shows that 42.6% agricultural households in Gujarat are indebted as against 51.9% in India.

Table 8: Number of Agricultural Households in India and Gujarat during the year – 2014

State / All India	Estimated No of Rural Households (00)	Estimated No of Agricultural Households (00)	Agricultural Households as % of Rural Households (%)	Percent of Agricultural Households Indebted
Gujarat	58719	39305	66.9	42.6%
India	1561442	902011	57.80	51.9%

Source: Anonymous (2014)

This indicates that existing farming system is not suitable for the stakeholders of the country in terms of economically viability. More over this situation is more panic for landless, small, marginal and medium farmers, might be due to limited resources and higher cost of input, lack of storage facilities and poor purchase power (Table 9).

Therefore, our system of agricultural education as well as farming should be change and it must be skilled oriented rather than job finders, where suitable entrepreneurship programmes shall be introduced. If these entrepreneurship programmes are supported by financial institutions, than this sector can provide better livelihoods security to more households in the rural area of the country, where existing problems of the transport of goods as well as other costs could be minimized and students of farm universities should be trained to have their own entrepreneurship and should became job provider rather than job seeker. It will help to improve the social status of the farmers as well as to make agriculture as economical viable occupation. The financial conditions of the farmers in the country are very poor, which is realized from the Table 9 also,

where about 51.9% agricultural households are under indebtedness. This situation becomes more panic, when we have to face the situation of drought, floods or erratic rainfall, where some times farmers lost whole crops. Similarly, declining the contribution of agricultural sector in our GDP raised our eyebrow, that we must change our strategies, which have direct impact on the enrolment of students, particularly in agricultural sector, which is also lowest in the country as compare to other field of study.

Table 9: Indebtedness of Agricultural Households (all-India) in Different Size / Classes of Land Possessed

Land Possessed (Hectare)	Estimated No of Agricultural Households (Lakh)	% to Total in each Class	Estimated No of Indebted Agricultural Households (lakh)	% to Total in each Class	% of Indebted Agricultural Households to Total	Average outstanding Loan Amount (Rs)
< 0.01	23.89	2.65	10.02	2.1	41.9	31100
0.01 - 0.40	287.66	31.89	135.97	29.0	47.3	23900
0.41 - 1.00	314.81	34.90	152.16	32.5	48.3	35400
1.01 - 2.00	154.58	17.14	86.11	18.4	55.7	54800
2.01 - 4.00	84.35	9.35	56.10	12.0	66.5	94900
4.01 - 10.00	33.02	3.66	25.21	5.4	76.3	182700
> 10.00	3.71	0.41	2.92	0.6	78.7	290300
All India	902.01	100.00	468.48	100.00	51.9	47000

Source: Anonymous (2014)

Another, important point of consideration is the poor response of students in doctorate programmes, where only one percent students are involved, which is very poor (Table 10). Therefore, we shall change our strategies to attract more and more students for research programmes of all Universities in the country, by providing them either part time internship of long duration, more attractive fellowships / scholarships and fair dealing with freedom of work, which sometimes is not given to the faculty as well as to the students, due to many reasons. The situation of SAU's is also more or less similar, where about 0.61% of total students in higher education during the year 2014-15, enrolled in SAU's, which includes UG students (Agriculture-21,286; Dairy Technology-562; Marine / Fish / Oceanography-866; Veterinary Science-2526; Home Science-10,964 and Agriculture Engineering-1949) and PG students (Agriculture-6328; Dairy Technology-111; Marine / Fish / Oceanography-500; Veterinary Science-970; Home Science-2770 and Agriculture Engineering-320) (Anonymous, 2015a).

Table 10: Enrollment of students according to level of education in India (2012-13)

Sr No	Level of Education	Number of Students	Percent of Total
1	Graduate (Bachelor's)	1,74,56,000	86%
2	Post-Graduate (Master's)	24,92,000	12%
3	Research (Doctoral)	1,61,000	1%
4	Diploma/Certificate	2,18,000	1%
	Total	2,03,27,000	100%

Source: Choudaha (2012)

Mechanization in Farming System

Another important aspect of agricultural education is mechanization of farm operations, where we required skilled workers, but cost of labour is increasing day by day due to increasing the wages, which were as. Rs 348.00, 385.00 and 423.00 for unskilled, semi-skilled and skilled workers during the financial year 2015-16 in the country (Anonymous, 2015), while for ploughing the field wages rates were about 78.47 to 100.83 during 2008-09 (Chalam-2010). The same were Rs173.90 for unskilled and Rs 213.58 for skilled workers during the year 2013 (Anonymous, 2013). Here, it is very interesting to note that labour cost in total operational cost of paddy, arhar and groundnut was 48.4% , 44.2% and 29.6% respectively in Gujarat during the year 2010 (Nadhanael, 2010). It shows that farmers shall adopt mechanization rather than labour dependent operations in agriculture. But real problem with them is the size of land holding, where farmers having small holdings are not able to maintain the machines / equipments required for different agriculture operations. Therefore, our focus in agriculture education as well as in cultivating the crops shall take into consideration this reality and proper modules for different categories of farmers shall be developed on priority basis.

Looking towards the landholdings in the country, it is indicated from the Table 11 and 12 that proportion / percentage of landless and marginal farmers is increasing, while number of farmers of other categories is declining and overall size of operational land holdings is also declining. Therefore, our future education programmes or course curriculum should consider these facts and realities; and opinion of these stakeholders should be taken into consideration before finalizing the future course curriculum in the country.

Table-11: Operational Land Holdings in Rural Area of Gujarat and India

Land holding category		Distribution of household operational holdings in percentage			
		1971-72	1981-82	1991-92	2002-03
Landless	(≤ 0.002 ha)	27.4	26.1	21.8	31.94
Marginal	(0.002 –1.00 ha)	32.9	41.1	48.3	47.1
Small	(1.01 – 2.00 ha)	16.4	14.5	14.2	11.2
Semi medium	(2.01 – 4.00)	12.9	10.6	9.7	6.2
Medium	(4.01 – 10.00)	8.1	6.3	4.9	2.9
Large	(> 10.00)	2.2	1.4	1.1	0.5
Estimated households operational holdings (No in million)		56.9	69.4	93.4	101.4

Source: www.nddb.org.in

Similarly, study papers of IMA, Ahmedabad (Table 12) shows that there are only 4.3% farmers in the country having land holding more than 5.0 hectares. Therefore, owners of this category can go for mechanization, while 32.82% may go for partially mechanization and 62.89% farmers can't go for mechanization. Hence, we must plan our strategies, considering these facts and reality.

Table 12: Fragmentation of Agriculture Land

Percent share of farmers by land holding size (ha)	Year	
	1995-96	2000-01
< 1.00 ha	61.60	62.89
1 to 5 ha	33.50	32.82
> 5.00 ha	4.9	4.3

Source: Anonymous (2009)

Faculty Positions / Status

The status of faculty in majority of institutes shows that on an average about 50 percent strength of total faculty positions are vacant, whereas in SDAU we have about 40% posts as vacant (n=206) and only 60% are filled (n=306). Further, it is said that there is a problem of inbreeding and about 51 per cent of faculty members have the degree from the same university. However, in agriculture universities, only 17 per cent recruits are new and 46 per cent faculty has served the same university for more than 15 years. (Joshi, 2011). It is very much interested that under SDAU, the ratio of faculty and students is very much comfortable for UG and PG students, which shows that our institute have scope to run more courses than the existing situation.

Realizing the national situation, it was reported by the MHRD in its Annual Report of 2014-15, that there are 38056 Colleges and 757 Universities in the country enrolled about 14,18,389 students in UG and PG courses and 38,056 faculties are running all the programmes of higher education. On the basis of these value, it is estimated that by the year 2020 we required about 40,021 colleges and 14,81,583 teachers for higher education and corresponding figures for the year 2030 will be 45,656 colleges and 17,01,599 teachers in the country (Table 13).

Table 13: Number of College per lakh population (18-23 years), Average Enrolment per College in India and Number of Teachers Required in India

Sr No	Year	Number of College	Number of College per lakh population (18-23 years)	Average Enrolment per College	Ratio of Students to Teacher	Number of Teachers available /required
1	2011-12	34852	25	703		----
2	2014	38056	"	NA		38,056 @ total students = 1418389, ie. 37 teacher per College
3	2020 (P*)	41,570*	"	800 @ total students = 320.17 lakh	24	14,91,583*
4	2030 (P*)	47,426*	"	800 @total students = 365.33 lakh		17,01,599*

Note: * Estimated figure: the number of college per lakh population (18-23 years) is assume that it is unchanged.

At the same time, looking towards the requirements of the universities in the country, and considering the same growth pattern as we have till now, than we must have about 795

Universities by the year 2020 and 905 Universities by the year 2030. Accordingly, we have to manipulate the resources for budgeting and infrastructure development in the country.

Future Strategies

- The dropout rate from 1st to 12th as well as in the higher education, shall be decline to increase the enrolment in higher education, which is very low i.e. 21.1% in India as compared to China (26%) and Brazil (36%). However, to meet the future demand for higher education, India should achieve about 30% gross enrolment rate by 2020 (Richard, 2014).
- The system of education is to be beset by addressing the issues of poor quality teaching, outdated and rigid curricula, poor accountability and quality assurance and separation of research and teaching methodology.
- The constraints face by the students / researchers should be addressed and improve the enrolment rate, to do the high quality research and industry engagement for improvement of skill of students.
- Fragile eco-system of India needs multidimensional approach, where inequalities in enrolment across population groups and geographies should be taken into consideration.
- Higher education is to be reorganized and remodeled, where accountability, funding, relationship with industry, international collaboration and improvement in teaching and research shall be given priority and funding of state universities / higher education should be through federal system.
- The syllabus of all Institute / Universities should be same and in twoparts i.e. (i) compulsory /common syllabus for all Institutes / Universities of the country and (ii) supplementary syllabus based on regional resources / requirements.
- Similarly, recruitment in all recognized Institutes / Universities must be through UPSC or state public service commission or other separate board, which must be applicable to all types of institutes managed by government / semi-government / public / private sector in the country.
- The entrepreneurship programme should be more intensive and more frequent (means at least one entrepreneurship programme every year, commencing from the third year onwards till completion of degree by the student.
- Opinion of stakeholders should be taken into consideration, before finalizing the course curriculum of SAU's in the country.
- The course curriculum of SAU's should be modular credit-based with flexibility of entry and exit and certificate course of one year and diploma course of two years with the options to transfer to regular degree programs.
- Any student coming from farmers' family should be given some weight-age in admission under UG as well as PG courses under SAU's.

CONCLUSION

The reports of MHRD and views expressed by different experts and policy planners, it is suggested that quality of education must be improve, which is deteriorating over the period. The private as well as government / semi-government institutes must be governed by a registered body of well-known experts of the country and all these institutes must be accredited at a

particular interval. The Accreditation Board should be a constitutional body having some regulated powers to maintain the proper standard of education in the country.

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Promotion of Computer Forensics Education in Nigeria: Implications for National Security

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Abstract

The rapid evolution and development of computers and other digital devices has orchestrated a geometric increase in the severity and rate of cybercrimes committed the world over, Nigeria inclusive. These proliferations of cybercrimes pose threats to cyber and national security as a whole. The only way to combat cybercrime is to train competent computer forensics professionals who will investigate and help prosecute these cybercrimes and cybercriminals as well. The research identified the implications promotion of computer forensics education has on overall national security. It was deduced from the research that there is no tertiary institution offering computer forensics education at any level in Nigeria, creating scarcity of computer forensics professionals. The paper outlined the benefits of fostering the education of computer forensics professionals, topmost of which include, elimination of un-ethical practices in Computer Forensics (90%), availability of manpower (90%), fostering research in the field of computer forensics (80%) and Creation of awareness in citizens on cyber security, cybercrimes and cyber warfare (100%), among others. Finally the paper recommends immediate attention to be geared towards introduction and promotion of computer forensics education in Nigeria in other to foster national cyber security.

Keywords: Computer, Forensics, Education, Cybercrimes, Cybersecurity.

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INTRODUCTION

With the enactment of the evidence Act of 2011, and Cybercrime Acts of 2015 by the government of the federal republic of Nigeria, it now becomes imperative that computer forensics professionals be trained in order to protect the National Cyberspace from National cyber security threats such as malicious hacking, cybercrime, cyber terrorism, espionage and cyber scam just to mention but a few. The dynamism of computer and digital devices, such as computer, mobile phones et cetera, and their attaining rapid evolution make it difficult to detect, track, retrieve, process and report digital evidence vital in cracking cybercriminals and cybercrime cases.

However, the responsibility of securing the Nigerian cyber space rests on the ability of computer forensics examiners to carry out thorough investigation with the purpose of curbing and reducing cybercrime to its lowest ebb hence fostering National security. This can only be achieved if a robust education backbone and framework is put in place to educate and train computer forensics professionals at all levels and positions. This paper aims at highlighting the implications, and impact of promoting computer forensics education on Nigeria national security.

COMPUTER FORENSICS: AN OVERVIEW

Computer forensics is seen as the practice of identifying, extracting and considering evidence from digital media such as computers, mobile phones, hard drives, etc. (ForensicsWiki, 2015). Digital Evidence is both fragile and volatile and requires the attention of a well-trained and a certified specialist to ensure that materials of evidentiary value can be effectively isolated and extracted in a scientific manner that will bear the scrutiny of a court of law. Computer forensics applies specifically to the evaluation of computers and data storage or data processing devices. Carroll et al. (2008), states that the complete definition of computer forensics is the use of scientifically derived and proven methods towards the preservation, collection, validation, identification, analysis, interpretation, documentation and presentation of digital evidence derived from digital sources for the purpose of facilitating or reconstruction of events found to be criminal.

In comparison to other forensics science, the field of computer forensics is relatively young (Carroll et al., 2008). Many argue whether computer forensics is a science or art. The argument is unnecessary, however, the tools and methods are scientific and are verified scientifically, but their use, the use of the digital evidence provided necessarily involves elements of ability, judgment, and interpretation.

Regardless of specific case or technology used, the concept of computer forensics is constant and consists of four basic steps which include:

- **Preparation:** Preparation includes understanding local laws, legal issues and determination of tools and procedures to employ in carrying out computer forensics tasks. This step also includes understanding the assignment at hand, preparing the team, and checking equipment.
- **Collection:** This involves on-site acquisition of digital evidence by making binding copy of hard drives and learning the unusual or evidence collection and taking the collected

evidence to the laboratory where evidence acquisition are made. Another method of collection is live forensics when evidence is collected from powered-on computers.

- **Examination and Analysis:** This is a key area of computer forensics and involves examination of data, internet artefacts, temporary files, spool files, shortcuts, keywords search and dealing with encryption.
- **Reporting:** This involves court expert report being made according to valid templates. The reports are written the way the judges and prosecutors understands it.

USES OF COMPUTER FORENSICS

The uses of computer forensics include the following:

- Detecting a cybercrime;
- Solving an alleged criminal activity provided the medium used in perpetrating the crime is a digital device;
- Forestalling a crime from taking place;
- Computer forensics investigations are often used to refute or support a supposition during civil, criminal and corporate litigations;
- Computer forensics is used in the private sector by companies who are undergoing internal investigations into unauthorized technical and network transgressions.

The Areas of specialization in a computer forensics investigation include:

- Computer forensics
- Network forensics
- Database forensics
- Mobile forensics

THE ROLE OF COMPUTER FORENSICS IN NATIONAL SECURITY

According to Kessler (2005), nearly everything that someone does on a computer or a network leaves a trace. This ranges from deleted files and registry entries, to the internet history cache, and automatic word back- up files. E-mail headers and instant messaging logs give clues as to the intermediate servers through which information has traversed. Server logs provide information about every computer system accessing a website. The internet is totally changing crime investigations due to its dynamic nature. The dynamism of the internet is such that a website used to perpetrate a crime one day may be different or absent the next day. It now becomes imperative that the Computer Forensics Investigator wades in and identifies the missing link in such a cybercrime. Computers yield evidence of a wide range of criminal and unlawful actions. Criminals engaged in network-based crimes, are not the only ones that store information on computers. Many criminals engage in murder, kidnapping, sexual assault, extortion, drug dealing, Espionage, terrorism, gun-dealing, robbery, gambling, money laundering, and economic crimes, criminal hacking, scams, et cetera. The information on the computers of these criminals are keys to identifying suspects and sometimes the computer yields the most needed evidence to prosecute and punish these criminals. The job of the Computer Forensics Investigator hence is to identify, extract, analyse and report these digital evidences hidden in these computers. Computer

forensics plays a key and important role in ensuring national security as it is fundamental and important to the law enforcement agencies for a number of reasons which include.

The computers and the internet represent the fastest growing technology tool used by criminals, because cybercrimes and white collar crime have become lucrative as they are less-violent, yield high profits and have relatively low risk of capture and if caught and convicted usually result in relatively short prison sentences. With more criminals tilting towards these cybercrimes, the only method of curbing, tracing, and apprehending these cyber criminals in through thorough computer forensics investigation. A basic level understanding of computer forensics is very essential and a vital knowledge area for all law enforcement officers. Crime investigation and law enforcement agents need to know when information on a computer might have a nexus to a crime. Then the need arises for the computer forensic investigation, to gather and need to understand the important role played by digital evidence.

In developing nations, computer forensics examines have cyber warfare, and rapidly evolving computer and digital devices and cybercrimes especially espionage and cyberspace and achieve cyber security computer forensics investigation must be given top priority and tracing CF examiner should be upon its National Security Agenda.

COMPUTER FORENSICS WORKFORCE

For any nation to efficiently and effectively secure its cyberspace, there are need for a well trained workforce. The education of computer forensics professionals becomes imperative in the face of growing losses resulting from computer crimes and increased terror and breach of national security due to increasing cyber terrorisms, cyber warfare, and espionage and cybercrimes. An essential element in improving forensics techniques is the development of a comprehensive approach to computer forensics education.

Yasiniac et al. (2003) identified that there are skills and positions that computer forensics education program would fill in order to ensure adequate man-power in the computer forensic industry in other to achieve National Security. These positions to be filled by computer forensics professionals include the following:

- **Computer forensic technician:** Persons in the cadre are to be trained to exercise the technical aspects of gathering evidence. They must have sufficient skills to gather information from computers networks and other digital devices. Training of the computer forensics technician should be carried out by polytechnics.
- **Computer forensic policy maker:** At the other end of the computer forensics spectrum is the computer forensics policy maker. The policy maker should be trained to be a manager and administrator who establishes policies that reflect the broad considerations of the enterprise. The policy maker should be trained to see the impact of forensics in the broader context of business goals. The policy maker should be trained to make hard decisions that trade-off forensics capability with issues of privacy; and correspondingly, morale, along with the many other trade-offs demanded of forensics. While the computer forensics policy maker should be trained to focus on the big picture, they must also be trained to be familiar with computing and forensics sciences. Training of the computer forensics policy maker falls under the mandate of the universities.
- **Computer forensics researcher:** While computer forensics is not fully recognized as an independent discipline, it has clearly surpassed the development status it enjoyed in the

early internet years, hence has become the topic of applied research appearing in conferences and workshops. There is a clear demand for researchers in this field. Computers forensic researchers are expected to being with masters programs and consequently proceed to reach a sufficient basic research categorization to meet the rigid “contribution to knowledge” requirement of doctoral degrees. Master’s and doctoral researchers in this field will help demystify the computer forensic domesticate and localize the practice to specific geographical and demographical settings.

- **Computer forensics educators:** There is need for training computer forensics educators, whose mandate it will be to teaching the art and science of computer forensics at the foundation, basic and secondary levels of education. These Educators would be trained in Colleges of Education.

Aims and Objectives

The broad aim of the research is to identify the implications of promotion of computer forensics education in Nigeria to National Security.

The specific objectives include:

- To determine the state of computer forensics education in Nigeria;
- To identify how important promotion of computer forensics education is to National security in Nigeria;
- To determine the benefits of promoting computer forensics education in Nigeria on National Security.

METHODOLOGY

Two methods were adopted in the study:

- Archival research and content analysis: This methodology was employed and was used to study the Joint Admission and Matriculations Board Brochure (JAMB) for the 2016/2017 year, in order to determine the state of computer forensics education in Nigeria.
- Descriptive survey: Descriptive survey was carried out in other to sample the opinion of stake holders on the importance and effects of computer forensics education to National Security in Nigeria.

Population of the study

The population of study comprised of law enforcement, judiciary workers and lecturers in Owerri Municipal Area Council of Imo State, Nigeria.

Sampling technique/Sampling Size

25 police personnel, 25 lawyers and 25 lecturers were purposively sampled. Seventy (70) questionnaires were distributed, but 50 out of the 70 distributed questionnaire were properly filled out and returned, reducing the sample size to 50 (10 policemen, 20 lawyers, 20 lecturers). Therefore $n = 50$

Data collection

Primary data were collected using:

- Structured questionnaire. A four point Likert scale was used in rating questionnaire responses.
- Interview of respondents

Secondary data were collected from review of archival data (JAMB BROCHURE), Text books, journals, and review of related literature.

Method of Data Analysis

Data from questionnaire responses were analysed using frequency distribution tables and percentages.

RESULTS AND DISCUSSIONS

Results from the research are presented and discussed below:

Result from figure 1 above shows that a study of all the courses listed by JAMB as submitted by all tertiary institutes, none of the institutions have computer forensics program running at any level. This implies that computer forensics education is yet to commence at all levels of tertiary education in the country. However, further research showed that the only body that undertakes training and certification of computer forensics professionals in Nigeria is the computer forensics institute of Nigeria (www.cfinonline.org), which is a professional certification and regulatory body saddled with developing digital and computer forensics experts. The institute alone cannot train the required manpower needed to propel and position the computer forensics profession in Nigeria. Interview of some selected respondents yielded continuous call for Nigerian tertiary institutions to as a matter of urgency set up computer forensics programs at all levels in order to train professionals to fit into all cadres if Nigeria intends to prepare and position itself in this era of cyber security threats and crimes.

Figure 1: JAMB approved science courses

SCIENCES

SCIENCES
FACULTY/SCHOOL/COLLEGE OF SCIENCE
(B.Sc. & B. Tech Programmes)

1	Architecture	41	Computer with Statistics	81	Information and Communication Tech.	121	Physical Sciences
2	Archaeology	42	Computer and Economics	82	Information Technology	122	Plant Science
3	Parasitology with Entomology	43	Computer Sci. with Islamic Religious Studies	83	Information Science	123	Plant Biology
4	Animal Biology and Environmental	44	Computer and Mathematics	84	Management Information Systems	124	Plant Science and Biotechnology
5	Animal and Environmental Biology	45	Computational Analysis	85	Management Software Development	125	Plant Science and Forestry
6	Anthropology	46	Computer Science and Information Technology	86	Mathematics	126	Plant Science and Taxonomy
7	Applied Botany	47	Computer Science and Accounting	87	Mathematics and Economics	127	Pure/Applied Chemistry
8	Applied Biology	48	Communication Technology	88	Mathematics and Geography	128	Pure and Industrial Chemistry
9	Applied Zoology	49	Cognitive Science	89	Mathematics and Geography	129	Public Health Technology
10	Applied Chemistry	50	Chemistry and Industrial Chemistry	90	Mathematics with Statistics	130	Pure/Applied Biology
11	Applied Geophysics	51	Electronics	91	Mathematics/Statistics/Computer Science	131	Pure/Applied Physics
12	Applied Oncology	52	Electronics and Computer Technology	92	Mathematics with Physics	132	Pure/Applied Mathematics
13	Applied Biology	53	Engineering Physics	93	Mathematics with Management Science	133	Science Laboratory Technology
14	Applied Biochemistry	54	Energy Studies	94	Marine Biology	134	Statistics
15	Applied Biology and Biochemistry	55	Energy and Petroleum Studies	95	Marine Biology and Fishery	135	Statistics and Biometics
16	Applied Microbiology and Brewing	56	Environmental Biology and Fishery	96	Medical Laboratory Technology	136	Statistics and Computer Science
17	Applied Mathematics with Statistics	57	Environmental Management	97	Medical Laboratory Science	137	Software Development
18	Applied Statistics	58	Event Management	98	Microbiology	138	Surveying and Geo-Information
19	Applied Microbiology	59	Environmental Biology	99	Microbiology	139	Software Engineering
20	Applied Biology and Biotechnology	60	Exercise and Sport Science	100	Microbiology and Indus. Biotechnology	140	Telecommunication Management
21	Artificial Intelligence	61	Fisheries and Aquatic Biology	101	Molecular Biology	141	Telematics Science/Technology
22	Aquaculture and Fisheries Management	62	Fisheries Aquaculture	102	Marine Environmental Science	142	Transport Management
23	Biochemistry	63	Genetics and Bio-Technology	103	Mathematics with Computer Science	143	Urban and Regional Planning
24	Biodiversity Conservation & Utilization	64	Geography	104	Natural Ecosystem Science and Management	144	Quantity Surveying
25	Bio-Informatics	65	Geophysics	105	Natural and Environmental Studies	145	Wildlife Eco-Tourism
26	Biological Science(s)	66	Geology	106	Natural and Environmental Science	146	Water Resources Management
27	Biology	67	Geology and Petroleum Studies	107	Organizational and Industrial Psychology	147	Water Resources and Agro-Meteorology
28	Botany	68	Geology and Mining	108	Operations Research	148	Wood Science
29	Botany and Microbiology	69	Geology and Geo-Physics	109	Optometry	149	Zoology
30	Biotechnology	70	Geography/Regional Planning	110	Patrol Chemistry	150	Zoology and Aquaculture
31	Building Technology	71	Geology and Earth Sciences	111	Project Management	151	Zoology & Animal Systematics
32	Cell Biology and Genetics	72	Geology and Mineral Science	112	Physics and Applied Physics		
33	Chemistry	73	Geoscience	113	Physics		
34	Chemical and Industrial Chemistry	74	Hardware and Networking	114	Physics Engineering		
35	Chemical Science	75	Industrial Chemistry	115	Physics/Astronomy		
36	Combined Physical Sciences	76	Industrial Physics	116	Physics / Computational Modeling		
37	Computer Engineering	77	Industrial and Environmental Chemistry	117	Physics / Computer Science		
38	Computer Electronics	78	Industrial Mathematics	118	Physics / Electronics		
39	Computer Science	79	Industrial Mathematics/Statistics	119	Physics/Natural Science		
40	Computer Science with Accounting	80	Industrial Microbiology	120	Physics with Solar Energy		

Some Universities may accept a pass in English for these courses.

ALL PROGRAMMES ADVERTISED IN THIS BROCHURE HAVE BEEN OFFICIALLY RECEIVED FROM THE INSTITUTIONS AND ARE DEEMED TO HAVE MET ALL APPROPRIATE STANDARDS AND HAVE BEEN APPROVED BY COMPETENT AUTHORITIES.



Source: <http://www.jamb.org.ng/Unifiedtme2/Brochure.aspx>

From table 1 above, it is observed that 30 out of the 50 respondents representing 60% of the sampled population indicated that computer forensics education is very important and a vital vehicle to training personnel who will position themselves to aid in securing the Nigeria cyberspace against all forms of security threats and crimes committed with or through the use of computers and other digital devices.

The result from table two also showed that 40% of the respondent agrees that computer forensics education is important to National Security. The table further shows that none of the respondents indicated the computer forensics education was less or not important to National Security.

On further investigation the interviewed respondents emphasized that for the nation to enjoy a secure cyberspace, there is need to establish as a matter of urgency educational programmes at different levels to train computer forensics professionals.

Table 1: Importance of Computer Forensics Education to National Security

	Frequency	Percentage (%)
Very important	30	60
Important	20	40
Less important	-	-
Not important	-	-
Total	50	100

Source: Field data 2016.

Table 2 above indicated that 100% of sampled population agrees that promotion of computer forensics education would lead to development of more professionals to do the assiduous task of crime investigation and hence foster National security. Among other benefits illustrated by table 3 include elimination of un-ethical practices in Computer Forensics (90%) availability of manpower (90%), and fostering research in the field of computer forensics (80%). Creation of awareness in citizens in cyber security and cybercrime cyber warfare (100%); Reduction of cost of Computer Forensics Investigation due to availability of more Computer Forensics professionals (90%) and finally professionalization of the field of computer forensics (60%).

Table 2: Benefits of promoting computer forensics education in Nigeria on National Security

Benefits	Frequency	Percentage (%)
Creation of awareness of cybercrime, cyber security and cyber warfare	50	100
Development of more computer forensics professionals	50	100
Reduction in cost of Computer Forensics investigation.	45	90
Availability of manpower	45	90
Fostering of research in the field of computer forensics	40	80
Professionalization of the field of computer forensics.	30	60
Reduction of unethical and sharp practices in Computer Forensics investigations	45	90

Source: Field data, 2016.

Summary of Findings

- The research showed that there is no tertiary institution currently running computer forensics education program across Nigeria;
- This result of this is that forensics investigators either train abroad, or partake in the (5-day) boot camp program run by the computer forensics institute of Nigeria;
- Lack of training structure for computer forensics investigators hence lure organization to use their own IT internal Staff to conduct a computer forensics investigation, which is unethical;
- Owing to lack of computer forensics education in Nigeria, the few trained professionals provide forensics services at very high cost hence:
 - Making clients to limit the scope of forensics and analysis due to cost.
 - Leading to client selecting substandard or quack forensics organization.
 - Making clients to wait until last minute to perform a Computer forensics exam due to shortage of manpower.
 - Computers forensics education is very important to National security as it is the only avenue to train forensics examiners whose tasks would be to ensure National security through.
 - Investigation of computer crime such as identify theft, harassing emails, illegal downloading of copyrighted materials, cyber scams, child pornography, economic frauds et cetera.
 - Forestall and wedge war against cyber terrorisms, cyber warfare and espionage.
 - Recreate crime scenes to help criminal investigation.
- Benefits of promotion of computer forensics education to National security would be in the form of:
 - Increase in availability of professionals at all cadres.
 - Creation of awareness in cybercrime, cyber warfare, cyber security
 - Reduction of unethical practices in computer forensics investigation
 - Availability of manpower
 - Fostering of research in the field of computer forensics
 - Professionalization of the field of computer forensics science.

CONCLUSION

The proliferation of criminal activities on the internet and on other digital devices like identity theft, spamming, cyber terrorism, economic frauds etc. computer forensics will continually increase the demand for computer forensics investigators in line with law enforcement and national security. Computer forensics investigators work with changing technologies, and are expected to learn the most recent versions, tools and processes in fraud and crime detection. Hence their education in very paramount and should be kept dynamic amidst rapidly evolving technologies.

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