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Role of ICT on Employees' Knowledge Management and Academic Staff Retention in Tertiary Institutions in South-East Nigeria

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Abstract

This study examined the role of ICT on employees' Knowledge management and academic staff retention in selected tertiary institutions in South East, Nigeria. The study was guided by objective which sought to examine the role of information communication technology (ICT) in knowledge management and academic staff retention in selected tertiary institutions in South East Nigeria. The research design adopted was a cross-sectional survey design. The sources of data, were primary and secondary. The main instrument used for primary data, was questionnaire and oral interview. The secondary data were sourced from journals, test books, internet, and libraries. The population of the study was 7,423 academic staff of the 10 selected institutions in the South East Nigeria. A total sample size of 555 was determined from the finite population formula. The instrument was checked for reliability using test-re-test method. The result gave a reliability co-efficient of 0.915 showing high degree of item reliability. The total number of questionnaire distributed for this study was five hundred and fifty- five (555) copies, while for hundred and thirty five (435) copies were completed and returned. The data generated from the field survey were presented and analyzed using percentage tables, pie chart, mean and standard deviation. The hypothesis was tested using Friedman chi-square statistics. The findings indicate that there is significant positive relationship between the role of ICT in knowledge management and academic staff retention (X^2_{cal} = 111.651 > $X^2_{critical}$ = 7.81, p < 0.05). The study concludes that there is need for the instituting of ICT data base with the state-of-the-art-equipments to enable staff source useful materials from any part of the institution.

Keywords: ICT, role, academic staff, Nigerian Universities.

1. Introduction

Knowledge Management promotes the sharing of knowledge by linking people with people and by linking them to information so that they learn from documented experiences (Scarborough and Preton, 1999). Lubit (2001) opines that knowledge is acquired within the organization, from external sources and by creating new knowledge from the already existing information. One of the most important benefits of Knowledge Management is to avoid repeating mistakes already made by others and reducing duplication of work. Therefore, knowledge has to be filtered so that only the knowledge that are useful and applicable to achieve reality-based results is retained.

Knowledge Management is concerned with storing and sharing the wisdom, understanding and expertise accumulated in an organization about its processes, techniques and operations. It involves transforming knowledge resources by identifying relevant information and then disseminating it so that learning can take place. Knowledge Management is concerned with stocks and flows of knowledge. Stocks include expertise and encoded knowledge in computer systems. Flows represent the ways in which knowledge is transferred from people to people or from people to a knowledge database (Squiner and Snyman, 2004).

2. Review of Literature

Lee and Choi, (2003) and Chaudry (2005) noted that Knowledge Management enablers are organizational mechanisms for fostering knowledge consistently; they stimulate knowledge creation, protect and facilitate knowledge sharing within an organization. Collaboration is an important feature in knowledge management adoption. It is defined as the degree to which people in a group actively assist one another in their task (Lee and Choi, 2003). The problems identified to affect KM cover the four KM processes of creation, storage/retrieval, transfer and application. These include: "Work procedures of work are not standardized"; "Staff seldom share knowledge"; "The information in the system is not enough"; "The skill of selling various products can only be learned by new employees when they face the clients" (Qu and Davidson, 2010). However, other reported problems include; "General staff cannot access Internet for work purposes. Only senior colleagues have Internet or email functions"; "The Company loses knowledge after retirement of staff"; "The special selling skills cannot be learned from colleagues because of the high turnover rate" (Qu and Davidson, 2010). Knowledge Management integrates different types of tacit and explicit knowledge. Through integration, organizations can discover what type of tacit and explicit knowledge subsists in the organization. Furthermore, knowledge activities like knowledge gathering, managing, sharing, learning, reuse and retrieval play important role in bringing innovation.

The growth in the global research market has made institutions realize that the right work force could give them a competitive advantage (Dibble, 1999). Every organization or institution wants to have a competitive edge in order to attract more students and potential employees. Therefore, the demand for employees has increased and organizations are competing to attract and retain the best talent. While acknowledging their theories, some theories have been criticized because their investigation was primarily about what people want from a job, and not why they leave (Naris and Ukpere, 2010).

2.1. Statement of Problem
Tertiary institutions in Nigeria have continued to lose their best hands in the recent past. This situation is worrisome and calls for attention on how best to manage knowledge in the work force in order to retain such knowledge within the institution (establishment). Information and communications technology (ICT) has been seen as an efficient tool in the management of organizations, especially in the areas of lecture delivery and data retrieval by academic staff. Hence the present study is aimed at evaluating the role of ICT on employees' Knowledge management and academic staff retention in selected tertiary institutions, South East Nigeria. The present study tested the hypothesis that ICT plays a significant role in knowledge management and academic staff retention in tertiary institutions.

2.2. Objective of the Study
The specific objective is to examine the role of information communication technology (ICT) in Knowledge Management and academic staff retention in selected tertiary institutions in South East Nigeria.

3. Research Question
The study seeks to find answers to this question:
i) To what extent do you consider ICT critical in Knowledge Management and academic staff retention of staff in tertiary institutions in South East Nigeria?

3.1. Research Hypothesis
i) ICT plays a significant role in Knowledge Management and academic staff retention in selected tertiary institutions in South East, Nigeria.

4. Theoretical Framework
Most people find that behaviours are the most comfortable frame of reference for understanding the relationships between business processes and knowledge flows. The main aligning theory for this study is the structuration theory.
Structuration Theory
Giddens' conception of structuration theory purports "a duality of structure which relates to the fundamentally **recursive** character of social life, and expresses the mutual dependence of structure and agency". In other words, the agents within a social system are both influenced by the structural elements of that system, and recursively reproduce those structural elements through interaction between agents.

In structuration theory, structure refers to *patterns* of social relationships and only exists as structural properties. These structural properties exist virtually as rules and resources that in social reproduction bind time (Giddens 1979) and result in enduring practices in social systems (reproduced relations between actors or groups, organized as regular social practices that occur in time and space). To regard structure as a *virtual order* implies recognizing the existence of (1) knowledge—as memory traces—of how things are to be done (said, written) on the part of social actors; (2) social practices organized through the recursive mobilization of that knowledge; and (3) capabilities that the production of those social practices presupposes (Giddens 1979).

5. Methodology
5.1. Research Design
The study adopts a cross-sectional survey design method. Survey means 'to view comprehensively and in detail' or the act of 'obtaining data for mapping' (Onodugo et al., 2010). These are studies whose sole aim is to examine the current opinions, behaviours and other characteristics of a group of people. It is an investigation into what currently exists in an area, at the time of the research, in their natural setting.

5.2. Sources of Data
The sources of data comprised of both primary and secondary.
5.2.1. Primary Source
The information from this source consists of responses from the questionnaire administered to the academic staff from the selected institutions under study. One set of questionnaire was used for the study. The information elicited

includes information on educational background, qualifications, positions, gender, age and number of years of service. Oral interview was also used.

5.2.2. Secondary Source of Data Collection
This comprised of already existing publications on the study area. They consisted of books, journals, magazines, newspapers, periodicals and other publications from national, state and institutional libraries.

5.3. Population of the Study
Population is described as the aggregate of all element defined, prior to the selection of the sample size (Kinner and Taylor, 1983). The population of the study is 7,423 which consist of all the academic staff of tertiary institutions in the South East Nigeria. As a result, it was not possible to use the entire population. Unyimadu (2003) points out that the population size of this nature is normally too large and it will be very cumbersome to go round the entire population, hence ten institutions in the South East Geopolitical Zone of Nigeria were selected. The target population of this study consists of the academic staff of the ten selected institutions.

Table 1: Government Owned Tertiary Institutions in the Study Area

State	Tertiary Institution
Abia	1. Federal University of Agric; Umudike 2. Abia State University, Uturu 3. Abia State Polytechnic, Aba
Anambra	1. Nnamdi Azikiwe University, Awka 2. Anambra State University, Uli and Igbariam Campuses 3. Federal Polytechnic, Oko and Atani Campuses 4. Federal College of Education Technical, Umunze 5. Nwafor Orizu College of Education, Nsugbe 6. Federal Metereological Institute, Onitsha
Ebonyi	1. Ebonyi State University, Abakaliki, CAST and PRESCO Campuses 2. Federal University, Ikwo 3. Akanu Ibiam Federal Polytechnic, Unwana 4. Ebonyi State College of Education, Ikwo
Enugu	1. University of Nigeria, Nsukka and Enugu Campuses 2. Enugu State University of Science and Technology, Agbani 3. Institute of Management and Technology, Enugu 4. Federal School of Dental Technology, Trans Ekulu, Enugu 5. School of Health Technology, Oji River 6. Federal College of Education, Eha Amufu 7. Federal Training Centre, New Haven, Enugu 8. School of Agriculture, Iwollo
Imo	1. Federal University of Technology, Owerri 2. Imo State University, Owerri 3. Federal Polytechnic, Nekede 4. Imo State Polytechnic, Umuagwo 5. Alvan Ikoku College of Education, Owerri

Source: Extracted from the Websites of the National University Commission (NUC), National Board for Technical Education (NBTE) and National Commission for Colleges of Education, March, 2013

Table 2 Population of the study

State	Tertiary Institutions	No. of academic staff
Abia	Federal University Umudike	652
"	Abia State Polytechnic, Aba	366
Anambra	Nnamdi Azikwe University, Awka	1,150
"	Nwafor Orizu College of Education, Nsugbe	270
Ebonyi	Ebonyi State University, Abakaliki	1,605
"	Akanu Ibiam Polytechnic, Unwanna Afikpo.	339
Enugu	University of Nigeria, Nsukka	1,519
"	Institute of Management and Technology, Enugu	205
Imo	Federal University of Technology, Owerri	800
"	Imo State University Owerri	517
	Total	7,423

The population of this study is 7,423, derived from ten selected institutions domiciled in the South East, Nigeria.

5.4. Sample Size Determination and Distribution

The target population of the study includes all the academic staff of the selected institutions in the South East, Nigeria which stands at 7,423. Thus, using a finite population formula of Krejcie and Morgan (1970), the sample size was determined viz:

Sample size

$S = Z^2 NP (1-P) / Z^2 (N-1) + X^2 P(1-P)$ (Krejcie and Morgan 1970)

Where

n = required sample size 555

Z^2 = The table value of Z-variate at 95% confidence interval (1.96)

N = Total population size

P = The population proportion (assumed to be 0.04 since this would provide the maximum sample size)

d = The degree of accuracy expressed as a proportion (0.05).

$S = 1.96^2 \times 7423 \times 0.50 (1 - 0.50) / (0.04)^2 (7423 - 1) + 1.96^2 \times 0.5(1 - 0.50)$

n = 555.

The sample was distributed using Bowley's proportional allocation formula:

S/N x Nh

Where S = Sample size

N = Total Population size

Nh = Stratum weight (Total population of academic staff of each institution selected).

5.5. Sampling Technique

The sample technique used was stratified random sampling.

5.6. Description of Research Instrument

The major research instrument used in gathering data for this study was a structured questionnaire and an interview guide. This questionnaire had two (2) sections; question A was on general information concerning the respondents while section B directly addressed the research questions. Close ended and multiple choice questions were used. The questionnaire was administered to all the randomly selected academic staff of the ten institutions. Interview method was also used to complement the questionnaire. Interview is a question and answer in which the interviewer asks questions supposed to be pertinent to the research study (Wiersma, 1969).

5.7. Validation of the Instrument.

Validity is concerned with measurement. According to Ikeagwu (1998), validity deals with the soundness and the effectiveness of the measuring instruments. In order to ensure that the research instrument was valid the researcher ensured that the instrument measured the concepts it was supposed to measure. The questionnaire was vetted by experts in the Faculty of Business Administration University of Nigeria. A pilot survey was used to test 30 respondents selected from two universities (one federal and one state institution). Their responses, comments and preliminary analysis were used to modify and fine-tune the instrument.

5.8. Reliability of Research Instrument

Reliability refers to the consistency of scores obtained by the same individuals when required with the same text on different sets of equivalent items or under other variable examining conditions (Ikeagwu, 1998).

Therefore, to ensure reliability of the data, the researcher administered the questionnaire in batches that yielded nearly equivalent responses. To ascertain that the instrument is reliable, the Test-Retest was adopted. The outcome of the test-retest was determined using Cronbach Alpha and the result was 0.915. Since the result was very high, thus we assert that the instrument was highly reliable.

5.9. Method of Data Analysis

The collected data was presented using percentage tables, pie charts, mean and standard deviations. The 5 Likert type questionnaires rating of Strongly Agreed (SA), Agreed (A), Undecided (UD), Disagree (D) and Strongly Disagree (SD) were assigned numbers 5, 4, 3, 2 and 1 respectively. The formulated hypothesis was tested using Friedman Chi-square at a significance level of 0.05 (5%), with the aid of the SPSS (version 20).
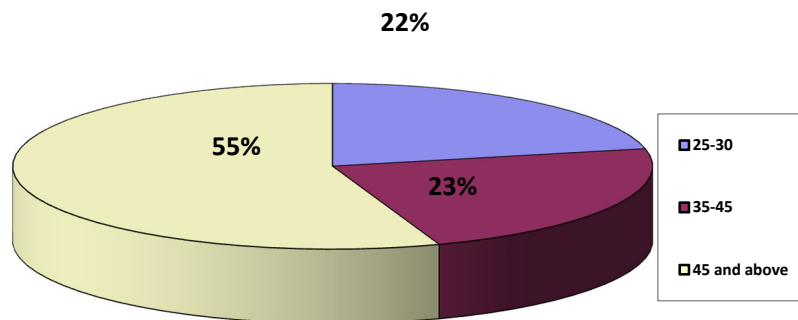
5.10. Decision Rule

The decision rule was based on the sample mean greater than 3 for agreed and otherwise for disagreement.

6. Results
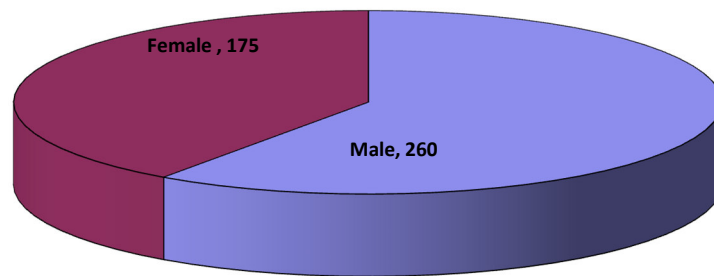
Fig. 1: Pie chart representing Gender of Respondents

Fig 1. Shows 260 respondents representing 60.07% were male, whereas 175 respondents, representing 40.22% were female. This indicated that males were more than the females.

Fig. 2: Pie chart of age

From Fig 2, 94 respondents representing 22.00% were between the age of 25-30, 100 respondents with 23.08% were within the age bracket of 35-45, while 241 respondents representing 55.40% were within the age bracket of 45 years and above. This implies that greater proportion of the respondents fall within the age of 45 years and above.

Table 3: Distribution of respondents according to school

School	Frequency	Percentage (%)
Abia State polytechnic, Aba	30	6.90
Ebonyi State University	75	17.24
FUTO	48	11.03
Fed. Poly Afikpo	28	6.44
IMT Enugu	20	4.60
Imo State University	35	8.05
Nwafor Orizu College Education	26	5.98
UNN	69	15.86
Umudike Fed. University	45	10.34
UNIZIK Awka	59	13.56
Total	435	100

From table 3, 30 respondents representing 6.90%, were from Abia State Polytechnic, 75 respondents, representing 17.24%, were from Ebonyi State University, 48 (11.03%) respondents from FUTO, 28 respondents, representing 6.44% were from Federal Poly Afikpo, 20 (4.60%) respondents from IMT, 35 (8.05%) respondents from Imo State University, 26 (5.98%) respondents from Nwafor Orizu College of Edun Nsugbe, 69 (15.86%) respondents, from UNN, 45 (10.34%) respondent from Federal University Umudike, and 59 (13.56%) respondents from UNIZIK Awka campus. This implies that respondents from Ebonyi State University were more, followed by respondents from UNN and UNIZIK Awka which had 75, 69 and 59 respondents respectively.

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Table 4: Role of ICT

Questions	SA	A	I	D	SD	Freq	Mean	SD
Provision of multimedia for teaching and learning plays major role in Academic Staff retention.	134	158	48	49	46	435	3.66	1.31
	30.81	36.33	11.03	11.26	10.57	100		
Provision of user manual and appropriate system fit departmental requirement is vital for academic retention.	122	156	64	58	35	435	3.63	1.24
	28.05	35.86	14.71	13.33	8.05	100		
Provision of e-learning system to store research materials and electronic library in the institutions aid academic Staff retention	152	135	50	44	54	435	3.66	1.37
	34.94	31.03	11.50	10.12	12.41	100		
ICT enhances information circulation by means of email, fax, telecommunication, intercoms and the likes.	172	134	38	49	42	435	3.79	1.33
	39.54	30.80	8.74	11.26	9.66	100		

Table 4 evaluated the role of Information Communication Technology in knowledge management and retention of academic staff. Four questions were formulated in this respect. In response to the question on provision of multimedia for teaching and learning, 134 (30.81%) and 154 (36.33%) respectively of the respondents strongly agreed and agreed that there is provision of multimedia for teaching and learning. 48 (11.03%) of the respondents were undecided, while 49 (11.26%) and 46 (10.57%) of the respondents disagreed and strongly disagreed that there is provision of multimedia for teaching and learning respectively. The mean of 3.66 averred to this. On the aspect of provision of user manual and appropriate system fit for departmental requirement is vital for academic staff retention, 122 (28.05%) and 156 (35.86%) of the respondents, strongly agreed and agreed on that assertion, respectively. 64 (14.71%) of the respondents were undecided while 58 (13.33%) and 35(8.05%) of the respondents disagreed and strongly disagreed with the above assertion, respectively. On the provision of e-learning system to store research materials and electronic library in the institutions to aid academic staff retention, 152 (34.94%) and 135 (31.03%) respectively of the respondents strongly agreed and agreed on that statement that there is provision of e-learning system to store research material and electronic library that aids academic staff retention. 50 (11.50%) of the respondents were undecided while 44 (10.12%) 54 (12.41%) of the respondents disagreed or strongly disagreed with the assertion respectively.

Responding to the question of whether ICT enhances information circulation by means of e-mails, fax, telecommunication, intercoms and the likes, 172 (39.54%) and 134 (30.80%) of the respondents strongly agreed and agreed on the above statement respectively. 38 (8.74%) of the respondents were undecided. 49 (11.26%) and 42 (9.66%) of the respondents disagreed and strongly disagreed respectively on the above assertion.

Since the mean for all the questions is above 3, based on our decision rule, this implies information communication technology plays a vital role in the knowledge management and academic staff retention.

The present study tested the hypothesis that ICT plays a significant role in knowledge management and academic staff retention in tertiary institutions. In testing this hypothesis, the data presented in Table 4 were tested using the Friedman Chi-Square test. The results are presented below.

Table 5: Friedman Chi-Square Test Result for Hypothesis Four

Statistic	Value
N	435
Chi-Square	111.651
Df	3
Asymp. Sig.	.000

The result presented in Table 5 shows that the calculated Friedman Chi-Square value is 111.651. This is greater than the critical chi-square value of 7.81. Having an asymptotic significance of 0.000 < 0.05, this result is significant. Therefore, ICT has played great role in knowledge management and academic staff retention in tertiary institutions.

7. Discussion & Conclusion

Analysis for the purpose of achieving the objective of the study was based on the responses on table 4. The questions that generated these responses were designed to ascertain the role of information communication technology in Knowledge management and academic retention. The respondents were of the view that information communication technology has a great positive role in knowledge management and retention of academic staff in selected tertiary institutions. More than 80% of the questions raised in the objective supported the assertion. Chi-square was used to test the hypothesis that information communication technology has a significant role in knowledge management and academic staff retention, in selected tertiary institutions. The result reveals that since the calculated Friedman chi-square value (111.651) at 3 df was greater than the chi-square critical value of 7.81,

indicates a significant association between row/columns at 95% confidence level, the null hypothesis was therefore rejected and the alternative hypothesis was accepted.

This finding agrees with the assertion of Williams (1997) that information is one of the most important corporate resources which require a strategy that is geared, to its development, and management. This necessitates an understanding of management requirements as well as strength and weakness of the organizations competitors. Therefore the development of information systems needs to be based on the institution strategic planning objectives. Because knowledge is the key source which organizations need to develop, it is imperative, therefore, that systems reflect user requirements within the differing management levels. Furthermore, processes and procedures that support information, systems need to be simplified, adaptable and flexible to meet the changes in user requirements. Maintaining competitive advantage in global market places more demand on information systems to provide accurate and reliable information to strategic tactical and operational levels of management. The complexity and investment of the information system in the levels of management in decision making that is required cannot be overemphasized. ICT therefore has a great role to play in knowledge management and Academic staff retention in selected tertiary institutions.

Similar study has revealed that some of the respondents concern was that lack of information or clarity stems from the failure of the systems acquainting themselves with available documentation. There is therefore, the need for institutions to address these reality- perception gaps, through better, regular, and accessible flow of information. Instead of expecting that staff members will still have University statutes and manuals that were given to them on assumption of duty, it may be more convenient for these documents to be posted on the University's website and updated as necessary for easy access by all staff at all times.

The findings further agrees with the findings of Qu and Davidson, (2010) in which the respondents suggested various ways that ICT can enable knowledge management to retain their academic staff as follows:

- By the establishment of a knowledge expert list and corporate libraries as a starting point to knowledge management implementation.
- Set up the expert system or knowledge database so the junior employees can find a way to look for knowledge.
- The use of multimedia to briefly describe what is the basic knowledge.
- Uploading the teaching manuals in the e-portal systems, so everyone can retrieve and follow the guidelines.

Davidson, (2010) equally agrees on the positive role of ICT that a customized Knowledge Management system would be provided so the user manual and appropriate systems fit for departmental requirement that institutions can better manage their knowledge. Several respondents pointed out, that institutions should provide a platform for staff to submit knowledge anonymously and the knowledge contributors should have right to choose a real name or a pseudonym. The above assertion from the respondents and supported by other studies carried out in other countries succinctly agreed with the objective that ICT has a positive role on knowledge management and retention of academic staff of Nigerian tertiary institutions.

The study has shown that there is a significant positive relationship between the role of ICT in knowledge management and academic staff retention. This results is generated from the result in table 4 (X^2_{cal} = 111.651 > $X^2_{critical}$ = 7.81, p < 0.05).

8. Recommendation

As a solution to the role of ICT in Knowledge Management, it is recommended that our Nigerian tertiary institutions should institute ICT data base with the state of the art equipment that will enable academic staff access useful materials from any part of the institution.

9. Acknowledgment

10. Limitations of the Study

A study of this nature to be carried out in this period of economic meltdown and security uncertainties is faced with a number of limitations. Some of these include: finance and attitude of some respondents that did not respond positively to the information required. As a result of the above factors, the researcher was constrained to limit the study to tertiary institutions in the South East, Nigeria rather than the entire country.

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