THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Statistical Analysis and Evaluation of ICT Competencies of Academic and Non-Academic Staff in a Typical Nigerian University

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Abstract:
The aim of this study is to carry out appraisal of the current status of the ICT competencies of the Academic and non-Academic staff in a typical Nigerian University. The main essence is to accurately recommend suitable ICT training intervention programmes needed to enhance productivity in teaching, research and administration. A task-oriented questionnaire was designed and administered to the teaching and non-teaching staff of the Federal University of Technology, Akure, Nigeria. The questionnaire was used to assess the ICT competencies of staff because it comprises of distinct Computer-related skills representing various competencies in the use of ICT in Education. The questionnaires were administered to one hundred and twenty members of staff of the University but only ninety-three members of staff returned the questionnaire. The ninety-three members of staff that participated in the study comprise of forty-six non-Academic staff and forty-seven academic staff of the University. The research findings showed that the ICT competency level of all staff is generally good. It was however specifically observed that ICT competency level of Academic staff in the area of internet literacy and competency is better than that of their non-academic counterparts, while the competency level of the non-academic-staff in desktop publishing is better than that of their academic counterpart.

Keywords: *Competency, attitude, Computer, ICT, Education, staff, assessment*

1. Introduction

Rapid developments in Information and Communication Technologies (ICT's) in recent years have resulted in significant changes in nearly all phases of the educational processes. The Internet has emerged as a major driving force of this dynamic development. ICT's are fast gaining ground in tertiary institutions throughout Nigeria, thus the urgent need for all Academic and Non-Academic Staff of Nigeria Universities regardless of their priorities in teaching, research, technical and administrative work aspire to attain professional competence in the use of ICT's. The attainment of competence and professionalism in the use of ICT's by all categories of staff of Nigerian Universities will help enhance Excellence and Productivity in their teaching, research, technical and administrative duties. Information Communication Technology (ICT) represents the set of activities and technologies that fall into the union of information Technology (IT) and communication technologies, where IT refers to the processing, storage and output of information. Thus, ICT fundamentally changes the way we live, learn and work, as a result of these changes, technology tools, and creative application of technology, have the capacity to increase the quality of people's lives. Benton Foundation (2000) recommended that training opportunities needed to be created for teachers and education stake holders, so as to make them use this Information Technology tools effectively and thereby enhance excellence in teaching and research.

2. Literature Review

Numerous research studies, associations, and industry groups have examined issues relating to Information Communication Technology (ICT) skills as they affect workforce readiness. Bollier (2000), Bower (2008), Lombardi (2007), Sharples et al (2012), Venezky (2001), Veletsianos (2010) and Yilmaz (2011) are some other research endeavours in the field of education that investigated the use of emerging technologies in educational sectors, aimed at improving quality of teaching and learning. They equally investigated the role of ICT's in education and the ICT Competency level of students and staff of tertiary institutions. Kirkwood and Adrian (2003) conducted findings on using ICT's to improve teaching practice, improve students' learning outcomes and enhance teacher's ICT competency level. These research efforts produced models and frameworks necessary to meet workforce requirements as regards ICT competencies.

3. ICT Competency Framework for All Categories of Staff

The design of ICT competency assessment that evaluates ICT competency and ICT literacy skills in higher education measures abilities to research, organize and communicate information using ICT's. ICT literacy is using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge driven society. ICT Competency assessment instrument used in this work focuses on the problem-solving skills associated with using ICT's to handle information. The competency assessment measures ICT literacy and Competency through seven performance areas which represent important problem solving and critical thinking aspects of ICT literacy and competency skill as shown in Fig 1 and table 1 below.

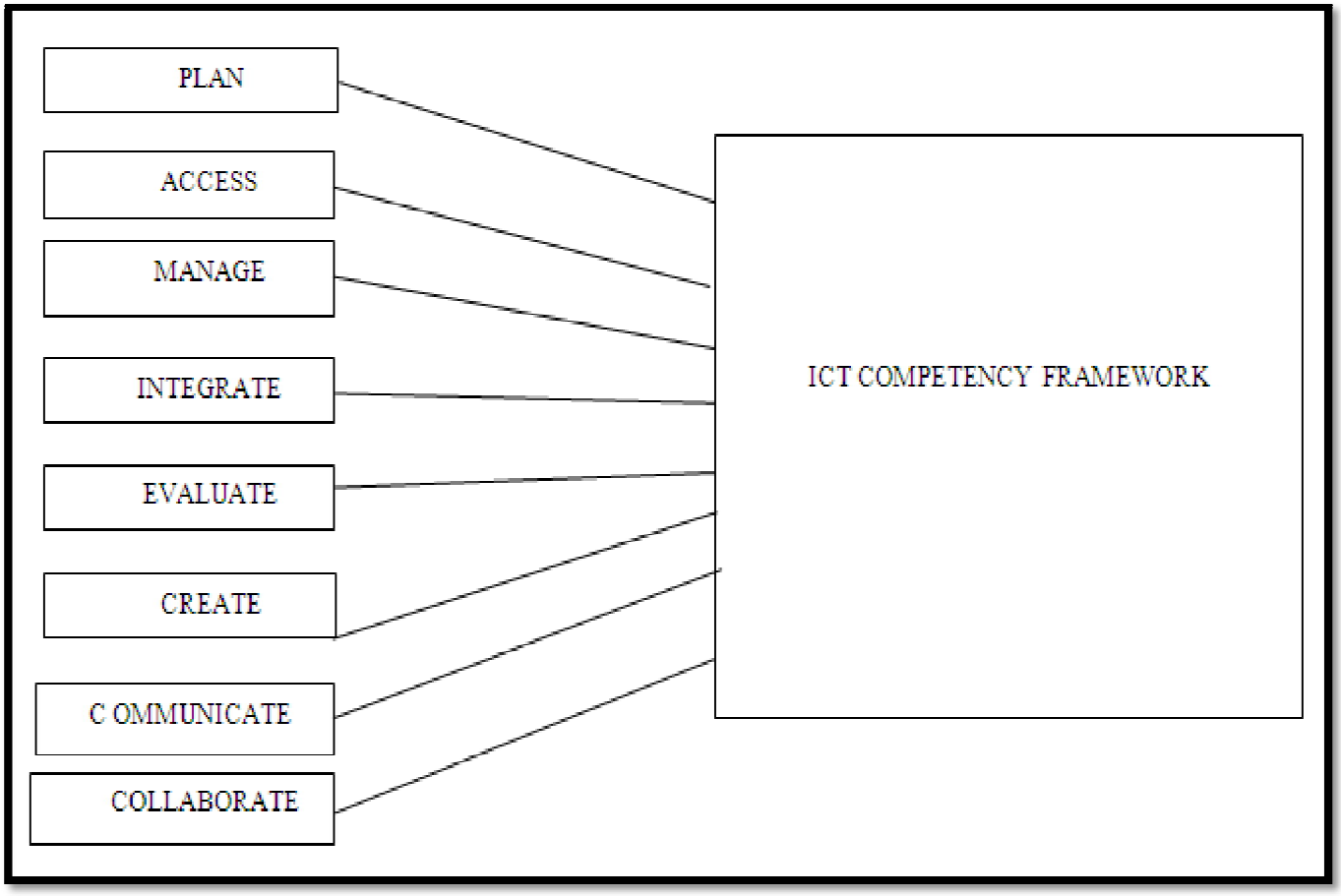

Figure 1: ICT Competencies Framework

s/n	ICT Competency	ICT Capabilities
1	Plan	Using Digital tools to plan and represent information need
2	Access	Search digital resources to collect and retrieve information
3	Manage	Using digital tools such as Spreadsheets and databases to solve problem and perform some operations
4	Integrate	Interpret and represent information using digital tools to synthesize, summarize, compare and contrast information from several sources.
5	Evaluate	Evaluation of relevant digital resources, information and tools etc.
6	Create	Create graphics, documents, presentations and web pages. Etc.
7	Communicate	Disseminate, Publish and deliver results of a research activity using ICT presentation tools and networks.
8	Collaborate	Collaborate in research activity using e-mail, networks and other digital tools and resources.

Table 1: ICT Competencies Assessment Table

4. Research Methodology

A questionnaire was designed aiming to quickly assess staff ICT Competency in a structured way. The questionnaire is in principle, a list of distinct Computer-related skills, representing various competencies applicable to the use of Computers in

Educational processes. The different tasks were organized in eight groups reflecting major areas of application of Computers in tertiary educational settings. These groups are shown in Table 2 below:

s/n	ICT-Related Skills	Example
1	Use of Internet for Research	Internet Explorer, Google search engine
2	Use of Electronic Mail	Futa Mail, Yahoo mail, Gmail
3	Use of Word Processing package	Microsoft Word
4	Use of Electronic Spreadsheet	Microsoft Excel
5	Use of Multimedia Presentation	Microsoft PowerPoint
6	Use of Databases Management system	Microsoft Access
7	Use of Operating System	Windows Operating System
8	Use of Desktop Publishing	Corel draw, Pagemaker

Table 2: Main Areas of ICT Literacy and Competency

The tasks were ordered by increasing difficulty or complexity showcasing elementary, intermediate and expert competencies. The questionnaire was designed to objectively assess competence with the use of computers in eight major areas. During the completion of the questionnaire, participants encountered some questions aimed at assessing various levels of competence from No competence to very high competence.

Ninety-three staff members randomly selected from ten departments in the institution participated in the study. The selection cut across all junior, professional, technical, administrative and Academic staff cadre. The 93 staff members that participated in the study comprise of 46 Non-Academic and 47 Academic staff of the University. The research instrument called "Performance review questionnaire 2016" was used to elicit needed information from the respondents concerning the ICT Competence of the respondents. The scores were organized into eight sub-scores and described in table 2 above. Respondents were to indicate their ICT Competence on a 5-Point scale of No Competence, Little Competence, Average Competence, High Competence and Very High Competence. The questionnaire was administered on 120 staff of the university, 93 participants returned the questionnaire which was then statistically analysed using SPSS statistical package. Percentage descriptive statistical analysis was performed on the data collected through the administered questionnaires.

5. Results

Percentage descriptive statistical analysis performed on the data collected through the administered questionnaire shown in table 3 is indicative of the fact that 93 staff members from 10 departments/units participated in the study. In all, 15 participants are from Microbiology Department, 11 participants are from Student Affairs Unit, 2 from physics department, 2 from statistics department, 1 from Computer Science Department, 6 from Chemistry Department, 5 from Project Management Department, 16 from Biology Department, 23 from the university library and 12 from Biochemistry Department.

s/n	Department /Unit	Respondent's n (%)
1	Microbiology Department	15 (16.1%)
2	Student Affairs Unit	11 (11.8%)
3	Physics Department	2 (2.2%)
4	Statistics Department	2 (2.2%)
5	Computer Science Department	1 (1.1%)
6	Chemistry Department	6 (6.5%)
7	Project Management Tech. Dept.	5 (5.4%)
8	Biology Department	16 (17.2%)
9	Library Unit	23 (24.7%)
10	Biochemistry Department	12 (12.9%)
Total		93(100)

Table 3: Composition of Sample Respondents on Departmental Basis

The Percentage descriptive statistical analysis also performed on the data collected as shown in table 4 showed that that the 93 staff members that participated in the study, comprise of 46 (49.5%) Non- Academic Staff and 47 (50.5%) academic staff. Further analysis also reveals that the Academic staff that participated in the study also comprise of 4 teaching assistant, 4 Graduate assistant, 11 Assistant Lecturer, 8 Lecturer II, 10 Lecturer I, 5 Associate Professors and 5 Professors.

s/n	Department /Unit	Respondents' n (%)
1	Non-Academic	46 (49.5%)
2	Teaching Assistant	4 (4.3%)
3	Graduate Assistant	4 (4.3%)
4	Assistant Lecturer	11 (11.8%)
5	Lecturer II	8 (8.6%)
6	Lecturer I	10 (10.8%)
7	Associate Professors	5 (5.4%)
8	Professors	5 (5.4%)
Total		93(100)

Table 4: Composition of Sample Respondents on Staff Category Basis

The Percentage descriptive statistical analysis also performed on the data collected showed that that the 93 staff members that participated in the study as shown in table 5 comprise of 63 male and 30 female members of staff.

s/n	Gender	Respondents n (%)
1	Male	63(67.7%)
2	Female	30 (32.3%)
Total		93(100%)

Table 5: Composition of Sample Respondents on Gender Basis

	No Competence	Little Competence	Average Competence	High Competence	Very High Competence
Internet Browsing	3 (3.2%)	5 (5.4%)	13 (14%)	45 (48.4%)	26 (28%)
Email	5 (5.4%)	6 (6.5%)	13 (14%)	39 (41.9%)	28 (30.1%)
Microsoft Word	0 (0 %)	4 (4.3%)	17 (18.3%)	39 (41.9%)	32 (34.4%)
Microsoft Excel	4 (4.3%)	14 (15.1%)	26 (28%)	29 (31.2%)	17 (18.3%)
Powerpoint	6 (6.5%)	12 (12.9%)	20 (21.5%)	35 (37.6%)	19 (20.4%)
Access	13 (14%)	23 (24.7%)	30 (32.3%)	16 (17.2%)	6 (6.5%)
Operating System	2 (2.2%)	8 (8.6%)	11 (11.8%)	32 (34.4%)	35 (37.6%)
Desktop Publishing	21 (22.6%)	28 (30.1%)	21 (22.6%)	15 (16.1%)	3 (3.2%)

Table 6: Staff Response In Respect of ICT Competency Level

6. Discussion of Results

Percentage descriptive analysis of the discrete statistics of responses in table 6 above shows that 90.4% of the respondents actually had competence (Average Competence, High Competence and Very High Competence) in the use of internet browser/ search engine while 8.6% of the respondents had little or no Competence in the use of internet for browsing, 1.1% of the respondents did not indicate their level of Competence with the use of the Internet for browsing.
Similarly, table 6 also shows that 86% of the respondents actually had competence (Average Competence, High Competence and Very High Competence) in working with Electronic Mail while 11.9% of the respondents had little or no Competence in the use of Electronic Mail. 2.2% of the respondents did not indicate their level of Competence with the use of the Electronic Mail.

Also, 94.6% of the respondents actually had some competence (Average Competence, High Competence and Very High Competence) in the use of Microsoft Word while 4.3% of the respondents had little or no Competence in working with Microsoft Word. 1.1% of the respondents did not indicate their level of Competence with the use of Microsoft Word. 72% of the respondents indicated they actually had competence (Average Competence, High Competence and Very High Competence) in the use of Microsoft Excel while 19.4% of the respondents had little or no Competence in working with Microsoft Excel. 3.2% of the respondents did not indicate their level of Competence with the use of Microsoft Excel.

Moreso, 79.5% of the respondents indicated they actually had competence (Average Competence, High Competence and Very High Competence) in the use of Microsoft PowerPoint while 19.4% of the respondents had little or no Competence in working with Microsoft Power point 1.1% of the respondents did not indicate their level of Competence with the use of Microsoft Power point. 56% of the respondents indicated they actually had competence (Average Competence, High Competence and Very High Competence) in the use of Microsoft Access while 38.7% of the respondents had little or no Competence in working with Microsoft Access 5.4% of the respondents did not indicate their level of Competence with the use of Microsoft Access.

83.8% of the respondents indicated they actually had competence (Average Competence, High Competence and Very High Competence) in the use of Microsoft Windows Operating System while 10.8% of the respondents had little or no Competence in working with Microsoft Windows Operating System 5.4% of the respondents did not indicate their level of Competence with the use of Microsoft Windows Operating System. 41.9% of the respondents indicated they actually had competence (Average Competence, High Competence and Very High Competence) in the use of Desktop Publishing while 52.7% of the respondents had little or no Competence in working with Desktop Publishing 5.4% of the respondents did not indicate their level of Competence with the use of Desktop Publishing.

7. Conclusion and Recommendations

This research focused on investigating the ICT Competencies of all categories of staff in a typical Nigerian University. The result of this study indicated that the ICT Competency of staff is generally good. It was however specifically observed that majority of the members of staff are competent in the use of Microsoft Word for Word Processing. It was equally observed that quite a good number of the members of Academic staff are competent in the use of internet for research purposes, Email and some other internet related activities, while harnessing internet for research purposes is still quite low among the non-academic staff.

More so, it was observed that a large number of staff is conversant with the use of Microsoft Windows Operating System, Microsoft Excel, Microsoft PowerPoint and Microsoft Access. It was however discovered that the Competency level in the use of Desktop Publishing programme among the academic staff is still quite low. In view of all of these, ICT capacity building programme shown in table 7 below is recommended for all categories of staff of Nigerian University. The trainers should ensure that the curriculum and the training contents be developed around the skills that will strive to achieve what is actually needed so that all University staff in Nigeria will attain the transformative benefits of ICT proficiency

Staff Category	Email / Internet for Research Purposes	Desktop Publishing	Use of Operating System	Microsoft Office Applications
Academic Staff	Advanced Training	Beginners Training	Advanced Training	Advanced Training
Non-Academic Staff	Beginners Training	Advanced Training	Advanced Training	Advanced Training

Table 7: ICT Training Programmes Recommended for All Categories of University Staff

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