

ICT Competence and Lecturers' Job Efficacy in Universities in Cross River State, Nigeria

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Abstract

The study sought to find out the influence of ICT competence on lecturers' Job Efficacy in two Nigerian universities. Two hypotheses were formulated to guide the study. The sample of the study consisted of 500 university teachers randomly sampled from a population of 1,795 teachers. Data for the study were collected using ICT Competence and Job Efficacy Questionnaire (ICTCJEQ). The data were analyzed using Chi-square and One-way Analysis of variance (ANOVA) statistical techniques. The results of the study revealed that male and female lecturers did not differ significantly in their level of ICT competence. Lecturers with high ICT competence were found to be more efficacious in classroom instruction, research/publication, communication and record-keeping than those with moderate and low ICT competence. The findings of this study revealed that the level of ICT competence of lecturers significantly enhanced their job efficacy. Premised on these findings, it was recommended that lecturers should be well motivated to develop their ICT competence as this has been found to improve job efficacy for high productivity. University management should encourage lecturers to participate in ICT training programs and ICT facilities should be provided in lecturers' offices to enhance their job efficacy.

Keywords: ICT Competence, Job Efficacy, Lecturers, Universities

1. Introduction

University education in Nigeria is aimed at producing high level manpower to cater for the various sectors of the country's economy. It is expected to contribute to national development by intensifying and diversifying its programs for the development of high manpower needs of the nation and making professional course contents to reflect our national regiments (FRN, 2004). These objectives could be achieved through effective teaching, research and other allied academic activities.

For university teachers to carry out their job efficiently and effectively especially in this age of knowledge-based technology and globalization, the use of information and communication technology (ICT) becomes imperative. Interestingly, universities all over the world are rapidly incorporating information and communication technology (ICT) into all facets of teaching, research and management. Teachers who succeed in making use of ICT in their work processes do not only contribute to improved learning outcomes in their students, but also benefit personally from enhanced work productivity (Carlson & Gadio, 2000). University lecturers have various tasks to accomplish and these range from teaching, research and publications, marking of tests and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences, providing community services etc. In order for them to be effective and efficient, they need to acquire an appreciable level of ICT competence. This is necessary in order to meet up with the demands of their job. Jusuf (2005) and Daniel (2002) reported that overwhelming majority of teachers in Europe use ICT to plan lessons more effectively and more efficiently. With the use of ICT, teachers have also been able to communicate and collaborate with other teachers and this enhances their job performance.

ICT involves a process of creating, processing, storage, retrieval and dissemination of information and data using computers and telecommunications (Akpan, 2008). In education, it involves the application of digital equipment to all aspects of teaching and learning. Thus, ICT encompasses a combination of technologies for collecting, storing, processing, communicating and delivering of information related to teaching and learning processes (Johnson, 2007).

Onuma (2007) reports that ICT can be used to enhance teaching effectiveness, prepare lesson plan, collect and analyze students' achievement. Thus, curriculum contents could be enriched through search in the internet. Akpan (2008) states that ICT can improve the quality of researches and publications in our universities through the use of information and quality materials from the internet and can also facilitate record-keeping by teachers. Therefore, the importance of ICT in enhancing university lecturers' job efficacy cannot be overemphasized.

Radloff (2001) identifies the importance of ICT in enhancing the quality of teaching and learning to include:

- (a) Providing encouragement for staff and students to reflect on how they teach and learn.
- (b) Applying theory and research on learning and principles of good instructions to designing online learning environments.
- (c) Making teaching and learning more visible and public.
- (d) Encouraging collaboration and team work among staff and students.
- (e) Offering greater access to learning for more people.

ICT competence as used in this study refers to the ability of a university teacher to make use of the various ICT tools such as e-mail, facsimile, internet, world wide web, intranets, extranets, online databases and other networking technologies in the performance of their job. Efficacy means having the ability to do what is defined as desired or to be effective in producing the desired result. It encompasses teacher efficiency and effectiveness. It is teachers' confidence in their abilities and capabilities to produce quality outcome in the performance of their job. An effective and efficient teacher is one who does things right, attempts to solve job-related problems, avoid waste of resources and ensures quality output. Lecturers' ICT competence can help in this direction. Radloff (2001) states that ICT increases the skills and status of teachers for job performance. Premised on this background, the study investigated the extent to which lecturers' level of ICT competence influenced their job efficacy

2. Literature Review

Information and communication technology (ICT) encompasses the effective use of equipment and programs to access, retrieve, convert, store, organize, manipulate and present data and information (Gay & Blades, 2005). The use of ICT has been found by researchers to improve job efficiency and effectiveness of teachers. Wheeler (2000) discovered in his study that the use of ICT improves efficiency in educational process and effects changes in teaching methodology, assessment of learning, student tracking, communication and evaluation. Thus, the use of ICT by university teachers reduces workload (Omenyi, Aju & Odimegwu, 2007). In support of this finding Balanskat, Blamire and Kefala (2006) reported that ICT is being increasingly used by teachers in their day-to-day work leading to increased efficiency in planning and preparation of work. Similarly, Holdich (2002) reported that ICT programs like web-based and computer-based analysis of written works save the time the teacher spend in marking students' scripts. Thus, in this era of information and communication technology, institutions should start investing in modern educational technologies which will provide innovative learning environment where both teachers and students could move beyond the limits of school building for information, interaction and enrichment. This is what job efficiency of university lecturers is all about. According to Becta (2004), ICT equips teachers with new innovations in education and in teaching and research.

In a study conducted by Omenyi, Agu and Odimegwu (2007), it was found that on the average, teachers feel that ICT have helped them to increase their classroom efficiency. They also discovered in their study that teachers' perception of their increased job efficiency was associated with the level of ICT competence possessed by the teachers. This finding suggests that ICT is effective in providing educational delivery to students.

In a related study, Soffer and Raban (2003) and Ramajah, Jantan and Aafagi (2003) discovered a significant difference in ICT competence between male and female teachers. This finding was supported by the work of Dholakia, Dholakia and Kshetri (2003) who reported low level of ICT competence among female teachers. Omenyi, Agu and Odimegwu (2007) attributed this finding to the societal role expectations of the African women which places a lot of restrictions on them. However, these findings were at variance with the work of Wong, Sidek, Aida, Zakaria, Kamariah, Hamidah and Hanafi (2005) who reported that females rated themselves to be more competent than males in ICT especially in inserting and editing texts for word processing, inserting texts and deleting slides for presentation, using search engines and downloading files from web and using e-mails for communication.

The researchers attributed these findings to the fact that the majority of the female academicians used in the study were younger than their male counterparts. Thus younger age has been found to be associated with more favorable attitudes towards ICT (Jennings & Onwugbuzie 2001)

Jusuf (2005) and Olulube (2006) in their studies showed that teacher ICT competence in Nigeria is below expectation and access to ICT resources like the internet and computer is mostly limited in campuses of various higher institutions. This finding is supported by the work of Akpan (2008) who reported that lecturers' perception of the role of ICT in management of university education was significantly low. The implication of these findings is that the level of university teachers' ICT competence could greatly impact upon their job efficiency in classroom teaching, communication, students' record keeping, and research/ publication.

3. Statement of the Problem

In this era of globalization, job efficacy of academic staff in higher institutions cannot be divorced from the level of ICT proficiency which is necessary for quality academic output. Unfortunately, some university teachers still do not recognize the opportunities that ICT presents for improving the efficiency and effectiveness of their job. Some of them lack knowledge that would aid the application of ICT skills in instructional delivery, research and record management. This results in the utilization of ICT among teachers in the teaching/learning situation being low (Jusuf, 2005). Research reports have shown that overwhelming majority of teachers in Europe use ICT to plan lessons more efficiently (Jusuf, 2005 & Daniel, 2002). Although, researches have been carried out on the impact of ICT competence on job efficacy of teachers in the western world, little or no researches have been done in this area in Nigeria. This study therefore, investigated the extent to which lecturers' level of ICT competence influence their job efficacy.

4. Purpose of the Study

The purpose of the study is to find out the extent to which

- (1) Male and female lecturers differ in their level of ICT competence
- (2) The level of ICT competence influence lecturers' efficacy in
 - (a) Classroom instruction
 - (b) Research/publications
 - (c) Communication
 - (f) Record-keeping.

5. Hypotheses

HO1: Male and female lecturers do not differ significantly in their level of ICT competence.

HO2: The level of ICT competence of university lecturers does not significantly influence their efficacy in

- (a) Classroom instruction
- (b) Research/publication
- (c) Communication
- (d) Record – keeping.

6. Research Methodology

6.1 Research Design

The survey design was adopted for this study. This design was appropriate because it dealt with the study of a large population by collecting and analyzing data from only a sample of the population. The design studies the opinion, attitude and behavior of people.

6.2 Population of the Study

The study population consisted of 1795 lecturers from University of Calabar and Cross River University of Technology, Calabar, Nigeria. A breakdown of the population revealed that there were 1284 lecturers in University of Calabar and 511 lecturers in Cross River University of Technology, Calabar. (Offices of Directors of Academic Planning, 2013).

6.3 Sampling Technique and the Sample

The simple random sampling technique was used in selecting the study sample. This method was necessary to ensure that every member of the population had equal and independent chance of being selected. Using this technique, 300 academic staff were randomly selected from University of Calabar and 200 academic staff from Cross River University of Technology, Calabar. This gave a total sample size of 500 lecturers from the two institutions. A breakdown showed that 187 were females and 313 were males.

6.4 Research Instrument

The instrument for data collection was a questionnaire developed by the researcher and titled “ICT competence and Job Efficacy Questionnaire (ICTCJEQ)” for lecturers. The instrument consisted of two sections. Section I dealt with personal and demographic data such as gender, educational qualification, age, and years of working experience. Section II consisted of two parts, A and B. Part A measured lecturers’ level of ICT competence in terms of ability to use e-mails, facsimile, browsing of internet, spread sheet, download files and ability in word processing, use of computer, power point, store and retrieve information etc. Each item had 4 response options of highly competence, moderately competence, lowly competence and not competence. The respondents were required to tick one option against an item. Part B was also a 4-point Likert type scale consisting of 20 items. Each item had 4 response options ranging from Strongly Agree (SA), Agree (A) to Disagree (D) and Strongly Disagree (SD). The variables under consideration here were lecturers’ efficacy in classroom instruction, research/publications, communication and record-keeping. Each of these variables was measured with 5 items. The respondents were required to indicate the extent of their agreement or disagreement with each item by ticking one of the 4 options against each item.

To determine the reliability of the instrument, a trial test was carried out. The research instrument was administered to 40 lecturers who were not part of the actual study. A reliability coefficient of 0.77 was obtained using test re-test method. This was high enough for the instrument to be considered reliable. The instrument was administered to the respondents in their respective institutions with the help of a research assistant. All copies of the questionnaire were correctly filled and returned. With a 4- point Likert scale, items that were positively worded were scored 4 points for Strongly Agree, 3 points for Agree, 2 points for Disagree and 1 point for Strongly Disagree responses respectively. For negatively worded items, the scoring technique was reversed.

7. Results

HO₁ Male and female lecturers do not differ significantly in their level of ICT competence.

To test this hypotheses chi-square (χ^2) statistical technique was used for data analysis. The result is presented on Table 1

Table 1: Chi- Square (χ^2) Analysis of the Difference in the Level of ICT Competence between Male and Female Lecturers (N = 500)

Gender	Level of ICT Competence			Marginal
	High	Moderate	Low	
Male	140 (150.24)	110 (103.29)	63 (59.47)	313
Female	100 (89.76)	55 (61.71)	32 (35.53)	187
Total	240	165	95	500

The figures in parentheses are expected frequencies

Calculated Chi-square (χ^2) value = 3.43

df. = 2

Critical χ^2 - value = 5.99

$p > .05$

The data on table 1 reveal that the calculated χ^2 – value of 3.43 is less than the critical χ^2 – value of 5.99 at .05 level of significance and 2 degrees of freedom. Given this result therefore, the null hypothesis is upheld. This means that male and female lecturers do not differ significantly in their level of ICT competence.

HO₂: The level of ICT competence of University lecturers does not significantly influence their efficacy in

- (a) Classroom instruction
- (b) Research/publications
- (c) Communication
- (d) Record-keeping

The data for this hypothesis were analyzed using One- way Analysis of Variance. The result is presented on Table 2

Table 2: Summary of One-Way Analysis of Variance of the Influence of ICT Competence on Lecturers' Job Efficacy. (N = 500)

Lecturers' efficacy in	Source of variance	Ss	df	Ms	F
1. Classroom Instruction.	Between	398.16	2	199.13	14.41*
	Within	6865.25	497	13.81	
	Total	7263.41	499		
2. Research / publications.	Between	231.08	2	115.54	9.78*
	Within	5869.87	497	11.81	
	Total	6100.95	499		
3. Communication	Between	46.16	2	23.08	3.11*
	Within	3683.01	497	7.41	
	Total	3729.17	499		
4. Record –keeping.	Between	70.65	2	35.33	3.65*
	Within	4810.10	497	9.68	
	Total	4880.75	499		

* Significant at .05, df (2 & 497); critical -F = 3.04

The result of analysis of data presented on Table 2 reveals that the calculated F-values for lecturers' job efficacy in classroom instruction (F = 14.41), research/publication (F = 9.78), communication (F = 3.11), record-keeping (F = 3.66) are each greater than the critical F-value of 3.04 at .05 level of significance with 2 and 497 degrees of freedom. With this result, the null hypothesis is therefore rejected, while the alternate hypothesis is upheld. This means that lecturers' level of ICT competence significantly influences their job efficacy in classroom instruction, research/publication, communication and record-keeping.

To determine the direction of significant difference, Fisher's Least Significance Difference (LSD) test was carried out. The result of analysis is presented on Table 3.

Table 3: Fishers' Least Significance Difference (LSD) test among Means

Variable	Level of ICT Competence	Low (n=95)	Moderate (n=165)	High (n=240)
1. Classroom Instruction	Low	14.76 ^a	-0.75 ^b	-2.56
	Moderate	-1.60 ^c	15.51	-1.81
	High	-5.81*	-4.89*	17.32
		MSw =13.81		
2. Research and publication.	Low	15.05 ^a	-0.11 ^b	-1.12
	Moderate	-0.26 ^c	15.16	-1.01
	High	-2.80*	-2.97*	16.17
		MSw =11.81		
3. Communication	Low	15.16 ^a	-0.58 ^b	-0.71
	Moderate	-1.71 ^c	15.74	-0.31
	High	-2.22*	-0.48	15.87
		MSw =7.41		
4. Record-keeping	Low	14.92 ^a	-0.33 ^b	-0.92
	Moderate	-0.85 ^c	15.25	-0.59
	High	-2.47*	-1.90	15.84
		MSw =9.68		

*p<.05

- (a) All means are along the diagonal
 (b) Differences between means are above the diagonal
 (c) Fisher's t-values are below the diagonal
 MSw = Mean Square within.

The data on table 3 reveal that lecturers with high ICT competence are more efficacious in classroom instruction ($t = -5.82$) than those with moderate ICT Competence ($t = -4.89$) and than those with low ICT competence. This means that the higher the level of ICT competence, the more efficacious lecturers are in classroom instruction. Similarly lecturers with high level of ICT competence are significantly more efficacious in research/publication than those with low ICT competence ($t = -2.80$) and significantly more efficient than those with moderate level of ICT competence ($t = -2.97$). Similarly, university teachers with high ICT proficiency are significantly more efficient and effective in communication ($t = -2.22$) than those with moderate and low ICT proficiency. Also, academic staff with high ICT competence are significantly more efficacious in record – keeping and management ($t = -2.47$) than those with moderate and low ICT competence. The trend is that, the higher the level of ICT competence among academic staff, the more efficacious they are in their job performance. Generally, academic staffs with high ICT proficiency are significantly more efficient and effective in their job performance than those with moderate and low ICT competence.

8. Discussion of Findings

One of the findings of this study reveals that gender does not significantly influence lecturers' level of ICT competence. In other words, male and female lecturers do not differ significantly in their level of ICT proficiency. This finding depicts that male and female lecturers used in the study are familiar with the use of ICT tools on a regular basis for academic work. The finding also suggests that gender should not be considered as a major factor that can hinder or promote ICT competence among lecturers. Further explanation to this finding is that perhaps both male and female lecturers must have seen the need to acquire ICT skills to enable them to reduce pressure of work in terms of time and energy and to enhance their job efficacy. The acquisition of appropriate ICT competence enables academic staff to meet up with the demands of their job. The finding of this study agrees with the research findings of Jusuf (2005) and Daniel (2002) who reported that overwhelming majority of teachers (males and females) in Europe use ICT to plan and teach their lessons more efficiently and effectively.

However, the finding is at variance with the works of Soffer and Radan (2003), Ramajah, Jantan and Aafaqi (2003), Omony, Agu and Odimogwu (2007), who reported a significant difference in ICT competence between male and female teachers.

Another finding of the study shows a significant influence of teachers' level of ICT competence on their efficacy in classroom instruction, research/publication, communication and record-keeping. The trend is that the higher the level of ICT competence of teachers, the more efficacious they are in their job. Thus, lecturers' job efficacy is a function of their level of ICT competence. This finding could be attributed to the fact that majority of university teachers in recent times have realized the importance of ICT in achieving job efficiency and effectiveness because it facilitates quicker and easier communication and network which allows them to perform their tasks more quickly and thoroughly. Furthermore, majority of university lecturers now have their personal laptops connected to the internet through the use of their personal modems. With this they can access information easily in the world-wide web and in databases, communicate quickly with both students and colleagues through the use of text messages, mobile phone calls, e-mails and facsimile and also keep tracks of students records. This enhances their ability to produce the desired result in the discharge of their professional responsibilities.

This finding is in consonance with the work of Wheeler (2000) who reported that ICT competence improves efficiency in educational process and effect changes in teaching methodology, assessment of learning, student tracking, communication and evaluation. Thus, ICT equips teachers with new skills and innovations in education and in teaching and research (Becta, 2004). The present finding is also in agreement with the research finding of Omenyi, Agu and Odimegwu (2007) who reported that teachers' perception of their increased job efficiency was associated with the level of ICT competence possessed by the teachers. This helps them to increase their efficacy in classroom teaching, research and publications. Thus, lecturers who are competence in the use of ICT tools can easily download new materials from the internet which can be used for lecture preparation and teaching. They can also search for research materials in the internet and publish research findings in reputable international journals of their choice.

9. Conclusion

In the light of the findings of this study, it could be concluded that male and female university teachers do not differ significantly in their level of ICT proficiency. This indicates that gender is not a major factor that can hinder or promote lecturers' ICT competence. Thus, male and female lecturers are favorably disposed towards the positive effect of ICT competence. The study also reveals that the level of ICT competence of lecturers enhances their job efficacy in classroom teaching, research and publications, communication and record-keeping. Therefore, lecturers' job efficacy is a function of lecturers' level of ICT competence.

10. Recommendations

This paper therefore recommends that:

Management of universities should encourage both male and female lecturers to participate in ICT training programs. Acquisition of ICT skills from such training programs would help to improve lecturers' job efficacy and this would lead to high productivity.

The management of universities should ensure that academic staff offices are provided with ICT facilities and also connected to the internet. This would enable the lecturers to access and download information or materials quickly and easily for lecture preparation, teaching, research and other allied duties. This would enhance lecturers' job efficacy.

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