

Availability of Information and Communication Technology (ICT) Resource and Academic Staff Task Performance of Universities in Cross River State of Nigeria

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Abstract

The study adopted the descriptive survey research design, with one hypothesis formulated to guide the study. The population of the study consisted of all the academic staff in the two public universities in the study area. A sample of 577 academic staff was randomly drawn from selected departments of the two universities. A questionnaire titled "Information and Communication Technology Resource Availability and Academic Staff Task Performance in Universities Questionnaire" was the instrument for data collection. The hypothesis was tested at 0.05 level of significance using One-Way Analysis of Variance and Fisher's Least Significant Difference (LSD) multiple comparison test. The results of the analysis revealed that, ICT resource availability significantly influence academic staff task performance in the aspects of teaching, research and community services, and that the higher the availability of ICT resources, the higher academic staff task performance in the areas of teaching, research and community services. It was therefore recommended, among other things, that a state of the arts ICT centre should be established in each of the universities in the state, and that each faculty should be made to have a prototype ICT centre for customized and specialised services to those faculties.

Keywords: Availability, ICT, Resource, Academic, Staff, Task, Performance

Introduction

The acquisition, utilization and maintenance of Information and Communication Technology (ICT) has gained prominence in educational management and delivery all over the world. Thus the delivery of quality teaching and learning, teachers' professional development in the area of research and efficient educational

management, governance and administration are all within ICT's range of educational usefulness. Akuegwu, Ntukidem, Ntukidem and Jaja (2012) state that the knowledge driven nature of the world powered by information technology in the center stage has made the place of ICT second to none in ensuring quality instructions in universities (Akpan, 2014; Mayisela, 2014; Oweyemi & Abayomi, 2013). Mohanty (2011) remarked on ICT's role in enhancing the quality of education to include its motivational role in facilitating the acquisition of basic skills and making learning more engaging and attractive. It is also said to bring about transformation when put to appropriate use by shifting attention to learners.

Though difficult to be completely captured in a single definition because it continuously evolves, Idaho Assistive Technology Project (2007) defined Information and Communication Technology as products that store, process, transmit, convert, duplicate, or receive electronic information, and they include: software applications and operating systems. The technologies under this umbrella name include, according to the source, video equipment and multimedia products that may be distributed on videotapes, CDs, DVDs, email, or the World Wide Web; office appliances, such as photocopiers and fax machines; calculators; and computer hardware. Electronic textbooks, instructional software, email, chat, and distance learning programs are also examples of ICT and related gadgets (Yusuf, 2005).

Task performance, according to Borman and Motowidlo cited in Rotundo and Sackett (2002), is the proficiency with which specific activities that are formally recognized as part of an individual's job is performed to the extent that it contributes to organization's goals attainment. Zulkipli, Nordin and Ismail, (2013) visualize task performance as, among other things, being indicative of whether a staff comes to work on time, completes specific work assignments, has the ability to work independently and many other things. Academic staff in universities are expected to teach required units of courses in a semester, assess and evaluate students according to the academic calendar, supervise required number of students in a session, and publish required number of researches within a particular period. These involve adequate and timely lesson planning, sourcing of relevant materials and allocation of adequate time for lesson preparation, obtaining relevant instructional materials for effective lesson delivery, regular and timely attendance of classes for teaching and learning, clear and effective communication of the subject matter in curriculum delivery and timely students' assessment and release of results among other routine activities. While many staff do these competently and with self-acquittal, some are found wanting in doing their part of tasks performance.

The connection between ICT utilization and academic staff task performance is captured in the study conducted by Chaputula (2012), who researched into the state,

adoption and use of ICTs by students and academic staff at Mzuzu University in Malawi. It was discovered that though the state of ICTs at Mzuzu University was poor, the adoption and use of ICTs was high and thus aided the effectiveness of staff and students of the university especially in the areas of academic-related word processing tasks, including internet access. Mohanty (2011) further suggests that Computer Aided Instructions (CAI) can facilitate academic staff effective instructional delivery to students directly by aiding students' direct interaction with the lessons programmed into computer systems without the teacher intervening or making any fresh instruction. This is particularly useful for tutorials, drills and simulations thus exploiting a defining feature of ICTs which is their ability to transcend time and space to make possible asynchronous teaching and learning: a learning characterized by a time lag between the delivery of instruction and its reception by learners as held by the source. Furthermore, online course materials, for example, may be accessed at convenience and at anytime by students.

With ICTs, academic staff do not have to rely solely on printed books and localised libraries for research needs. The Internet and the World Wide Web with their wealth of learning materials in vast areas of human endeavour bring the much needed academic information to staff for research and teaching thus saving them from the burden of outdated local library resources; heads of institutions, heads of faculties and departments need ICTs to provide accurate and up-to-date information so that their actions would be based on facts and figures and not on speculation. Such ICT facilities like Wi-Fi technology, which allow electronic devices to connect to the internet, Bluetooth wireless technology which makes use of short-wavelength radio waves and helps to create personal area network (PAN), Virtual Library, Wide Area Network, Microsoft Tools, and institutional Website, Electronic Mailing, and Global System Mobile Telephony resources availability in the right quantity and quality is rightly associated with enhanced task performance of academic staff in these universities.

Purpose of the study

The purpose of the study was to ascertain if Information and Communication Technology (ICT) resource availability influences academic staff task performance in the areas of teaching, research and community service.

Hypothesis

H₀₁: ICT resource utilization does not significantly influence academic staff task performance in the areas of teaching, research and community service.

Methodology

The study adopted the survey design because it was an assessment of ICT resource situation and its influence on academic staff task performance as obtained at the time of investigation through studying large and small populations from selected samples of the population as recommended by Kellinger in Isangedighi, Joshua, Asim, and Ekuri (2004). The study was conducted in Cross River State of Nigeria with Calabar as the state capital. Cross River State has an area of 20,156 square kilometers, 18 Local Government Areas with population of 3,821,394 as projected at a yearly growth rate of 2.8 percent from the 2006 National Population Commission (NPC) census. There are also two government owned universities and one private university in the State. The universities are: University of Calabar (UNICAL) owned by the Federal Government of Nigeria, Cross River University of Technology (CRUTECH) with Campuses in Calabar, Obubra and Ogoja, which is owned by the State government, and Arthur Javis University which is a private university. The population of the study was all the academic staff in the two public universities in Cross River State owned by government with academic staff strength of 2358 lecturers according to statistics from the institutions: The University of Calabar (UNICAL) had 1910, and Cross River University of Technology (CRUTECH) had 448 academic staff. Multistage sampling technique was used to select 577 academic staff as research sample. The universities were first stratified along proprietorship into Federal and state universities; secondly, by balloting process, 30 out of the 75 departments were selected from UNICAL, and 16 out of the 40 departments were selected from CRUTECH. The third stage saw 478 academic staff randomly selected from the 30 departments of UNICAL while 112 were sampled from the 16 departments in CRUTECH. The sample of the study was 590 academic staff randomly selected from the two public universities sited in Cross River State. However, the eventual sample was 577 as a result of elimination of non-returned questionnaire.

The instrument for data collection was questionnaire titled "Information and Communication Technology Resource Availability and Academic Staff Task Performance in Universities Questionnaire (ICTRAASTPUQ). The research instrument was divided into sections A and B. Section A gathered data on ICT resources availability, while section B gathered data on academic staff task performance. There were 30 items in section A, with the response options of High (H); Moderately (M); Low (L); Not Available (NA); while section B had 24 items with response options of Always (A); Sometimes (S); Rarely (R), Never (N). The instrument was validated by experts in Measurement and Evaluation, Faculty of Education, University of Calabar and reliability tested using the Cronbach reliability test which produced reliability coefficient value of 0.88 indicating that the instrument was reliable enough for use in the study. Analysis was done using One-Way Analysis of Variance (ANOVA).

Presentation of results

H01: Information and Communication Technology (ICT) resource availability does not significantly influence academic staff task performance.

The independent variable is ICT resource availability which was seen in three categories of high availability, moderate availability and low availability. One-Way Analysis of Variance (ANOVA) was applied as the statistical tool to establish the influence of ICT resource availability on academic staff task performance in the aspects of teaching, research and community services. Summary of the results is presented in Table 1.

Table 1: Descriptive statistics and One-Way Analysis of Variance of influence of ICT resource availability on academic staff task performance (N = 577)

Academic staff task performance	ICT resource availability	N	Mean	Std. Deviation
Teaching	High	93	25.13	3.69
	Moderate	231	23.16	3.14
	Low	253	21.96	3.44
	Total	577	22.95	3.54
Research	High	93	26.39	3.20
	Moderate	231	23.82	2.92
	Low	253	22.80	3.77
	Total	577	23.79	3.58
Community services	High	93	26.05	3.59
	Moderate	231	24.22	3.19
	Low	253	22.20	3.96
	Total	577	23.63	3.87

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Academic staff task performance	Source of variation	SS	Df	MS	F	Sig.
Teaching	Between Groups	701.50	2	350.75	30.98*	.000
	Within Groups	6498.05	574	11.32		
	Total	7199.54	576			
Research	Between Groups	876.20	2	438.10	38.75*	.000
	Within Groups	6489.15	574	11.31		
	Total	7365.35	576			
Community services	Between Groups	1143.18	2	571.59	43.89*	.000
	Within Groups	7475.19	574	13.02		
	Total	8618.37	576			

*p<.05; df: 2 and 574; critical F = 3.02

Table 1 showed that at .05 level of significance and degrees of freedom 2 and 574, the critical F-ratio is 3.02. The calculated F-ratios obtained in establishing the influence of ICT resource availability on the three aspects of academic staff task performance are as follows: teaching, $F = 30.98$ ($p < .05$); research, $F = 38.75$ ($p < .05$); community services, $F = 43.89$ ($p < .05$). The calculated F-ratios were seen to be greater than the critical F-ratio with their obtained significant values less than .05 level of significance used in the study. With these results, the null hypothesis was rejected and the alternate accepted that ICT resource availability significantly influence academic staff task performance. With the obtaining of significant F-ratios, a post hoc test was carried out using Fisher's Least Significant Difference (LSD) multiple comparison to ascertain between the groups where the significance occurred among the three categories of the independent variable, with pair-wise comparison. The three categories of the independent variable compared are: high ICT resource availability, moderate ICT resource availability and low ICT resources availability. The results are presented in Table 2.

Table 2: Fisher's Least Significant Difference (LSD) multiple comparison of influence of ICT resource availability on academic staff task performance

Academic staff task performance	ICT resource availability	High (n = 93)	Moderate (n = 231)	Low (n = 253)
Teaching	High	25.13 ^a	1.97 ^b	3.17 ^b
	Moderate	8.05* ^c	23.16 ^a	1.20 ^b
	Low	13.47* ^c	5.43* ^c	21.96 ^a
msw = 11.32				
Research	High	26.39 ^a	2.57 ^b	3.59 ^b
	Moderate	10.51* ^c	23.82 ^a	1.02 ^b
	Low	15.24* ^c	4.61* ^c	22.80 ^a
msw = 11.31				
Community services	High	26.05 ^a	1.83 ^b	3.85 ^b
	Moderate	7.07* ^c	24.22 ^a	2.02 ^b
	Low	15.44* ^c	8.55* ^c	22.20 ^a
msw = 13.02				

*p<.05

a. Group means are placed on the diagonal

b. Difference between the group means are placed above the diagonal

c. Fishers LSD t-value are placed below the diagonal

Table 2 showed that with regards to teaching, the comparison of respondents with high ICT resource availability with moderate and low ICT resource availability showed the following t-values: high and moderate, $t = 8.05$ ($p < .05$); high and low, $t = 13.47$ ($p < .05$). The comparison of moderate and low yielded the t-value of 5.43 ($p < .05$). Significant difference was observed in the comparison of high and moderate. However, significant difference also occurred in the comparison of high and low and the comparison of moderate and low, with positive t-values showing that the significance is in favour of the first comparison groups. This showed that academic staff provided with high ICT resource availability in their school can carry out their teaching task better than those provided with moderate and low ICT resource availability in their school. Also, those provided with moderate ICT resource availability can carry out their teaching task better than those that their institution provided low ICT resource availability.

With regards to research, the comparison of respondents with high ICT resource availability with moderate and low ICT resource availability showed the following t-values: high and moderate, $t = 10.51$ ($p < .05$); high and low, $t = 15.24$ ($p < .05$). The comparison of moderate and low yielded the t-value of 4.61 ($p < .05$). Significant difference was observed in the comparison of high and moderate. However, significant difference also occurred in the comparison of high and low and the comparison of moderate and low, with positive t-values showing that the significance is in favour of the first comparison groups. This showed that academic staff provided with high ICT resource availability in their school can carry out their research task better than those provided with moderate and low ICT resource availability in their school. Also, those provided with moderate ICT resource availability can carry out their research task better than those that their institution provided low ICT resource availability.

With regards to community services, the comparison of respondents with high ICT resource availability with moderate and low ICT resource availability showed the following t-values: high and moderate, $t = 7.07$ ($p < .05$); high and low, $t = 15.44$ ($p < .05$). The comparison of moderate and low yielded the t-value of 8.55 ($p < .05$). Significant difference was observed in the comparison of high and moderate. However, significant difference also occurred in the comparison of high and low and the comparison of moderate and low, with positive t-values showing that the significance is in favour of the first comparison group. This showed that academic staff provided with high ICT resource availability in their school can carry out their community services task better than those provided with moderate and low ICT resource availability in their school. Also, those provided with moderate ICT resource availability can carry out their community services task better than those that their institution provided low ICT resource availability.

Discussion of findings

The hypothesis sought to determine whether or not ICT resource availability influences academic staff task performance in terms of teaching, research and community services. The finding showed that ICT resource availability significantly influences academic staff task performance in the aspects of teaching, research and community services. Thus, the null hypothesis was rejected. This finding is a suggestion that the level of ICT resource availability in universities in Cross River State determines the level of academic staff teaching, research and community services task performance. This means that the degree to which academic staff in universities in Cross River State engage in teaching, research and community services task performance are general reflection of the level of presence of Virtual Library, Wide Area Network, Microsoft Tools, Institutional Website, Electronic Mailing, and Global System Mobile Telephony resources. This however, can be on the positive or negative direction depending on the adequacy or inadequacy of ICT resource availability. The

high capacity, versatility and ease of ICT resource in every section of modern human endeavour, especially in information gathering, production, storage, management, dissemination and monitoring makes ICT a necessary resource for academic staff task performance. This is supported by Akpan (2014), Mayisela (2014), Oweyemi and Abayomi (2013), Akuegwu, Ntukidem, Ntukidem and Jaja (2011). Their findings showed that application of ICT by staff in teaching and research positively influence and enhance their job effectiveness and efficiency. Such impact are noticeable in the areas of improved teaching methodology, students' assessments and tracking, quicker and easier communication and networking with professional colleagues, and innovation in research, publication and presentation.

The world of ICT provides excitement and increased human potential. It gives great and wide opportunities, breaking barrier of distance, race, tribe, and status. This stimulates exploration, research and self-promotion and selling on the part of academic staff. Adequate availability of Microsoft tool will aid the staff in easy and convenient preparation, development, storage, retrieval and transfer of teaching and research. Institutional website, when adequately available, will enhance administration of lesson and assessment to students, staff access to varied and wide reservoir of knowledge to source for teaching and research materials as well as outlet for publication of research output, and collaborate with colleagues. Quality teaching is determined by the quality of instructional preparation, development, delivery and assessment. This will depend on the availability and accessibility of subject matter materials, instruments for preparation and development, and facilities for delivery. Adequate availability of ICT resource offers academic staff transformed teaching technique. ICT offers varied and accessible sources of information on subject matter thereby giving staff opportunities to gather quality volume of course materials with ease.

The Microsoft tools are veritable instrument of easy and convenient course preparation, organization and delivery. With the PowerPoint and multi-media presentation, lessons are delivered clearly and effectively. Academic staff can easily transmit course materials and lessons to students; administer students' assessment and projects through the internet when face to face meeting is not possible. Students' encountering challenges with their course content can use the mobile phone calls and text messages to reach their teachers and ask questions. This ability of academic staff to employ ICT to improve their knowledge, prepare and deliver robust course content makes teaching interesting and exciting to stimulate academic staff commitment, zeal, resourcefulness and conscientiousness. Conversely, inadequate availability of ICT resource will make teaching old fashioned, time wasting, boring and ineffective in this era of information age. It creates a distance between the staff and reservoir of course materials and students. Staff ability to source for materials will be limited to the library with lean result. Communication of course contents will lack innovativeness, limited

to face to face meeting, strenuous and ineffective. This in effect will have negative effect on teaching effectiveness and efficiency of teachers which could lead to stress, frustration, and loss of morale on the part of academic staff. This in effect will limit their task performance.

Conclusion

ICTs are powerful tools for enhancing educational engagement for academic staff in universities at the teaching, research and community service levels of their duties. It is clear from the findings of this research that the higher the availability of ICTs, the higher academic staff performance in terms of teaching, research and community services. Thus use of Computer Aided Instructions (CAI) can enhance academic staff effective instructional delivery to students directly, and make possible asynchronous teaching and learning in which students who, for one reason or the other, could not be in class can access resources via the internet at his or her convenience. It is obvious that with ICTs, academic staff do not have to rely solely on printed books and localised libraries for research needs as the internet and the World Wide Web hold the much needed academic information to staff for research and teaching in addition to access to resource persons, mentors, experts, researchers, professionals, business leaders, and peers all over the world thus encouraging and facilitating collaborative researches. Community service duties of academic staff especially in areas of educational planning, management and administration constantly need proper data management and processing which ICT is of great relevance. Managing university educational processes needs ICTs to provide accurate and up-to-date information so that actions are based on facts and figures and not on speculation. There is no doubt that the provision of ICTs to the different departments of universities will enhance the effectiveness of academic staff and their unavailability will not only stunt their growth, but the growth of the students which they teach; it will further downgrade their task performances and make them ineffective.

Recommendations

1. University authorities should empower academic staff with Laptops and Tablets for personal use on appointment and conduct ICT literacy workshop for newly appointed academic staff of universities to ensure their ICT literacy and compliance.
2. University authorities should acquire Projectors and Interactive White Boards or Smart Boards for display of projected computer images and install them in classrooms for effective integration of ICT into instructional processes in the Nigerian university system.
3. Faculties in universities should have customized ICT Resource Rooms with e-readers and other electronic devices that can hold hundreds of books in digital form, for delivery of reading materials for students and staff use.

4. The National Universities Commission (NUC) should set benchmark for ICT facilities needed in universities, and compliance with the benchmark should form an important condition for denying or giving accreditation to departments in universities.

5. Individual university authorities should engage in ICT facilities audit and maintenance schedule to ensure availability and functionality of ICTs in different departments in universities.

6. Individual university authorities should install specific ICT gadgets like the Wi-Fi for free internet surfing, and office appliances such as photocopiers, fax machines and scanners for easy community service execution.

7. To circumvent the menace of power outages, University Authorities should install powerful generators with appropriate KVA capacity in each faculty capable of supplying power for continuous use of ICT gadgets.

References

- Akpan, C. P. (2014). ICT Competence and lecturers' job efficacy in Universities in Cross River State, Nigeria. *International Journal of Humanities and Social Science*, 4(10), 259-266.
- Akuegwu, B. A., Ntukidem, E. P., Ntukidem, P. J. & Jaja, G. (2011). Information and communication technology (ICT) facilities utilization for quality instruction service delivery among universities lecturers in Nigeria. *Review of Higher Education in Africa*, 3(1), 33-53.
- Chaputula, A. H. (2012). State, adoption and use of ICTs by students and academic staff at Mzuzu University, Malawi. *Program*, 46(4), 364-382.
- Idaho Assistive Technology Project (2007) Information and communication Technology (ICT). Retrieved from <https://idahoat.org/services/resources/ict> on January 6, 2019.
- Isangedighi, A. J., Joshua, M. T., Asim, A. E. & Ekuri, E. E. (2004). *Fundamentals of research and statistics in education and social sciences*. Calabar: University of Calabar Press.
- Mayisela, T. (2013). Assessing how e-learning implementation has enhanced the Lecturers' teaching practices at a South African University. *International Journal of Educational Sciences*, 6(1), 117-124.
- Mohanty, M. M. (2011). ICT Advantages and Disadvantages. Retrieved from <http://www.ict-avd-disadv.blogspot.com.ng/2011/02/introduction-to-ict.html> on September, 4, 2015.
- Owoyemi, T. E. & Abayomi, T. (2013). Factor analytic study of internet usage by Lecturers in Nigerian institutions of higher learning. *Global Journal of Human Social Science Linguistics & Education*, 13(11), 6-13.
- Rotundo, M. & Sackett, P. R. (2002). The relative importance of task, citizenship, and counterproductive performance to global ratings of job performance: A policy-capturing approach. *Journal of Applied Psychology*, 87(1), 66-80.

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- Yusuf, M. O. (2005). Integrating information and communications technologies (ICTs) in Nigerian tertiary education. *The African Symposium: An Online Journal of African ASD Educational Research Network*, 5(2), 43-50.
- Zulkipli, I., Nordin, M. S. & Ismail, N. A. H. (2013). *Validity of factor structure of the TVET graduates' job performance inventory*. Paper presented at the European Conference on Education. Retrieved from <http://www.iafor.org> on April 6, 2016.