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Impact of COVID-19 Pandemic on ICT Competency among Academic Staff in Selected Nigerian Universities

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Abstract

The COVID-19 pandemic brought about a revolutionary change in educational systems around the world and forced the adoption of ICT in the teaching-learning process. This paper investigated the impact of this pandemic on ICT competency in selected Nigerian universities. A sample of 334 academic staff of public universities in Ogun State, Nigeria was selected through the stratified random sampling technique. The COVID-19 Pandemic and ICT Competency Questionnaire (CPICQ) was utilized for data collection. Simple linear regression was used to analyze the three formulated hypotheses at the .05 significance level. The COVID-19 pandemic was found to significantly impact general computing skills (Beta = .286, t = 12.748, p < .05), use of presentation packages (Beta = .257, t = 10.845, p < .05) and use of Internet resources (Beta = .319, t = 14.384, p < .05). It was recommended, among other things, that ICT competency of academic staff of Nigerian universities should be reinforced by exposing them to ICT training.

Keywords: *COVID-19 Pandemic, ICT Competency, General Computing Skills, Presentation Packages, Internet Resources.*

Introduction

The global COVID-19 pandemic disrupted traditional face-to-face association, communication and interactions among people in all parts of the world. In particular it has fast-tracked the utilization of information and communication (ICT) by university academic staff for the instruction and evaluation of learners. As pointed out by UNESCO (2020), universities and other educational institutions were shut and stern restrictions were imposed on physical interactions among people. This necessitated the massive application of ICT in the educational industry as a viable alternative or supplement to traditional classroom

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instruction. Since lecturers were compulsorily required to engage in remote/online teaching, they were compelled to acquire the requisite ICT competency and enhance their knowledge and skills in the use of technology. During the last two decades education institutions have invested heavily in ICT particularly computers. Universities now have ICT Centres on their various campuses and computer-based tests (CBTs) are being increasingly used for the assessment of student learning (Eze, Chinedu-Eze& Bello, 2018). These innovations are naturally expected to increase the knowledge and skills of university academic staff in the application of ICT.

More than 1 billion and 575 million students in approximately 188 countries around the world are reported to have been affected by the closure of schools and universities due to preventive measures adopted by countries to combat the spread of COVID-19 (UNESCO, 2020). Due to isolation, the use of technology has been considered the most appropriate (if not the only) alternative to keep educational systems functional in many parts of the world during this period. Despite the challenges in its implementation, several advantages have been acknowledged in the need to shift to remote or online learning, among which stands out the opportunity for rapid knowledge and ICT skills of both students and lecturers in digital education, which otherwise might have taken years to acquire (Loudoun, 2020). The shift to the remote learning format has also been assessed as a good opportunity for teachers and students to become stronger, more creative, and innovative (Abdullahi 2020). The implication of these findings are that the COVID-19 pandemic may provide an opportunity for academic staff of universities to acquire and/or improve their skills in the application of ICT to the teaching-learning process.

Ogunsola (2015) observes that the effect of computer use on the teaching-learning process is currently in relation to the Internet to facilitate teaching and learning. Computers are the technologies used in conveying, manipulation and storage of data by electronic means, they provide an array of powerful tools that may help in transforming the present isolated teacher-centred and text-bound classrooms into rich, student-focused, interactive knowledge environments. This suggests that the increased use of computers that was a reaction to the COVID-19 pandemic would help the student to optimize his/her learning and academic achievement and the lecturer to enhance his/her ICT competency.

Hypotheses

1) COVID-19 pandemic has no significant impact on general computing skills among academic staff in Ogun State universities.
2) COVID-19 pandemic has no significant impact on use of presentation packages among academic staff in Ogun State universities.
3) COVID-19 pandemic has no significant impact on use of Internet resources among academic staff in Ogun State universities.

Methods

Design, Population, Sample, and Sampling Technique

This paper adopted the descriptive survey research design. The population consisted of the academic staff members or lecturers of public universities in Ogun State, Nigeria. A sample size of 350 lecturers was used for this study. The participants were selected through the stratified random sampling technique from the three public universities in Ogun State, Nigeria, namely, Federal University of Agriculture, Abeokuta (n = 138), Olabisi Onabanjo University, Ago-Iwoye (n = 124) and Tai Solarin University of Education, Ijagun (n = 88).

Instruments

Data used for this investigation were collected from the participants through an instrument styled, "COVID-19 Pandemic and ICT Competency Questionnaire (CPICQ)" developed by the researcher. This instrument consists of 24 items having three dimensions in a 4-point Likert-type format with responses ranging from 1 = Strongly Disagree to 4 = Strongly Agree. A 4-point Likert scale was used in the study to eliminate a neutral option, thereby making respondents to make a definitive choice and provide clearer insights into their ICT competency during the COVID-19 pandemic. The researcher did not force the responses, every respondent filled the consent form. Moreover, respondents had opportunity to continue or withdraw from the study. The 4-point Likert scale response format has been widely used in researches. Some scholars discouraged the use of neutral option in quantitative studies because in coding and scaling the neutral option tends to take higher scores than some indicative responses such as disagree or strongly disagree and this tends to make the analysis parsimonious.

This approach helps to reduce ambiguity in responses and enhances the reliability of the data collected. Sample items on the instrument includes 1. *I can operate the computer efficiently* and 2. *I can use the computer to communicate with others.* The developer used test-retest method to assess the reliability of the CPICQ in a sample of 20 academic staff of polytechnic in the study area. A two-week interval elapsed between the two administrations of the instrument and the test-retest reliability coefficient was .85 which shows the stability of the scale over time. Expert opinion was relied upon to determine the validity of the CPICQ.

Procedure

The instruments were personally administered by this researcher on the participants in their various institutions after obtaining the permission of the school authorities and informed consent of the participants. This administration lasted for one week. Out of the 350 copies of the questionnaire administered, 334 were retrieved and used for the study. Thus, there was an attrition rate of 4.6%.

Method of Data Analysis

Data collected were tested using simple linear regression analysis at the .05 level of significance.

Results

Hypothesis One

Ho1: COVID-19 pandemic has no significant impact on general computing skills among academic staff in Ogun State universities.

Table 1: Regression Coefficients for the Impact of COVID-19 Pandemic on General Computing Skills

	B	Std Error	Beta	t	Sig.
(Constant)	10.569	5.629		15.946	.000
COVID-19	.104	.025	.286	12.738	.000

Dependent Variable: General Computing Skills

Table 1 revealed significant results (*Beta* = .286, *t* = 12.748, *p* < .05). As such, the null hypothesis is rejected while the alternative hypothesis is upheld. Hence, COVID-19 pandemic has a significant impact on general computing skills among academic staff in Ogun State universities.

Hypothesis Two

Ho2: COVID-19 pandemic has no significant impact on use of presentation packages among academic staff in Ogun State universities.

Table 2: Regression Coefficients for the Impact of COVID-19 Pandemic on Use of Presentation Packages

	B	Std Error	Beta	t	Sig.
(Constant)	7.306	4.110		13.880	.000
COVID-19	.138	.174	.257	10.845	.000

Dependent Variable: Use of Presentation Packages

Table 2 revealed significant results (*Beta* = .257, *t* = 10.845, *p* < .05). As such, the null hypothesis is rejected while the alternative hypothesis is upheld. Hence, COVID-19 pandemic has a significant impact on use of presentation packages among academic staff in Ogun State universities.

Hypothesis Three

Ho3: COVID-19 pandemic has no significant impact on use of Internet resources among academic staff in Ogun State universities.

Table 3: Regression Coefficients for the Impact of COVID-19 Pandemic on Use of Internet Resources

	B	Std Error	Beta	t	Sig.
(Constant)	11.925	8.503		18.005	.000
COVID-19	.048	.077	.319	14.384	.000

Dependent Variable: Use of Internet Resources

Table 3 revealed significant results (*Beta* = .319, t = 14.384, $p < .05$). As such, the null hypothesis is rejected while the alternative hypothesis is upheld. Hence, COVID-19 pandemic has a significant impact on use of Internet resources among academic staff in Ogun State universities.

Discussion

The examination of the impact of COVID-19 on ICT competency which was carried with a sample of university lecturers in the study area was exploratory and was prompted by the need to enhance ICT competency in view of the demands of contemporary education. Three hypotheses were formulated to determine whether the COVID-19 pandemic would have a significant impact on participants' general computing skills, use of presentation packages, and use of Internet resources.

The first null hypothesis which stated that COVID-19 pandemic has no significant impact on general computing skills among academic staff in Ogun State universities was found to be unsupported by data. Hence, it was rejected and the alternative hypothesis was upheld: COVID-19 pandemic has a significant impact on general computing skills among academic staff in Ogun State universities. The positive value of the beta coefficient indicates that the pandemic led to an increase in general computing skills. This could be explained by the fact that the lockdown of universities and social distancing which were put in place to limit the spread of COVID-19 compelled university lecturers to look for alternative means of communicating with their students. The only viable means of doing this was through the use of ICT. Thus, acquisition of necessary computer skills by lecturers was considered not an option but a necessity.

The second null hypothesis which stated that COVID-19 pandemic has no significant impact on use of presentation packages among academic staff in Ogun State universities was found to be unsupported by data. Hence, it was rejected and the alternative hypothesis was upheld: COVID-19 pandemic has a significant impact on use of presentation packages among academic staff in Ogun State universities. This could be explained by the fact that the COVID-19 lockdown compelled lecturers to hone their ability to use presentation software to convey academic information to their students through highlights and summaries.

The third null hypothesis which stated that COVID-19 pandemic has no significant impact on use of Internet resources among academic staff in Ogun State universities was found to be unsupported by data. Hence, it was rejected and the alternative hypothesis was upheld: COVID-19 pandemic has a significant impact on use of Internet resources among academic staff in Ogun State universities. This could be explained by the fact that the COVID-19 pandemic, which necessitated physical distancing and closure of universities, provided no other alternative for academic staff than to utilize online resources to reach their students. Since necessity is the mother of invention, lecturers were compelled to acquire or increase competency in the use of Internet resources in order to communicate with their students remotely.

Conclusion and Recommendations

From the findings from this study, it can be concluded that the COVID-19 pandemic had significant positive impact on ICT competency among academic staff in selected Nigerian universities. Specifically, it had the strongest impact on staff's use of Internet resources, followed by their General Computing Skills and use of presentation packages in that order. In other words, the pandemic increased the ICT competency of academic staff. Based on these findings and conclusion, the following recommendations were made:

a) The increased ICT competency of academic staff of Nigerian universities occasioned by the COVID-19 pandemic should be reinforced by exposing them to further training on the utilization of ICT facilities.
b) University authorities should provide their academic staff with needed ICT resources such as computers, modems, Internet networks, projectors, computer laboratories, and so on in order to enhance their ICT competency.
c) Government should increase the funding of universities and make it compulsory for all academic staff members to have good ICT competency that can make them operate not only in real time but also virtually.
d) University authorities should carry out periodic ICT competency tests for their staff and those who are found to be deficient should be shown the way out.
e) Government, education authorities and Internet Service Providers should expand fast, reliable facilities and Internet access on the campuses so that not only academic staff but also students can have easy access to online resources, thereby minimizing learning disruption resulting from the COVID-19 pandemic.
f) Government and university authorities should ensure the provision of regular power supply in the universities.

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