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# ICT FACTORS AND LECTURERS' PRODUCTIVITY IN PUBLIC COLLEGES OF EDUCATION IN THE NEW NORMAL

**[1]Emmanuel A. Isah**
*E-mail: emmanisah1959@yahoo.com*

**[2]Ayeni, Folake Catherine**
*E-mail: ayenicf@gmail.com*
*[1&2]Department of Educational Management, University of Ibadan*



**Abstract**

*The outbreak of COVID-19 pandemic introduced a new normal into the business world and the higher education environment. The pandemic has served as an existential threat to humanity resulting in productive dynamism in higher education system particularly in the demand for enhanced productivity of lecturers through Information Communications Technology (ICT) factors (availability, accessibility and functionality of ICT facilities). This study investigated ICT factors and the productivity of lecturers in public Colleges of Education in Nigeria in the new normal. The study was guided by one research question and one hypothesis. The survey research design was adopted for the study. The population for the study comprised of lecturers and students in Colleges of Education in the Southwestern geopolitical zone of Nigeria. The multi-stage procedure was adopted to draw a sample of 1,011Lecturers and 3,033 students. The findings of the study included the fact that ICT facilities are available, accessible and functional in public Colleges of Education in Southwestern Nigeria as they scored low ($\bar{x}$ = 0.00-2.44). Also, it was found from the hypothesis in this study that a significant relationship exists between ICT facilities factors (availability, accessibility, functionality) and lecturers' productivity (teaching) in public Colleges of Education in Southwestern Nigeria at r=0.125; 0.868 and 0.824; p<0.05 level of significance. The study recommended that Government should make sure that acquisition of computers and other related ICT facilities are available, adequately*

*accessible for lecturers and functioning properly. Additionally, training of lecturers to enhance ICT proficiency must be encouraged by the government.*

**Keywords:** *ICT factors, lecturers' productivity, new-normal, Nigeria.*

## Introduction

The outbreak of COVID-19 pandemic introduced a new normal in the world, as well as to higher education environment. The pandemic has served as an existential threat to humanity and to higher education in particular demanding for enhanced productivity among lecturers. Productivity of lecturers in Colleges of Education in Nigeria can be quantified in terms of research output, teaching output and community services. Research output involves (publications in local and international journals, attendance at local and international conferences, international seminars and workshops). Teaching output involves dissemination of knowledge to students, final year students' projects supervision and teaching practice supervision. Others in this category involves class (level) coordination, exanimation results preparation and in some other cases, rigorous administrative duties. Another index of lecturer's productivity is community services which is used in measuring the levels of output of lecturers. It is not a new fact that scholars have explained that the productivity of academic endeavors are measured differently from the approach adopted in the productive process. In the academic environment, measurement of productivity cannot be seen like in the industrial factories where productivity is made of tangible products (Akangbou, 1985 cited in Isah, 2012).

The quality of teaching carried out in College of Education has been adjudged to be of low standard when compared with counterparts in other parts of the world (Mohammed, 2017). Also, stakeholders have complained about the type of teachers produced in Nigerian Colleges of Education generating contentions on how the Colleges of Education graduates were produced which indirectly questions what lecturers do in Colleges of Education. The complaint is not about a section of CoEs, but all over, calling to question the level of productivity of lecturers in terms of teaching. These

stakeholders' contentions have been exacerbated in recent times by the outbreak of COVID-19 pandemic which has introduced a new dimension into the higher education environment. These contentions and counter arguments have inspired this investigation into the lecturers' productivity and ICT factors in public Colleges of Education in Southwestern, Nigeria.

The main purpose of this study is to investigate the extent of availability, accessibility and functionality of ICT facilities on lecturers' productivity(teaching) in Colleges of Education in southwestern, Nigeria.

**Statement of the Problem**

The world has been inundated by a series of new changes arising from local and global dynamisms which has also affected higher education that includes Colleges of Education. In Nigeria, Colleges of Education serve as a major producer of teachers for the lower schools i.e. basic schools. Dynamisms currently facing the professions includes threats to education in the form of terrorism and in recent times the COVID-19 pandemic. The arrival of COVID-19 generated pedagogical changes but in the Colleges of Education before now, stakeholders have complained of the productivity of their output (graduates). The challenges of Colleges of Education graduates have created the opportunities to also query the competence of the producers of these graduates who are the lecturers in the Colleges of Education. The first area that is usually questioned is the level of productivity of these lecturers. Productivity is seen as asking questions on the competence in the areas of teaching, research and community services. While some say that the level of productivity of these lecturers is low, others argue that it is not low. To address the issue of teaching, modern teaching technologies canvassed for Colleges of Education in the form of Information and Communications Technology (ICT) and its factors will be investigated as ICT availability, accessibility and functionality among Colleges of Education lecturers in southwestern, Nigeria. Before now, researchers had investigated much into the academic performance of Colleges of Education students and graduates. Though the same challenges were identified, attention was not

focused on the productivity of lecturers rather, research focus was on lecturers' welfare, qualifications among others.

**Research Question:**
What is the extent to which ICT facilities are available, accessible and functional in public Colleges of Education in southwestern Nigeria?

**Hypothesis:**
There is no significant relationship between ICT facilities factors (availability, accessibility and functionality) and lecturers' productivity (teaching) in public Colleges of Education in southwestern Nigeria.

**Methodology**
This study adopted the survey research design with a study population that comprised of lecturers and students from 16 (Sixteen) accredited Colleges of Education in southwestern Nigeria. The sample size for the study consisted of 1,011 lecturers and 3,033 students. The study sample consisted of respondents from six public Colleges of Education using the Multi-stage sampling procedure. Research instrument was the ICT factors and Lecturers' Productivity Questionnaire (ICTFLPQ) that was subjected to face and content validity. A trial test was conducted using ICTFLPQ on respondents outside the target group of the research through the Cronbach's alpha statistical tool that yielded a coefficient of 'r'=0.86. Data collected from the field were analyzed using descriptive statistics as frequency count, mean percentages, standard deviation, graphs charts for research questions and inferential statistics for the hypothesis. The Pearson Product Moment Correlation Coefficient was used to analyze the hypothesis at $p < 0.05$ level of significance.



**Finding and Results**

**Research Question1:** What is the extent to which ICT facilities are available, accessible and functional in public Colleges of Education in Southwestern Nigeria?

**Table 1: Extent to Which ICT Facilities are Available in Public Colleges of Education in Southwestern Nigeria**

| Items | Highly Available | Moderately Available | Scarcely Available | Not Available | Mean ($\bar{x}$) | Std. D |
|---|---|---|---|---|---|---|
| Desktop / Laptop computers with internet for every Lecturer | 101 (10.0) | 341 (33.7) | 319 (31.6) | 250 (24.7) | 2.29 | 0.95 |
| Interactive whiteboard/smart board | 78 (7.7) | 377 (37.3) | 388 (33.4) | 218 (21.6) | 2.31 | 0.90 |
| Commercially produced educational software | 70 (6.9) | 323 (31.9) | 404 (40.0) | 214 (21.2) | 2.25 | 0.87 |
| Institution Virtual Library (Digital Library) | 99 (9.8) | 420 (41.5) | 336 (33.2) | 156 (15.4) | 2.46 | 0.87 |
| Examination Scoring Machine (OMR) | 119 (11.8) | 345 (34.1) | 349 (34.5) | 198 (19.6) | 2.38 | 0.93 |
| Internally produced educational software | 71 (7.0) | 380 (37.6) | 392 (38.8) | 168 (16.6) | 2.35 | 0.84 |
| Multimedia projectors | 101 (10.0) | 418 (41.3) | 388 (38.4) | 104 (10.3) | 2.51 | 0.81 |
| Computer Aided Instruction Software | 55 (5.4) | 431 (42.6) | 383 (37.9) | 142 (14.0) | 2.40 | 0.79 |
| Online databases for lesson preparation. | 50 (4.9) | 367 (36.3) | 376 (37.2) | 218 (21.6) | 2.25 | 0.85 |
| Smart phones for teaching and research | 42 (4.2) | 402 (39.8) | 294 (29.1) | 273 (27.0) | 2.21 | 0.89 |
| Tablets phones for teaching and research | 45 (4.5) | 331 (32.7) | 337 (33.3) | 298 (29.5) | 2.12 | 0.89 |
| E -mail address for lecturers to access research-based portal e.g. Google Scholar, Research Gate, Orchid | 91 (9.0) | 351 (34.7) | 358 (35.4) | 211 (20.9) | 2.32 | 0.90 |
| Learning Management System (LMS) e.g., Zoom, I- Lab, Edmodo | 33 (3.3) | 376 (37.2) | 351 (34.7) | 251 (24.8) | 2.19 | 0.85 |
| Lecturers E-portal for downloading of registered students and uploading of students' scores. | 92 (9.1) | 366 (36.2) | 323 (31.9) | 230 (22.7) | 2.32 | 0.92 |
| **Weighted Average** | | | | | **2.31** | |

**N = 1011**

**Key: 4** = Strongly Agree, **3** = Agree, **2** = Disagree, **1** = Strongly Disagree

**Decision Rule: Low** = 0.00-2.44, **Moderate**=2.45-3.44 and **High** = 3.45-4.00

Mean values of all the items in Table 1 were added and divided by the number of items in the table. Applying the decision rule, the value of the weighted average (2.31 out of 4.00 maximum obtainable) falls with the decision value for ***Low Extent,*** therefore it can be concluded that the extent to which ICT facilities are available in public Colleges of Education in Southwestern Nigeria is low.

**Table (2): Levels of Accessibility of ICT Facilities in Public Colleges of Education in southwestern Nigeria.**

| Items | Highly Accessible | Accessible | Fairly Accessible | Not Accessible | Mean ($\bar{x}$) | Std. D |
|---|---|---|---|---|---|---|
| Desktop / Laptop computers with internet for every Lecturer | 74 (7.3) | 239 (23.6) | 439 (43.4) | 259 (25.6) | 2.13 | 0.88 |
| Interactive whiteboard/smart board | 54 (5.3) | 334 (33.0) | 382 (37.8) | 241 (23.8) | 2.20 | 0.86 |
| Commercially produced educational software | 108 (10.7) | 300 (29.7) | 416 (41.1) | 187 (18.5) | 2.33 | 0.90 |
| Institution Virtual Library (Digital Library) | 111 (11.0) | 355 (35.1) | 344 (34.0) | 201 (19.9) | 2.37 | 0.92 |
| Examination Scoring Machine (OMR) | 85 (8.5) | 274 (27.1) | 431 (42.6) | 221 (21.9) | 2.22 | 0.88 |
| Internally produced educational software | 82 (8.1) | 339 (33.5) | 365 (36.1) | 225 (22.3) | 2.28 | 0.90 |
| Multimedia projectors | 80 (7.9) | 414 (40.9) | 332 (32.8) | 185 (18.3) | 2.39 | 0.87 |
| Computer Aided Instruction Software | 101 (10.0) | 344 (34.0) | 417 (41.2) | 149 (14.7) | 2.39 | 0.86 |
| Online databases for lesson preparation. | 87 (8.6) | 307 (30.4) | 344 (34.0) | 273 (27.0) | 2.21 | 0.94 |
| Smart phones for teaching and research | 58 (5.7) | 320 (31.7) | 373 (36.9) | 260 (25.7) | 2.17 | 0.88 |
| Tablets phones for teaching and research | 82 (8.1) | 299 (29.6) | 379 (37.5) | 251 (24.8) | 2.21 | 0.91 |
| E -mail address for lecturers to access research-based portal e.g. Google Scholar, Research Gate, Orcid | 61 (6.0) | 310 (30.7) | 378 (37.4) | 263 (25.9) | 2.17 | 0.88 |
| Learning Management System (LMS) e.g., Zoom, I- Lab, Edmodo | 91 (9.0) | 281 (27.8) | 333 (32.9) | 306 (30.3) | 2.16 | 0.96 |
| Lecturers E-portal for downloading of registered students and uploading of students' scores. | 79 (7.8) | 279 (27.6) | 379 (37.5) | 274 (27.1) | 2.16 | 0.91 |
| **Weighted Average** | | | | | **2.24** | |

Table 2 shows the extent to which ICT facilities are accessible in public Colleges of Education in Southwestern Nigeria. The table reveals that the lecturers indicated all the ICT facilities to be *fairly accessible* only: desktop/laptop computers with internet for every lecturer ($\bar{x}$ = 2.13, SD = 0.88), interactive whiteboard/smart board ($\bar{x}$ = 2.20, SD = 0.86), commercially produced educational software ($\bar{x}$ = 2.33, SD = 0.90), institution Virtual Library (Digital Library) ($\bar{x}$ = 2.37, SD = 0.92), examination Scoring Machine (OMR) ($\bar{x}$ = 2.22, SD = 0.88), internally produced educational software ($\bar{x}$ = 2.28, SD = 0.90), multimedia projectors ($\bar{x}$ = 2.39, SD = 0.87), Computer Aided Instruction Software ($\bar{x}$ = 2.39, SD = 0.86), online databases for lesson preparation. ($\bar{x}$ = 2.21, SD = 0.94), smart phones for teaching and research ($\bar{x}$ = 2.17, SD = 0.88), tablets phones for teaching and research ($\bar{x}$ = 2.21, SD = 0.91), E -mail address for lecturers to access research-based portal e.g. Google Scholar, Research Gate, Orchid ($\bar{x}$ = 2.17, SD = 0.88), Learning Management System (LMS) e.g., Zoom, I- Lab, Edmodo ($\bar{x}$ = 2.16, SD = 0.96), Lecturers E-portal for downloading of registered students and uploading of students' scores ($\bar{x}$ = 2.16, SD = 0.91). Applying the same decision rule in table 4.7a, the value of the weighted average (2.24 out of 4.00 maximum obtainable) falls with the decision value for ***Low Extent,*** therefore it can be concluded that the extent to which ICT facilities are accessible in public Colleges of Education in Southwestern Nigeria is low.

**Table 3: Level of Functionality of ICT Facilities in Public Colleges of Education, southwestern Nigeria.**

| Items | Adequately Functioning | Moderately Functioning | Fairly Functioning | Not Functioning | Mean ($\bar{x}$) | Std. |
|---|---|---|---|---|---|---|
| Desktop / Laptop computers with internet for every Lecturer | 94 (9.3) | 341 (33.7) | 305 (30.2) | 271 (26.8) | 2.26 | 0.96 |
| Interactive whiteboard/smart board | 65 (6.4) | 371 (36.7) | 348 (34.4) | 227 (22.5) | 2.27 | 0.89 |
| Commercially produced educational | 68 (6.7) | 346 (34.2) | 337 (33.3) | 260 (25.7) | 2.22 | 0.91 |

| | | | | | | |
|---|---|---|---|---|---|---|
| software | | | | | | |
| Institution Virtual Library (Digital Library) | 107 (10.6) | 406 (40.2) | 293 (29.0) | 205 (20.3) | 2.41 | 0.93 |
| Examination Scoring Machine (OMR) | 104 (10.3) | 329 (32.5) | 325 (32.1) | 253 (25.0) | 2.28 | 0.95 |
| Internally produced educational software | 87 (8.6) | 341 (33.7) | 333 (32.9) | 250 (24.7) | 2.26 | 0.93 |
| Multimedia projectors | 88 (8.7) | 386 (38.2) | 356 (35.2) | 181 (17.9) | 2.38 | 0.88 |
| Computer Aided Instruction Software | 72 (7.1) | 409 (40.5) | 312 (30.9) | 218 (21.6) | 2.33 | 0.89 |
| Online databases for lesson preparation. | 31 (3.1) | 310 (30.7) | 372 (36.8) | 298 (29.5) | 2.07 | 0.85 |
| Smart phones for teaching and research | 37 (3.7) | 349 (34.5) | 352 (34.8) | 273 (27.0) | 2.15 | 0.86 |
| Tablets phones for teaching and research | 66 (6.5) | 301 (29.8) | 381 (37.7) | 263 (26.0) | 2.17 | 0.89 |
| E -mail address for lecturers to access research-based portal e.g. Google Scholar, Research Gate, Orcid | 87 (8.6) | 313 (31.0) | 390 (38.6) | 221 (21.9) | 2.26 | 0.90 |
| Learning Management System (LMS) e.g., Zoom, I-Lab, Edmodo | 39 (3.9) | 346 (34.2) | 353 (34.9) | 273 (27.0) | 2.15 | 0.86 |
| Lecturers E-portal for downloading of registered students and uploading of students' scores. | 113 (11.2) | 334 (33.0) | 391 (38.7) | 173 (17.1) | 2.38 | 0.90 |
| **Weighted Average** | | | | | **2.26** | |

Table (3) shows the extent to which ICT facilities are functioning in public Colleges of Education in Southwestern Nigeria. The table reveals that the lecturers indicated all the ICT facilities to be *fairly functioning* only: desktop/laptop computers with internet for every lecturer ($\bar{x}$ = 2.26, SD = 0.96), interactive whiteboard/smart board ($\bar{x}$ = 2.27, SD = 0.89), commercially produced educational software ($\bar{x}$ = 2.22, SD = 0.91), institution Virtual Library (Digital Library) ($\bar{x}$ = 2.41, SD = 0.93), examination Scoring Machine (OMR) ($\bar{x}$ = 2.28, SD = 0.95), internally produced educational software ($\bar{x}$ = 2.26, SD = 0.93), multimedia projectors ($\bar{x}$ = 2.38, SD = 0.88), Computer Aided Instruction Software ($\bar{x}$ = 2.33, SD = 0.89), online databases for lesson preparation. ($\bar{x}$ = 2.07, SD = 0.85), smart phones for teaching and research ($\bar{x}$ = 2.15, SD = 0.86), tablets phones for teaching and research ($\bar{x}$ = 2.17, SD = 0.89), E -mail address for lecturers to access research-based portal e.g. Google Scholar, Research Gate, Orchid ($\bar{x}$ = 2.26, SD = 0.90), Learning Management System (LMS) e.g., Zoom, I- Lab, Edmodo ($\bar{x}$ = 2.15, SD = 0.86), lecturers E-portal for downloading of registered students and uploading of students' scores ($\bar{x}$ = 2.38, SD = 0.90).

Applying the same decision rule, the value of the weighted average (2.26 out of 4.00 maximum obtainable) falls with the decision value for ***Low Extent,*** therefore it can be concluded that the extent to which ICT facilities are functioning in public Colleges of Education in Southwestern Nigeria is low.

**Hypothesis**

There is no significant relationship between ICT facilities factors (availability, accessibility, functionality) and lecturers' productivity (teaching) in public Colleges of Education in southwestern Nigeria.

**Table 4: Correlation Matrix of Relationship among ICT Facilities Availability, Accessibility, Functionality and Lecturers' Teaching Productivity in Colleges of Education in southwestern Nigeria**

| S/N | Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 1 | Teaching Productivity | 1 | | | |
| 2 | ICT Facilities Availability | -0.125<br>0.000 | 1 | | |
| 3 | ICT Facilities Accessibility | -0.148<br>0.000 | 0.868**<br>0.000 | 1 | |
| 4 | ICT Facilities Functionality | -0.119<br>0.000 | 0.824**<br>0.000 | 0.887**<br>0.000 | 1 |
| **N** | | 1011 | 1011 | 1011 | 1011 |
| **Mean** | | 40.09 | 32.34 | 31.37 | 31.59 |
| **STD.D** | | 6.05 | 8.28 | 9.08 | 9.38 |

** Significant at 0.05 level

Table 4 shows the relationship that exists between ICT facilities factors (availability, accessibility, functionality) and lecturers' teaching productivity. The table shows that a significant negative and weak relationship exists between ICT facilities availability and lecturers' teaching productivity ($N = 1011$; $r = -.125$; $p<0.05$), ICT facilities accessibility and lecturers' teaching productivity ($N = 1011$; $r = -.148$; $p<0.05$) and between ICT facilities functionality and lecturers' teaching productivity ($N = 1011$; $r = -.119$; $p<0.05$). Moreover, the table shows that there was strong positive and significant relationship among the independent variables: ICT facilities availability and ICT facilities accessibility ($N = 1011$; $r = .868$; $p<0.05$), ICT facilities availability and ICT facilities functionality ($N = 1011$; $r = .824$; $p<0.05$), ICT facilities accessibility and ICT facilities functionality ($N = 1011$; $r = .887$; $p<0.05$). Based on this result, it can be inferred that there is significant relationship between ICT facilities factors (availability, accessibility, functionality) and lecturers' productivity (teaching) in public Colleges of Education in Southwestern Nigeria. Hence, the hypothesis was rejected.

**Discussion of findings**

The findings of the research question relating to the extent to which ICT facilities are available, accessible and functioning in public Colleges of Education in Southwestern Nigeria are low. The findings in this study is in line with the report of Dorayi (2012) who investigated the level of availability and use of ICT in Colleges of Education libraries in Kano state, Nigeria. The results of the survey on Colleges of Education staff on the level of availability, use of and perception of the impact of ICT on teacher education in Nigeria revealed and suggested a low level of usage of ICT gadgets; non-availability of ICT equipment and that the respondents were disgruntled with the sluggish use and integration of ICT. Furthermore, The finding is in consonance with the findings of Mishra and Koehler (2006); Adejumo (2000) and Adeogun (2002) which vividly show that few ICT facilities available, lack proper accessibility because they are kept in ICT laboratory, non-accessibility ICT facilities and lack of proper functioning of ICT facilities in College of Education make teaching meaningless. Also, it was found from the hypothesis in this study that there is significant relationship between ICT facilities factors (availability, accessibility, functionality) and lecturers' productivity (teaching) in public Colleges of Education in Southwestern Nigeria. The findings in this study corroborate with the finding of Obakhume (2011) who found that availability and usability of Information and communication technology among secondary school teachers in Oyo Metropolis contributed significantly to the teachers' productivity. In addition, the current finding is the same with Tella (2011) that ICT factors; availability, utilization of information and communication technology support significantly predicted lecturers' productivity.

**Conclusion and Recommendations**

From this study, the standard of lecturers' productivity (teaching and research) in Colleges of Education will improve significantly if ICT facilities are available, accessible and functioning. Therefore, Government should make sure that acquisition of computers and other related ICT facilities are available, adequately accessible for lecturers and functioning properly. This can be in form of making the

ICT facilities available in locations where they can easily have made use of them without any difficulties. This ease of access may end up increasing the frequency of use of the facilities. Additionally, training of lecturers to enhance ICT proficiency must be encouraged by the government. Furthermore, there is urgent need for the government to design and develop ICT literacy and ICT capacity building programme for lecturers to sharpen skills and boost ICT proficiency that are best developed whilst ICT remains transparent in the background of subject learning.

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