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REVISITING THE COVID-19 PANDEMIC, E-LEARNING PROCESSES AND ORGANISATIONAL PRODUCTIVITY IN IGNATIUS AJURU UNIVERSITY OF EDUCATION, PORT HARCOURT

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ABSTRACT

The Armageddon-like covid-19 pandemic occasioned large scale disruptions in social and economic structures of societies across the globe. Following it, the digitization of work became accentuated in a drive to minimize the disruptive effects of the various containment measures adopted against the increasing mortality rate of the pandemic. Against this background, this study appraised the adoption of the e-learning process as a fall out of covid-19 containment measures in Nigeria's tertiary institutions and its effect on organisational productivity using the experience of Ignatius Ajuru University of Education, Port Harcourt. The contingency theory and production-function theory were used as theoretical guide. Using the survey research design and purposive sampling technique, a sample size of 400 was drawn from the 24,573 students and staff population of the university. Data for the study were collected from primary and secondary sources. Primary data were collected with the use of structured questionnaire; and results were analyzed using the statistical tool of mean of mean and standard deviation. The findings showed poor/low level of preparedness amongst the students and lecturers at takeoff of the e-learning process; poor learning experience with the e-learning process; inadequate ICT infrastructural development, low ICT and digital skills and poor users' attitude, undermined the level of organisational productivity using the e-learning process in the university. The study recommended amongst others for: continuous development of ICT literacy and digital skills; attitudinal change and value re-orientation for students/lecturers ICT users; incentives and ICT hazard allowance to increase staff motivation; improved university-industry partnership for ICT development infrastructure; increased funding for ICT development by the government.

Keywords: Covid-19, e-learning, Productivity, Contingency, Production-Function.

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INTRODUCTION

The commonly known disruptive factor in tertiary education system in Nigeria has been industrial actions (strikes) by employees of the tertiary educational institutions under the aegis of Academic Staff Union of Universities (ASUU), Academic Staff Union of Polytechnic (ASUP) and Colleges of Education Academic Staff Union (COESU). Notwithstanding, in 2020 an external force occasioned a global disruption in the activities of private, public, corporate, religious organisation. Schools, universities, banks, airports, companies, churches, markets, small and big organisations were forced to shut down. In the face of covid-19 threats, shutdown otherwise called lockdown became the most portent containment measure against the ravaging spread of the Covid-19 virus and its mortality rate (WHO, 2020a).

Informed by the World Health Organisation (WHO) protocol and advisories, the Federal Government of Nigeria ordered the closure of all public institutions including educational institutions across the country on the 20th day of March, 2020 (Adepoju, (2020). This meant also, disruption in teaching and learning and distortion of tertiary educational institutions academic calendar. The disruption was rather more disturbing for Nigeria educational institution due to its orthodox physical classroom interaction teaching and learning system. The covid-19 pandemic and attendant lockdown conditioned the digitalization of work-life, which became the most available option. This was done to avoid catastrophic breakdown of systems and ensure survival of society. The digitalization of work-life transcends also into teaching and learning with the aid of information and communication Technology (ICT); implying teaching and learning from home through digital platforms. This in itself implies that the educational institutions suddenly moved away from traditional classroom to a digital classroom (Kunle & Osakwu, 2021).

E-learning according to Eze et al. (2018) is the holistic incorporation of modern telecommunication equipment and ICT resources into the educational system for ease of teaching and learning. It is un-doubtful that e-learning is a veritable platform for quality educational service delivery. The e-learning process where it is well developed (such as in India where 94% of the universities run efficient online studies including examination), the system is cheap, time saving, flexible adaptable and provide wide coverage without scramble space (Arkorful & Abaido, 2014). Organisation productivity on the other hand is the quantity and quality produced and participation over a given period of time and with rapt attention given to quality and efficient use of all resources. Productivity is doing the right thing, the right way, getting more output with less input, getting more output from the same input, speed level, removing waste in all its forms, justifying wages, improving all aspects of life, producing better and better quality. It is individual performance and staff productivity that translates into organisational productivity.

To sustain the organisational productivity of the educational sector during the period under review, the digitalization of learning or migration to digital learning (e-learning), was effectuated by the federal government through the Federal Ministry of Education and in collaboration with the Federal Ministry of Communication and Digital Economy. This was done by uploading electronic learning resources and chat room to her website across the 36 states of the federation (Adedigba, 2020). Unfortunately, the e-learning portals such as: school gate.ng and mobile classroom.com.ng were only free for Nigerian students at the primary and secondary schools level during the period of the pandemic. Needless, accessing them require other electronic devices, data and electricity etc. The point is that migration to digitalization of work including learning is a worthwhile innovation, however, it's utilization for effective educational service delivery and productivity remains a fundamental issue.

Problem Statement

The coronavirus pandemic has a spatial in effect and damages to organisational productivity. Social distancing and lockdown as a containment measures as were introduced meant a lot to the educational system and educational service delivery across the globe; with the most devastating impact on the developing world. The lock-down resulted in an estimated 1.725 billion, representing 99.9% of the global students' population at April, 13th 2020 being forced out of learning (UNESCO cited Salawudeen, 2023). According to Lindzon cited in Orij and Ekineh (2020), the impromptu disruption and closure of schools kept billions of learners out of school with far reaching social and economic implications. Bateman (2020) argued that in an environment of closure, restriction of movement, infections, fear of infections, isolation, quarantine, morbidity resulting from infection, workers cannot be productive.

At the peak of pandemic and the midst of the lock down, the Association of African Universities called on African universities to migrate to the utilization of ICT in delivery of teaching to help cushion the effect of the pandemic on the educational educations. The migration to the e-learning process was a scoping strategy to mitigate adverse disruption in the educational system as well as massive distortion of the academic calendar. Despite the cost effectiveness of the e-learning process, it is also not used directly for all programmes, and courses particularly those that require practical, experimentations and simulations (Arkorful & Abaido, 2014). Bhai cited in Salawudeen (2023) observed that the e-learning method of posting prepared notes or video recording of teachers' lesson would not lead to expected learning outcomes. Flaherty cited in Adedoyin (2020) averred that it would be very difficult to assume, pretend or claim that students got same teaching experiences and changes through the online learning as they would in physical classroom intervention.

There are some major problems confronting e-learning in Nigeria. Two of such problems are inefficient electricity supply and inadequate ICT infrastructure. These had created "a gigantic educational crisis Nigeria. According Adepetun (2022) in the Nigeria's ICT environment, 81% of the population lack internet connectivity, only 12.1% enjoys meaningful internet connectivity. The 2021 World Bank report showed that over 50% of the population lack digital skills or digital literacy (World Bank, 2022). ICT infrastructure and digital skill are therefore sine-qua-non to e-learning.. The public power situation in Nigeria is in a sorry state. These are stumbling blocks on the path of effective e-learning process in Nigeria tertiary education institution. Based on these, Okoye's generalization that some higher institutions in Nigeria such as Federal Polytechnic, Ilaro, University of Ibadan, Obafemi Awolowo University, University of Benin, University of Abuja, University of Lagos, National Open University of Nigeria, Covenant University, Madonna University among others had been able to weather the storms or challenges facing e-learning to a reasonable disagree" (2021, p. 59), becomes circumspect. There is nothing to show that these institutions through e-learning successfully concluded the 2019/2020 academic calendar without disruption. That is to say, admissions were successfully done in record time, e-lectures conducted and e-exams written with students moving to the next class and student graduated without delay and disruption in the academic programme.

Meanwhile, extant literatures such as those reviewed above including Obodosike and Obodosike (2020), Okure (2018), Eze et al. (2020), Salawudeen (2023), Okoye (2021), etc. focused on the availability of power, ICT infrastructure and the ICT and digital skills as factors affecting the e-learning process in Nigeria. None of these studies delved into the difficulty posed by the poor learning attitude and culture of the Nigerian students, majority of who appear to have

been forced to go to schooling or learning. Similarly, majority of the empirical works studied did not evaluate the productivity aspect of e-learning; particularly its deployment evaluation and examination without which the learning process is incomplete. It was against this backdrop that this study was set out to appraise the adoption of the e-learning process in Nigeria's tertiary institution during the Covid-19 pandemic and its effect on organisational productivity using Ignatius Ajuru University of Education (IAUE), Port Harcourt, as the social laboratory. In doing so, the following research questions were formulated to guide the investigation: What was the level of preparedness of the students, lecturers and the University at the takeoff of the e-learning processes during the Covid-19 pandemic? What were the experiences of the students and lecturers using the Covid-19 imposed e-learning processes in the university? How did the learning processes contribute to the organisational productivity of the university during Covid-19 pandemic? What were the factors militating against the e-learning processes in and organisational productivity of the university during the Covid-19 pandemic?

CONCEPTUAL REVIEW

The COVID-19

The African Centre for Disease Control (African CDC, 2019) defined Covid-19 as communicable disease caused by severe acute respiratory syndrome virus 2 SARS –COV-2 which causes illness to humans. The SARS –COV-2 is a family of known to cause illness ranging from the common cold to more severe diseases (WHO, 2020a). The first case of covid-19 was reported in the Chinese city of Wuhan from where it spread across, was declared a public health emergency of international concern on January 30, 2020; and was subsequently declared global pandemic on March 11, 2020 (Cucinotta & Vanelli, 2020; WHO, 2020b). Its declaration as a pandemic informed the decision to take urgent, drastic and aggressive containment measures by countries and on the instruction of the world health governing body, WHO.

The Concept of e-Learning

Parks (2013) described the prefix “e” in e-learning as “everything”, “everyone” and “easy” in the application of electronic, internet and ICT to support and enhance teaching and learning process. Okure (2018) simply defined e-learning as an integrated learning with technology. Eze et al. (2018) expanded Okure (2018) conceptualization and explained e-learning as the holistic incorporation of modern telecommunication equipment and ICT resources into the educational system for ease of the teaching and learning process. From the expansive definition of Hedge and Heywood, e-learning is an “innovative approach for delivering electronically mediated well-designed, learner-centered and interactive learning environment to anyone, anyplace, anytime by utilizing the internet and digital technologies connection with instructional design principles” (cited in Obodosike & Okekeokosisi, 2020, p. 155).

In essence, e-learning otherwise called internet enabled learning is an electronic learning platform with the aid of computer and internet such that learners can access teaching as well as learning materials electronically from any destination provided there is network connectivity. The process of e-learning includes computer-based learning, web-based virtual/smart classroom with internet enabled delivery through audio, video-clip, satellite television, etc. Other e-learning platforms that are adopted in organized educational institutions include zoom, Microsoft teams,

Google hangout (meet), Skype, Bamboo, learning, Google classroom, Docebo, WIZIQ, Adobe captivate, Elucidat, Blackboard learning etc. The advantages of e-learning according to Adeoye et al. (2020) in developed ICT environment are flexibility, convenience; timely availability of contents and strengthening of teachers and learners confidence.

Productivity and Productivity in the University

Productivity is a measure of performance of an employee and it is the driving force behind organisational success and profitability (Onah, 2015). It is hinged on the ability of the employee in an organisation to produce quality output with reasonable utilization of available inputs (Carol & Flora, 2019); towards the achievement of the result of an organisation. Usman et al. cited in (Nwaokezi, 2023) identified some of the factors that affect productivity as: financial and economic factors (reward and compensation system for the employees-producers), technological factors (availability of production capital, facilities and infrastructure), social cultural factor (discipline, attitude and productive behaviour); human factor (human resource management practice), power supply (state of electricity) to power the production and service delivery process. Productivity is expressed or measured in quantity and quality of work done and objectives achieved.

Productivity is at the heart of the university as an organisation. The university according to Godwin (2022) is derived from the Latin phrase *universitas magistrorum et scholarium*, meaning a community of teachers and scholars. The university as a tertiary institution of higher learning and knowledge transfer perform three core roles viz: research, information transfer and technological advancement. These core roles are in tandem with the core missions of the university which are generation, dissemination, advancement and human progress and development. As an organisation in a production process, the teachers are the producers and students (scholars) are its products. The productivity and quality of the product is a function of combination of inputs viz: quality teaching and research, availability of instructional facilities, good organisational human resources policies and management programme and the evaluation procedure (Orgiji & Ekineh, 2020). While, quantity aspect of this productivity is measured by the number of students graduated within a given period, the quality is measured observable changes in character and learning occasioned by the learning process and their application in the enhancement of societal growth and development.

Theoretical Framework

Two theories are adopted to guide this investigation. They are the contingency theory propounded by Fred Edward Fiedler (Fiedler, 1964); and the production function theory propounded by J. H. Von Thunen in 1840 but further developed by Charles W. Cobb and Paul Douglas production function theory, popularly referred Cobb-Douglas production-function (Gordon & Vanghan, 2011).

The contingency theory is an organisational and behavioural science theory. Its fundamental assumptions are that ideas and social system do not possess universal and everlasting structures and function; but that social organisation evolve and change in response to the external environment. As such environmental factors offer the internal and external stimulus that influence decisions for practical expected outcomes or result (Ritzler & Stephisky, 2014). As such it was for the management of the Covid-19 pandemic as external environmental stimuli, its

associated containment measures and fear of disruption in the academic calendar, that many tertiary institutions adopted the e-work and e-learning process as a contingency measure. But how effective and productive was the e-learning as a contingency measure during the pandemic? The production- function theory provides some explanations.

The production- function theory from managerial economics background explain that productivity is the function of planning, structuring, objective, efficient and effective utilization of organisational resources for accomplishment of organisational goal (Suwena et al., 2020). The relationship between input and output is described as production function. One of the fundamental assumptions of the production function theory of productivity is that the relationship between the quantity of inputs used in the production or service delivery process determine the level of output received. Fundamentally, the production function theory provides that any change in any of the variable factors of inputs will produce a corresponding change in output.

The explanation the production-function theory offers for this work is that planning structuring, objective, efficient and effective and utilization of resources (human, financial and materials) that went into the e-learning process as inputs and return as output can be measured or expressed in term of quantity and quality of students produced or graduated through the process. The human resources as inputs are he lecturers; financial resources are reward system and incentives for the lecturers and the materials are the soft and hard ICT infrastructure that enhance e-learning. It is the efficient and effective combination of these variable factors in the e-learning process that is expected result in quality output, hence productivity. These also affect the students (learners). Generally, the indicators of educational output or productivity are measured by change in the ability, attitude, behaviour and discipline of the students as well as the acquisition of skills and knowledge. Largely, the output and productivity in view of the essence of the migration to e-learning during Covid-19 is to be measured by the extent to which the academic calendar was not manifestly disrupted as well as the extent to which students (as customers/knowledge seekers/recipients of educational service delivery) were satisfied in relation to time, cost and quality of learning. Against the above theoretical explication, the proposition of the paper is that there was non-availability and under- utilization of the human, financial and materials as production-function inputs for e-learning process in IAUE within the period under review, hence the level of productivity (output) of the university using the e-learning process was low.

METHODOLOGY AND STUDY LOCALE

The expost-facto and descriptive research design was adopted for the paper. The population of the study consisted of 24, 977, making up 404 teaching staff and 24,573 students of IAUE, as at January, 2022 (Registrar Office, 2022). Using the Taro Yamane statistical formula, a sample size 400 was derived and used for the study. For the purpose of representativeness, stratified, proportional and simple random samplings were used in the selection of the respondents for the study. Respondents were stratified based on faculty from where 300 (year 3 and final year) students and 100 lecturers were selected based on their participation in the university e-learning processes during the covid-19 period. Meanwhile, the newly created Faculty of Agriculture was not included in this survey. Based on the distribution, the sample size was proportionally allocated to each of the faculties. The units of analysis were individual students and lecturers

selected using the simple random sampling technique. The distribution is shown in table 1 below:

Table 1: Distribution of Respondents across faculties

| S/N | Faculties | Distribution | | Total |
|--------------|--------------------------------|--------------|------------|------------|
| | | Students | Lecturers | |
| 1. | Humanities | 50 | 17 | 67 |
| 2. | Social Sciences | 50 | 18 | 68 |
| 3. | Education | 50 | 17 | 67 |
| 4. | Business Studies | 50 | 17 | 67 |
| 5. | National/Applied Science | 50 | 15 | 65 |
| 6. | Vocational & Technical Science | 50 | 16 | 66 |
| Total | | 300 | 100 | 400 |

Source: Field Survey, 2024

Data for this study were collected from primary and secondary sources. Primary data were collected through the survey method with the use of structured questionnaire patterned along the 4-point likert scale rating. The research instruments were personally distributed by the researchers. Due to ethical considerations, the purpose of the study was explained to the respondents to ensure their co-operation, and confidentiality was assured before commencement of the survey. The data were analyzed using mean, with a criterion mean of 2.5. Therefore N= 400, Criterion Mean= 2.5.

For the avoidance of doubt, the locale of this study was the Ignatius Ajuru University of Education, formerly the Rivers State College of Education,. The college was established on 14th June, 1971 as a National Certificate of Education (NCE) awarding institution. Following its affiliation to the University of Ibadan, it began awarding of the Bachelor of Education (B.Ed.) degree in 1981. It became the Rivers State University of Education on October 20th, 2009 and was later renamed Ignatius Ajuru University of Education (IAUE) in 2010 (<https://iauae.edu.ng>). Currently, the university has 50 teaching departments spread across seven (7) faculties namely: Humanities, Social Sciences, Education, Business Studies, Natural and Applied Science, Vocational and Technical Science and Agriculture. It runs the undergraduate programmes leading to award of Bachelor's Degree(B.Ed, B.A, B.Sc); and post graduates programmes leading to award of Post Graduate Diplomas, Master's and Doctorate (PGD, PGDE, M/A, M.Sc, PhD) Degrees. The focus of this study was however on the undergraduate programmes.

Data Presentation and Analysis

Research Question 1: What was the level of preparedness of students and lecturers at the takeoff of the e-learning process in IAUE?

Table 2: Mean responses on the level of preparedness of students and lecturers at the takeoff of the e-learning process in IAUE

| S/N | Items | Students | | Lecturer | | Mean set | Decision |
|-------------------|---|-------------|-------------|-------------|-------------|-----------------------|-----------------|
| | | \bar{x} | SD | \bar{x} | SD | $\bar{x}_1 \bar{x}_2$ | |
| 1. | Participated in e-learning during Covid-19 | 2.26 | 0.94 | 2.57 | 0.91 | 2.42 | Rejected |
| 2. | Participated in e-learning before the Covid-19 lockdown | 2.16 | 0.94 | 2.26 | 0.94 | 2.21 | Rejected |
| 3. | Received training on e-learning before its commencement in the university | 2.21 | 0.98 | 2.26 | 0.94 | 2.24 | Rejected |
| 4. | Availability of the required level of ICT skill and digital skill was adequate for the e-learning process | 2.03 | 0.77 | 2.14 | 0.98 | 2.09 | Rejected |
| 5. | Had the hard and soft ware infrastructure(computer, laptop, internet facilities) for effective e-learning | 1.86 | 0.91 | 1.97 | 0.89 | 1.92 | Rejected |
| Grand Mean | | 2.10 | 0.90 | 2.24 | 0.93 | 2.18 | Rejected |

Source: Field Survey, 2024

The results from the data presented in table 2 above indicated that the mean score for students and lecturers who participated in the e-learning during the Covid-19 lockdown were $\bar{x} = 2.26$ and $\bar{x} = 2.42$ respectively with a mean set $\bar{x}_1 \bar{x}_2 = 2.42$. The mean response also showed that $\bar{x} = 2.16$ for (students) and $\bar{x} = 2.21$ (lecturers) had participated in e-learning before the Covid-19 lockdown. The research questionnaire instrument item on training before the commencement of e-learning in the university had a mean score ($\bar{x} = 2.21$ and $\bar{x} = 2.26$ for students and lecturers respectively; giving a mean set $\bar{x}_1 \bar{x}_2 = 2.42$. The availability of the required level of ICT literacy and digital skills adequate for the e-learning got a mean of $\bar{x} = 2.03$ and 2.14 for the students and lecturers respectively. The mean set was $\bar{x} \bar{x} = 2.09$. The mean score for the availability of the hard and software infrastructure (computer, laptop, internet facilities) for effective e-learning $\bar{x} = 1.86$ for students, and $\bar{x} = 1.97$ respectively, with a mean set $\bar{x}_1 \bar{x}_2 = 1.92$. The grand mean for student $\bar{x} = 2.10$ and lecturer $\bar{x} = 2.24$. All the research instrument items measured for both students and lecturers fell below the criterion mean $\bar{x} = 2.5$; with an overall grand mean set $\bar{x}_1 \bar{x}_2 = 2.18$ also below the criterion mean, which were all rejected. The analysis showed that the level of preparedness of students and lecturers and indeed the IAUE at the takeoff e-learning process in the university at a grand mean set $\bar{x}_1 \bar{x}_2 = 2.18$ was low.

Research Question 2: What were the teaching and learning experiences of the students and lecturers during the Covid-19 imposed e-learning processes in the university?

Table 3: Mean responses on the teaching and learning experiences of the students and lecturers writing e-learning process in the university

| S/N | Items | Students | | Lecturer | | Mean set | Decision |
|-----|--|-----------|------|-----------|------|-----------------------|----------|
| | | \bar{x} | SD | \bar{x} | SD | $\bar{x}_1 \bar{x}_2$ | |
| 6. | Increased students motivation for learning | 1.86 | 0.91 | 1.97 | 0.89 | 1.92 | Rejected |
| 7. | Increased punctuality, attentiveness and | 1.86 | 0.91 | 1.97 | 0.89 | 1.92 | Rejected |

| | | | | | | | |
|---------------------|--|-------------|-------------|-------------|-------------|-------------|-----------------|
| | concentration | | | | | | |
| 8. | Effective smart/e-classroom management | 1.86 | 0.91 | 1.86 | 0.89 | 1.86 | Rejected |
| 9. | Effective feedback/evaluation | 1.61 | 0.67 | 1.97 | 0.89 | 1.79 | Rejected |
| 10. | Effective and enhanced teaching and learning | 1.52 | 0.51 | 2.03 | 0.76 | 1.78 | Rejected |
| Grand Mean = | | 1.74 | 0.78 | 1.96 | 0.86 | 1.85 | Rejected |

Source: Field Survey, 2024

The analysis of the data presented in table 3 above showed that motivation for e-learning scored $\bar{x} = 1.97$ for students and lecturers respectively with a mean set score $\bar{x}_1\bar{x}_2 = 1.92$. The extent to which e-learning increased punctuality, attentiveness and concentration scored $\bar{x} = 1.86$ and $\bar{x} = 1.97$ for students and lecturers respectively, with a mean set $\bar{x}_1\bar{x}_2 = 1.92$. The research questionnaire item for effective smart/e-classroom management scored $\bar{x} = 1.86$ for students for students and lecturers respectively. The item on the application of e-learning process for effective feedback/evaluation scored $\bar{x} = 1.61$ for students and $\bar{x} = 1.97$ for lecturers; and a mean set $\bar{x}_1\bar{x}_2 = 1.79$ which was also far below the criterion and therefore rejected. The extent to which e-learning enhanced effective teaching and learning score $\bar{x} = 1.52$ amongst the students and $\bar{x} = 2.03$ amongst the lecturers and a mean set $\bar{x}_1\bar{x}_2 = 1.78$ among both student and lecturers. The scores for all the items measured for table 3 above scored below the criterion mean and therefore were all rejected. Generally, teaching and learning experience of students and lecturers using e-learning process in the university during the Covid-19 pandemic scored a grand mean $\bar{x}_1\bar{x}_2 = 1.85$ which was below the criterion and therefore rejected, indicating that teaching and learning experience using e-learning during the period was poor.

Research Question 3: How productive was the e-learning processes in the university during Covid-19 pandemic?

Table 4: Mean responses the level of productivity using the e-learning process in the universities

| S/N | Items | Students | | Lecturer | | Mean set | Decision |
|---------------------|---|-------------|-------------|-------------|-------------|----------------------|-----------------|
| | | \bar{x} | SD | \bar{x} | SD | $\bar{x}_1\bar{x}_2$ | |
| 11. | e-learning process in the university | 1.86 | 0.91 | 1.97 | 0.89 | 1.92 | Rejected |
| 12. | enhanced quality teaching and learning | | | | | | |
| 12. | e-learning process with the covid-19 period was used for evaluation/examination | 1.61 | 0.67 | 1.86 | 0.91 | 1.74 | Rejected |
| 13. | Ensured the university calendar was uninterrupted and undistorted | 1.52 | 0.51 | 1.61 | 0.67 | 1.67 | Rejected |
| 14. | Students graduate in record time despite Covid-19 | 1.52 | 0.51 | 1.61 | 0.67 | 1.67 | Rejected |
| 15. | Students were satisfied with the e-learning process | 1.52 | 0.51 | 2.03 | 0.76 | 1.78 | Rejected |
| Grand Mean = | | 1.61 | 0.62 | 1.82 | 0.78 | 1.76 | Rejected |

Source: Field Survey, 2024

The analysis of the data presented in table 4 showed the level at which e-learning enhanced quality teaching and learning at $\bar{x} = 1.86$ and $\bar{x} = 1.97$ for the students and lecturers respectively. Both categories of respondents scored a mean set $\bar{x}_1\bar{x}_2 = 1.92$. The research questionnaire items

on whether the e-learning platform was used for evaluation and examination scored a mean $\bar{x} = 1.61$ amongst students and $\bar{x} = 1.86$ among lecturers and with a mean set of $\bar{x}_1\bar{x}_2 = 1.74$. The item that the e-learning process ensured undisrupted and undistorted university calendar scored $\bar{x} = 1.52$ and $\bar{x} = 1.61$ amongst students and lecturers respectively with a mean set score $\bar{x}_1\bar{x}_2 = 1.67$. The items that the e-learning process in the university ensured that students graduated within record time during the Covid-19 pandemic scored $\bar{x} = 1.52$ and $\bar{x} = 1.67$ amongst students and lecturers respectively with mean set score $\bar{x}_1\bar{x}_2 = 1.67$. Finally, the research questionnaire item on student satisfaction with the e-learning process in terms of time, cost and quality of learning scored a mean $\bar{x} = 1.52$ amongst students and $\bar{x} = 2.03$ among the lecturer and with mean set $\bar{x}_1\bar{x}_2 = 1.78$. All the items above scored below the criterion mean $\bar{x} = 2.5$ indicating negative performance. Summarily, the grand mean score $\bar{x} = 1.76$ indicated that the level of productivity using the e-learning process in IAUE during the Covid-19 pandemic was very low.

Research Question 4: What were the factors that militated against the efficiency and productivity of e-learning processes in the university during the covid-19 pandemic?

Table 5: Mean responses on factors that militated against e-learning in IAUE during the Covid-19 pandemic

| S/N | Items | Students | | Lecturer | | Mean set | Decision |
|---------------------|--|-------------|-------------|-------------|-------------|----------------------|-----------------|
| | | \bar{x} | SD | \bar{x} | SD | $\bar{x}_1\bar{x}_2$ | |
| 16. | Inadequacy of ICT infrastructure | 3.00 | 0.96 | 2.71 | 0.98 | 2.81 | Accepted |
| 17. | Poor internet connectivity | 2.94 | 1.00 | 2.88 | 0.92 | 2.91 | Accepted |
| 18. | Low level of ICT literacy and digital skills | 2.85 | 0.98 | 2.89 | 1.02 | 2.87 | Accepted |
| 19. | Resistance to innovation/change | 2.61 | 1.06 | 2.70 | 1.20 | 2.66 | Accepted |
| 20. | Poor power (electricity) supply | 3.20 | 0.87 | 2.81 | 0.96 | 3.00 | Accepted |
| Grand Mean = | | 2.92 | 0.97 | 2.80 | 1.02 | 2.86 | Accepted |

Source: Field Survey, 2024

The result of table 5 above from mean responses on the factors that militated against the e-learning process in IAUE during the Covid-19 pandemic showed that the factors of inadequate ICT infrastructure scored $\bar{x} = 3.00$ and $\bar{x} = 2.71$ amongst students and lecturers respectively with a mean set value of $\bar{x}_1\bar{x}_2 = 2.85$. The factor of poor internet facility and connectivity scored a mean $\bar{x} = 2.94$ and $\bar{x} = 2.88$ amongst students and lecturers respectively. Both categories of respondents mean set score was $\bar{x}_1\bar{x}_2 = 2.91$. The factor of low level of ICT literacy and digital skill scored $\bar{x} = 2.85$ amongst students and $\bar{x} = 2.89$ amongst lecturers, with a means set score $\bar{x}_1\bar{x}_2 = 2.87$ among both students and lecturers. Resistance to innovation and change as a militating factor against the e-learning process scored $\bar{x} = 2.61$ amongst students and $\bar{x} = 2.70$ amongst lecturers and a combined mean set scored $\bar{x}_1\bar{x}_2 = 2.66$. The factor of power or poor power (electricity) supply scored $\bar{x} = 3.20$ amongst the students and $\bar{x} = 2.81$ amongst the lecturers and also a combined mean set of $\bar{x}_1\bar{x}_2 = 3.00$. The mean responses to all the research questionnaire items were above the criterion mean and therefore accepted. Summarily, the grand mean set score $\bar{x}_1\bar{x}_2 = 2.86$ was accepted which indicated that the factors of Inadequate CT infrastructure, poor internet connectivity, low level of ICT literacy and digital skills, resistance to

change and innovation and poor power (electricity) supply were the factors that militated against the efficiency and productivity of the e-learning process in IAUE during the Covid-19 pandemic.

DISCUSSION OF FINDINGS

Poor/low level of preparedness amongst the students and lecturers

The result of the data presented and analyzed in response to research question 1 showed that the level of preparedness amongst the students and lecturers at the takeoff of the e-learning process in IAUE during the Covid-19 pandemic was low. The data presented and analyzed in table 2 above showed that many of the students and lecturers had not participated in the e-learning process anywhere before it forced take-off in the university during the Covid-19 pandemic. The problem became compounded in the absence well planned and effective technical and professional training for both students and staff before the commencement the covid-19 forced e-learning process in the university. There was also the inadequacy of ICT soft and hardwares as well as low level of ICT literacy and digital skills for adequate e-learning. The findings showed that only few students and lecturers had personal computers and internet wifi. The combined grand mean for the indicators used in measuring level of preparedness for e-learning scored $\bar{x} = 2.18$ which was rejected as an indication of low level of preparedness. This undermined the effectiveness and level of migration to digital work, teaching and learning during the Covid-19 pandemic. The findings corroborated the finding of Salawudeen (2023) which found that unpreparedness of Nigerian institutions undermined the effectiveness and level of migration to digital work during the covid-19 pandemic. It also confirmed the finding of Obodosike and Olekeokosisi (2020) who observed that absence of ICT infrastructure and low ICT literacy and digital skill in the Nigerian educational system is a gigantic educational crisis.

Poor learning experience with the e-learning process

The data analyzed showed that there was no motivation to learn on the part of the students. There was also no mechanism to ensure punctuality, attentiveness and concentration as such there was poor classroom management for the lecturers. Equally there was weak and in-effective evaluation mechanism, hence, no test or examination was conducted using the e-learning process. The combination of these experiences on the part of the students and lecturers undermined the effectiveness of the e-learning process. As indicated in table 3 above, the grand mean of $\bar{x} = 1.85$ was rejected which indicated that the teaching-learning experiences of the students and lecturers was not enhanced. The case of virtual learning without proper monitoring and classroom management was problematic. Ordinarily, the factors of the presence of teacher, positive peer influence and physical school environment many times motivate the students to learn. These were lacking in the e-learning process. This finding was in agreement with Adedoyin (2020) which found negative learning experiences among students using e-learning. It was therefore self-defeatist to assume, claim or pretend that students got same learning experiences and chances through e-learning as they would get in physical classroom interaction.

The level of educational service delivery and productivity using e-learning during the Covid-19 pandemic was low

The result from the data presented and analyzed showed that the level of educational service delivery and productivity using the e-learning was low. The e-learning did not enhance quality teaching and learning. The platform was not used for evaluation and conduct of semester examination. As such the objective of deploying e-learning platforms to avoid distortion of the academic calendar during the period under review did not achieve the target objective. Fundamentally, the students who are the end products of e-learning process indicated that they were not satisfied with the e-learning process. A grand mean of $\bar{x} = 1.76$ indicated the level of productivity in learning delivery using the e-learning process was low. It was noted that the flexibility of e-learning without sufficient backend security is susceptible to cheating and examination malpractice especially in the absence of internal discipline and digital surveillance. These together with in-efficient classroom interaction, discussion and quality feedback undermined the productivity of the e-learning process during the Covid-19 pandemic.

Inadequate ICT infrastructure development, low ICT and digital skill and poor user attitude

The result of the data presented and analyzed in response to research question 4 indicated that: inadequate ICT infrastructure, poor internet connectivity, low level of ICT literacy and digital skills, poor user attitude and resistance to change and innovation, poor power/electricity are the major factors that undermined productivity in the use of e-learning in IAUE during the Covid-19 pandemic. This was likely so for most public tertiary institutions in the country.

From the explanation of the theoretical framework of the study, particularly the Cobb-Douglas production function theory, the level of productivity where the high or low is a function of input (resource utilization). The findings showed that IAUE and by extrapolation many tertiary institutions in Nigeria lacked the right quantity and quality of inputs (financial and human resources) required for effectiveness e-learning for improved performance and organisational productivity. This finding corroborated the findings of Olabisi (2020) which identified poor quality of e-learning facilities, poor power supply, lack of telecommunication infrastructures, poor internet connectivity, poor technical skills and know-how as the challenging confronting e-learning in Nigeria universities. These are indicative of inadequate support for the growth and development of the Nigerian educational sector.

E-learning is far beyond, facebooking, snapchatting and whatsapping and tiktoking. The running of e-learning has huge financial implications. The cost of the needed facilities, soft and hardware infrastructures are high. It need more sophisticated platform that can enable the lecturer and students to see everyone in an e-classroom beyond the tiny corners of a Smartphone. It requires digital e-learning equipment that enhances effective interaction for both the students and lecturers such as smart classroom, digital board and projector and smooth uninterrupted internet connectivity. These were lacking in the e-learning process in the university. Their lack is indicative of poor government commitment to educational development as reflected in the poor yearly budgetary allocation for the development of the universities in Nigeria. Available record indicated that the average budgetary allocation to education over the past 10 years (2009-2019) at the national level hovered around 7.24%. In Rivers State, the average of budgetary allocation to education from 2010 to 2020 stood at an average of 5.8% (Idoniboye-Obu & Barigbon, 2018).

This is far from the UNESCO recommendation of budgetary allocation of a minimum of 15-20% of national or state budget to the development of educational sector. The level of budgetary allocation to the education undermines ICT infrastructure supportive enough for robust e-learning process in Nigeria.

The issue of epileptic power itself a national dilemma remains an unresolved serious concern for the development of any sector of the Nigeria national life. Poor power situation undermine e-learning. The situation is worst in rural areas which are the original abode of the many of the students. It is important to note that most students also relocated to the rural area during the Covid-19 lockdown. Poor public power supply together with cost of data bundle for internet connectivity undermined the effectiveness of e-learning amongst the students most of whom relocated to the rural areas due to the lockdown and restriction of movement imposed in the cities.

In the dying Nigerian economy confronted with high income poverty, allocating huge financial resources to data purchase in the face of severe food hunger was itself problematic and a misplacement of priority. To be sure, there was the opportunity cost of feeding against the acquisition ICT facilities for e-learning. The worrisome situation had rather been compounded by the data unfriendly character of major network providers: MTN and Globacom in the Nigerian ICT environment. All these together with the cost of acquiring functional ICT equipment and facilities for both lecturers and students were input (resources) factors that undermined the level of productivity of e-learning in Nigeria educational institutions. There was also the issue of ICT facility users' discipline, safeguard ICT infrastructure as well as resistance to innovation and change. The study found that most students including old stock lecturers showed resistance to innovation and change, particularly in the application of e-learning. Since technology is only as good as the user. It is obvious that without good ICT and digital skills, discipline and motivation on the part of the users, the availability of ICT infrastructure will *suomoto* enhance productivity.

SUMMARY AND CONCLUSION

There is no doubt that the digitalization of the work is an emerging global trend. The universities in Nigeria cannot isolate from this trend, otherwise it will be caught up in the current digital world of global competitiveness. There is an urgent need to effectively migrate to the digitalization of teaching and learning. This however requires effective preparation in planning, structuring, allocation and utilization of resources to secure the required inputs for effective and efficient e-learning or w-work that will enhance organisational productivity. These were found to be lacking at the point where Covid-19 lockdown caused the forced migration of Nigeria tertiary institution to e-learning.

Instructively, the World Health Organisation WHO (2020) had warned nations of the world to prepare for another pandemic after Covid-19. The Global Preparedness Monitoring Board of the WHO however remarked that nations had remained dangerously unprepared for global eventualities such as global pandemic; an indication that lessons were not learnt from previous global crises in history. This appears to be worst in the case of Nigeria. After the recorded abysmal performance of the digital work life and e-learning processes in Nigeria, there has not been improved attention to developing the ICT infrastructure, literacy and digital skills to overcome the negative experience recorded using the e-learning platforms; and to prepare for future eventualities. There is yet no serious policy measure marched with actions and funding to

place ICT infrastructure, literacy/digital skills at the required level for effective, functional and productive e-learning and educational service delivery. This is quite worrisome and does not portray Nigeria as one committed to productivity and national development.

Recommendations

Based on the findings of the study, the following recommendations are made:

- The university should therefore provide avenue for continuous ICT training for students and lecturers. One way of doing is to designate one course at every level in the university as e-learning course, with a true e-evaluation and e-examination platform under well secured anti-theft and anti-malpractice proofs and surveillance.
- The university through the Directorate of Quality Assurance together with the Committee on Ethics should routinely organize compulsory value re-orientation programme to redirect students and lecturers to digital innovations in world of learning, good ICT user culture and attitude.
- Introduction of e-course incentive and ICT hazard allowances by the university will encourage lecturers' participation in the e-learning process.
- The federal government through an act of parliament should provide incentive such as tax holiday/cut for ICT and telecommunication companies or corporate organisation that shift their CSR focus to provision of ICT facilities and free internet connectivity to tertiary institutions and rural areas.
- Beyond industries such as Cisco providing ICT facilities to universities, a robust relationship should developed between the universities and industries. Through such university ICT company relationship, anti-theft and anti-examination malpractice software should be developed to enhance the e-learning programme.
- The national power grid has remained a failure; therefore the university should develop renewable independent power supply project such as waste-to-power and solar power supply to light up the university. This will reduce total dependence on public power supply.
- The problem of the university in acquiring all that is needed and developing the right kind of attitude for e-learning revolve around funding. The federal and state government, Tertiary Education Trust Fund, National University Commission should increase their funding to help the tertiary institutions to encourage ICT development and for effective and efficient migration to the e-learning process.

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