HARNESSING POTENTIALS OF ARTIFICIAL INTELLIGENCE FOR TEACHING AND LEARNING OFFICE TECHNOLOGY AND MANAGEMENT PROGRAMME IN TERTIARY INSTITUTIONS IN EKITI STATE

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Abstract
The study examined potentials of artificial intelligence for teaching and learning OTM programme in tertiary institutions in Ekiti State. The study investigated OTM teaching and learning skills effectiveness with artificial intelligence technologies in tertiary institutions in Ekiti State. The descriptive research design of survey type was adopted for the study. Two research questions guided the study. The population of the study comprised 40 lecturers of OTM drawn from four institutions in Ekiti State. The entire population was used as a sample in view of the manageable size. A structured questionnaire with 20 items was used to collect data from the respondents. The instrument was validated by three experts. The reliability of the instrument was ascertained using Cronbach Alpha. A coefficient of 0.87 was obtained. Mean and standard deviation was employed to analyse the data collected. The findings revealed that the identified artificial intelligence are needed by OTM lecturers for instructional delivery in the 21st century. The findings also showed that artificial intelligence technologies were not utilised for effective instructional delivery by OTM lecturers. Based on the findings of the study, it was concluded that it is imperative for OTM lecturers to effectively utilise the artificial intelligence technologies for instructional delivery and skills acquisition in OTM programme for quality service delivery. Thus, it is recommended amongst others that school managment should procure artificial intelligence technologies for the lecturers and students. Thus, free internet facility, regular training on the usage of artificial intelligence technologies for teaching and learning process should be accorded priority.

Key Words: Artificial Intelligence, Teaching and Learning, and OTM.

Introduction

The global attention is focusing on adoption of artificial intelligence (AI) in a bid to find new methods of teaching and learning in the educational sector in order to complement the effect of COVID -19 on the teaching and learning activities. There is a pedagogical shift from the traditional and conventional method of teaching and learning in office technology and management (OTM) programme into smart learning for instructional delivery and improved learners' outcome and skills acquisition. In quest to expand ways of facilitating instructional delivery in OTM programme, attention has now been shifted to the adoption of artificial intelligence technologies for skills acquisition. The advent of information and communication technology which has revolutionised the way and manners in which learning activities are carried out across the globe has a tremendous influence on the learning outcome. Thus, Aina and Omidiji (2019) advised lecturers to embrace and utilise e-learning for improved learning outcome.

The increasing adoption and demand for quality education through

the process of artificial intelligence technological facilities at all levels of education and research globally over the last few years are often assumed to be inevitable procedures in reducing youth restiveness and social vices after graduation. Artificial intelligence has become an international method whereby teaching and skills acquisition in an educational sector are disseminated and facilitated at various tertiary institutions across the globe. Artificial intelligence software are widely used as means of instructional delivery in a large number of educational institutions and pathway for skills acquisition in OTM programme. In essence, teaching and learning in the 21st century have been revolutionized and become a global issues all over the especially in Nigeria. Education system has witnessed disruptions with the incessant strike action from lecturers and it has affected the students negatively.

OTM as a programme of study is one of the programmes, disciplines/occupations offered by universities/polytechnics and colleges of education under the aegis of their various supervisory bodies. Office technology and management is a sub-set of business education. It is a programme of study that should inculcate employable skills into the recipients in addition to general education. The objective of OTM programme is to produce modern secretaries who are proficiently prepared for both public and private enterprises of the global economy. Zakka and Wetnwan (2018) averred that office technology and management is a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related science and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic and social life. The programme is designed to equip students with the competencies required to work in a modern office environment which is information and communication technology driven. Federal Government of Nigeria (FGN) (2014) in the National Policy on Education stated that education recipient should develop an ever-improving capability in information and technology. Information and technology gave birth to digital skills which later metamorphosed into artificial intelligence.

Despite the importance of technological based instructional delivery in the tertiary institutions of learning, the aims and motive of improving academic achievement of learners in OTM programme is still characterised by passiveness, boredom, and teacher centredness. However, one of the technological-based strategies which has not been fully used in office technology and management department is artificial intelligence.

The outcome and service delivery of the lecturers and facilitators in OTM programme reside in the technological facility and apparatus available to facilitate the teaching and learning process. UNESCO (2023) approved the utilisation of artificial intelligence in the course of training students in tertiary institutions. Wikipedia listed some of the artificial intelligence platforms and software to include chat GPT, Nova, chatbot, Natural Language Processing, Deep learning, Matlab, Minitab, SPSS, Sas, Maple software, R, Quickbolt software, AI detector and paraphrasing tool among others which artificial intelligence had provided for both lecturers and students in the course of facilitating teaching and learning process. However, the application and utilisation of artificial intelligence are

dependent on human administrative skills.

One of the crucial elements of Artificial Intelligence is the ability to learn using artificial intelligence technologies in the teaching and learning process and for instructional delivery for the achievement of educational goal. Artificial Intelligence technologies' utilisation allows identification of patterns and trends and this improves performance in the educational sector. (Ademiluyi, Adegboye and Akande, 2023). The 21st century artificial intelligence technologies needed for instructional delivery in tertiary institutions of learning according to Okoli and Ikpat ranges from Chat GPT, Chat bot to Deep learning. These technologies are highly needed by OTM lecturers for teaching and learning process in the 21st century. (Toyin, 2022). Artificial intelligence allows personalisation of learning and instant feedback, aids assessment process and allows content and activities to be customised. (Rehman, Pir and Habibullah, 2021)

To develop positive attitude of the lecturers and facilitators for the purpose of harness the potentials of artificial intelligence in the skills acquisition and teaching as well as in the learning process in tertiary institutions in order to improve their academic achievement, artificial intelligence must be fully adopted along with instructional delivery. However, the dearth of research on the use of artificial intelligence software in skills acquisitions in OTM programme calls for this study.

Statement of the Problem

Previous studies revealed that teaching and learning in OTM programme are characterised by the use of technolog which does not improve the academic achievement of the learners because the students after graduation still roam about in search of white cola jobs which are no longer available and some employers of labour claimed that many graduates are not employable. There are rapid changes across the globe on the utilisation of artificial intelligence technology for instructional delivery in order to produce competent graduates in the real world. Technological advancement has made it imperative that OTM lecturers adjust to the utilisation of artificial intelligence technologies for the preparation of their students. Thus, it is imperative to harness artificial intelligence and its software for facilitation of teaching and learning process in tertiary institutions in Nigeria. Therefore, this study examined how artificial intelligence would be adopted for skills acquisition in OTM programme in Ekiti State tertiary institutions for academic achievement.

Objective of the Study

The main objective of the study was to ascertain the harnessing potentials of artificial intelligence for teaching and learning office technology and management programme in tertiary institutions in Ekiti State. Specifically, the study sought to:

1. identify the artificial intelligence software needed by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State.
2. identify the level of utilisation of artificial intelligence by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State.
3. ascertain the prospect of artificial intelligence on the lecturers' instructional delivery in OTM programme in tertiary institutions in Ekiti State.

Research Questions

1. What are the artificial intelligence software needed by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State?
2. What are the levels of utilisation of artificial intelligence by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State?
3. What are the prospects of artificial intelligence on the lecturers' instructional delivery in OTM programme in tertiary institutions in Ekiti State?

Method

The study adopted descriptive survey research design. The study sought the opinion of the respondents on how to harness the potentials of artificial intelligence for teaching and learning office technology and management programme in tertiary institutions in Ekiti State. The population of the study was 40 OTM lecturers from four tertiary institutions in Ekiti State. All the entire elements of the population were purposively adopted for the sample because of the manageable size. 07 lecturers were selected from Ekiti State University, Ado-Ekiti, 05 lecturers were drawn from Federal University, Oye-Ekiti. 10 lecturers were selected from Bamidele Olumilua University of Education, Science and Technology. Ikere-Ekiti, and 18 lecturers were selected from Federal polytechnic, Ado Ekiti respectively.

The instrument used for data collection was a 20-item questionnaire validated by experts from the fields of Business Education and Test and Measurement. The internal consistency of the instrument was established through a pilot testing that was analysed using Crobach Alpha which yielded reliability coefficient of 0.76. The validated instrument titled "Questionnaire on harnessing the potential of artificial intelligence on the teaching and learning of OTM programme (HPAITLOTMP) was adopted to elicit responses on the three research questions. The instrument was designed on a 4-point rating scale of Strongly Agree (SA) Agree (A) Disagree (DA) and Strongly Disagree (SD). The data collected were analysed using Mean and Standard Deviation. Decision rule was taken on the ground that any mean of 2.50 and above is regarded as "agree" why any mean below 2.50 is regarded as "disagree".

Results

The data collected in order to answer the research questions are presented in tables one to three below.

Research Question 1:

What are the artificial intelligence software needed by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State?

Table 1: Mean ratings and Standard Deviation of Respondents on Artificial Intelligence Software Needed by Lecturers in OTM for Instructional Delivery

S/N	ITEM	X	SD	REMARK
1	Chat GPT	3.74	0.16	Agree
2	Nova AI	3.64	0.16	Agree
3	Chat bot	3.48	0.21	Agree
4	Scikit – learn	3.53	0.31	Agree
5	Fuzzy Logic	3.64	0.15	Agree

6	Deep learning	3.60	0.33	Agree
7	TenserFlow	3.48	0.21	Agree
8	Pytorch	3.53	0.31	Agree
9	Keras	3.74	0.16	Agree
10	Natural Language Process	3.53	0.31	Agree

Source: Field survey, 2023 ***Grand Mean 3.59***

The data presented in Table 1 revealed that all the items on the artificial intelligence needed for instructional delivery by the lecturers in OTM programme in tertiary institutions in Ekiti State with their means ranged from 3.48 to 3.74. Thus, they all agreed with the items raised as needed to facilitate teaching and learning activity for improved learner outcome and optimum performance.

Research Question 2

What are the levels of utilisation of artificial intelligence by OTM lecturers for the teaching and learning of OTM programme in tertiary institutions in Ekiti State?

Table 2: Level of Utilisation of Artificial Intelligence by Lecturers in OTM for Instructional Delivery

S/N	ITEM	X	SD	REMARK
1	Using AI technology in giving assignment	1.55	0.64	NU
2	Creating lecture note through AI	1.81	0.79	NU
3	Using AI technologies for instructional delivery	1.61	0.79	NU
4	Assigning students to discovery learning through AI	1.47	0.69	NU
5	Utilising Tutoring for teaching and learning process	1.85	0.83	NU
6	Utilising Grading AI technology for marking	1.55	0.64	NU
7	Utilising TenserFlow on course quality	1.11	0.31	NU
8	Utilising Pytorch for teaching activities	1.23	0.42	NU
9	Utilising Keras for teaching activities	1.49	0.64	NU
10	Utilising Natural Language Process for teaching	1.47	0.69	NU

Source: Field survey, 2023 ***Grand Mean 1.51***

The data presented in Table 2 revealed that all the items on the level of utilisation of artificial intelligence technologies by lecturers of OTM for teaching and learning activities had their means ranged from 1.11 to 1.85. Each of these means was lower than the cut-off point of 2.50, indicating that the ten (10) raised artificial intelligence technologies were not utilised for effective instructional delivery by the lecturers in OTM programme in tertiary institutions in Ekiti State.

Table 3: Prospect of Artificial Intelligence on the OTM Lecturers for Instructional Delivery

S/N	ITEM	X	SD	REMARK
1	Access to Vast Resources	3.53	0.31	Agree
2	Immediate Feedback	3.53	0.31	Agree
3	Predictive Analytics	3.64	0.16	Agree
4	Balancing Automation with Student Interaction	3.53	0.31	Agree
5	Fairness	3.60	0.33	Agree
6	Professional Development	3.74	0.16	Agree
7	Lesson Plans	3.60	0.33	Agree
8	Academic Integrity	3.64	0.16	Agree

9	Intelligent Tutors	3.60	0.33	Agree
10	Automate Tasks	3.64	0.15	Agree
Source: Field survey, 2023		***Grand Mean***	***3.61***	

The data presented in Table 3 revealed that all the items raised are the prospect of artificial intelligence for instructional delivery in tertiary institutions in Ekiti State with their means ranged from 3.53 to 3.74. Thus, they all agreed with the items raised as prospect of artificial intelligence in facilitating teaching and learning activity for improved learner outcome and optimum performance.

Discussion of Results

The findings of the study revealed that ten (10) items raised on the artificial intelligence technologies needed for instructional delivery in OTM programme were highly needed in the 21st century global educational sector for effective instructional delivery in office technology and management programme. The implication of this is that, the lecturers in OTM programme will be on the same page with their colleagues in the 21st century world of education training for optimum performance. This finding was in agreement with the findings of the study conducted by Aina and Omidiji (2019) on the usage of e-learning for improved learning outcome among business education students in public tertiary institutions in Ekiti State where it was found out that application of latest e-learning technologies will improve learning outcome.

Findings of the study showed that all the items raised on the utilisation of artificial intelligence technologies were not utilised by the lecturers in OTM programme in tertiary institutions in Ekiti State for effective instructional delivery. The findings of the study agreed with the findings of the study conducted by Enang (2022) on the emerging technologies in teaching and learning of business education programme in the new normal in tertiary institutions in Nigeria where the findings showed that artificial intelligence technologies were not utilised by lecturers and facilitators to fit each student's ability to move forward at his or her own pace and personalized learning.

The findings of the study revealed that ten (10) items raised on the prospect of artificial intelligence technologies for instructional delivery in OTM programme were crucial and have enhanced teaching and learning activities in the 21st century global educational sector for effective instructional delivery in office technology and management programme. The implication of this is that, the lecturers in OTM programme will be on the same page with their colleagues in the 21st century world of education training for optimum performance. This finding was in agreement with the findings of the study conducted by Agboola (2019) whose study found out that there are numerous prospect of artificial intelligence technologies that improve learning outcome.

Conclusion

Revolution and advancement in teaching and learning in OTM programme through artificial intelligence technologies are crucial in tertiary institutions in Nigeria due to the effect of COVID-19 of which the impacts on the educational sector has not abated. This has resulted to a new way of facilitating teaching and learning activities in OTM programme by all relevant stakeholders. This study has ascertained that harnessing

artificial intelligence technologies by the lecturers in OTM programme for instructional delivery has immense benefits. The identified AI technologies were highly needed for teaching and learning programme. Literature review also revealed that lecturers in OTM programme have not embraced the utilisation of artificial intelligence technologies for teaching and learning activities in tertiary institutions in Ekiti State. Thus, there is the need to integrate artificial intelligence technologies into the OTM programme in order to cope with the global educational advancement and best practices.

Recommendations

The following recommendations were drawn from the study.

1. There is the need for application of competencies in artificial intelligence utilisation by all the relevant stakeholders in OTM programme to meet up with the realities of the 21st century global world of learning.
2. The management of tertiary institutions should organise a workshop and seminar for the lecturers in OTM programme on the artificial intelligence technologies usage for instructional delivery.
3. There is the need for the curriculum planners in OTM programme for the integration of artificial intelligence technologies into the OTM curriculum for optimum performance as a result of numerous prospects embedded in it.

References

Ademiluyi, A.B., Adegboye, A.O. & Akande, R.A. (2023) Digital Technology Skills Required of Graduating Office Technology and Management Students for Effective Performance in the Contemporary World. *Nigerian Journal of Business Education*. 10(2), 9-19

Aina, M. A & Omidiji, S. A. (2019) Usage of E-learning for Improved Learning Outcome Among Business Education Students in Public Tertiary Institutions in Ekiti State. *International Journal of Research and Design in Technical, Vocational Education and Training* (TVET) 3(1), 164-170

Agboola, B.G. (2019) Workforce Upskilling and Reskilling Revolution in European Labour Market: Lessons for Nigeria Entrepreneurs and Training Institutions. *International Journal of Research and Design in Technical, Vocational Education and Training* (TVET) 3(1), 327-334

Enang, C. E. (2022) Emerging Technologies in Teaching and Learning of Business Education Programme in the New Normal in Tertiary Institutions in Nigeria. *Nigerian Journal of Business Education*. 9(2), 64-71

Okoli, C.I. & Ikpat. N. H. (2022) Level of Application of virtual Learning Pedagogical Design by Business Educators in Tertiary Institutions in Anambra State. *Nigerian Journal of Business Education*. 9(2), 72-80

Rehman, F., Pir, S.S. & Habibullah, P (2021) Xllkogretim Online Elementary Education 20(5) 3186-3192

Toyin, O. (2022) Steer the Design and Use of Artificial Intelligence to Transform Teaching. *Sabinet African Journal* 30(1), 101-112

UNESCO (2022) Harnessing Artificial Intelligence for Educational Advancement: *International Journal Forum on AI and Education*

Zakka, D. D., & WEtnwan, P.R. (2018) Revamping Nigeria's Receding Economy through Skill Acquisition in Office Technology and Management. *Nigerian Journal of Business Education*. 5(1), 203-212.