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ARTIFICIAL INTELLIGENCE AND LECTURERS' PROFESSIONAL DEVELOPMENT IN FACULTY OF EDUCATION AND FACULTY OF VOCATIONAL EDUCATION, LIBRARY AND INFORMATION SCIENCE, UNIVERSITY OF UYO, AKWA IBOM STATE, NIGERIA

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Abstract
This study determined the relationship between Artificial Intelligence and Lecturers' Professional Development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Five specific objectives were identified, five research questions were raised and five null hypotheses were formulated to guide the study. The study adopted a descriptive survey design and was carried out in the University of Uyo, Akwa Ibom State, Nigeria. The population of the study was 156 lecturers and the sample size for the study comprised all the 156 lecturers from Faculty of Education and Faculty of Vocational Education, Library and Information Science. Purposive Sampling technique was used. The instrument for data collection was developed by the researcher and titled: "Artificial Intelligence and Lecturers Professional Development Questionnaires" (AILPDQ). To ensure the validity of the instruments, the instruments was subjected to face validation by three experts from University of Uyo, Uyo. To ascertain the reliability of the instruments, 30 copies of the instruments were administered on the lecturers who were not part of the population. The reliability of the instrument was obtained using the Cronbach's Alpha test which yielded reliability co-efficient of 0.89. The researcher administered the instruments with the help of two briefed research assistants. Out of the 156 copies of questionnaire distributed, 146 were returned with valid data. This gave a response rate of 93.58 percent. Simple regression analysis was used to provide answers to the five research questions as well as test the null hypotheses at 0.05 level of significance. Findings of the study showed that there is a high relationship between Artificial Intelligence and Lecturer's Professional Development. However, the utilization of data analytics, search engine and machine learning have very high relationship with lecturers professional development. Furthermore, there is significant relationship between utilization of data analytics, search engine and machine learning with lecturers' professional development. Based on these

findings, it was concluded that there is a high relationship between Artificial Intelligence and Lecturers Professional Development. Based on this conclusion, it was recommended that the university management should trained lecturers' on how to use AI resource tools and learn how to integrate them effectively into their teaching and research development.

Keywords: Artificial Intelligence, data analytics, professional development, machine learning

Introduction

Lecturer's Professional Development (LPD) is a process which starts during lecturers' training at tertiary education, job-embedded and collaborative professional learning opportunities for lecturers at their institutions. Four trends emerge over the past decade in the global literature on lecturer educational development. These are; First, the role of lecturer professional development being recognized to be as important as pre-service training in terms of its impact on the quality of teaching. Second, the traditional view of lecturers' professional development, involving the provision of in-service workshops and certificate/degree upgrading programs, being displaced by more school-based learning strategies (Harris and Jones 2019). Third, lecturers' professional development is now taking place more in the context of learning communities. Finally, lecturers' professional development occupying a central place in sustainable educational development strategies, (Ngoc *et al.*, 2020).

The low quality of Nigerian human resources can be seen from the low quality of education in Nigeria. The poor level of education in Nigeria is indirectly due to the low quality of graduates produced by a tertiary institution in Nigeria, both public and private. A good university will produce good graduates and vice versa. To produce quality students, professional educators and scientists are needed who have broad insight and high concern about education with all its problems, deep mastery of the science and technology that becomes its expertise, ability to manage and improve the implementation of professional tasks as educational staff, the ability to carry out research and development and technological skills in the field of education. Lecturers are one of the essential components of the Higher Educational system. Building self-professional development means subjecting oneself to technological current trends in term of deploying all resources that can make one to be up to date in knowledge and skills required to meet educational needs of student that can stand the trend required in term of skills and professional standard expected of them. Lecturers' professional development requires level of research, exposure to the common trend, technological tools, knowledge of analysis, global expectation for material using available technology. The academic efforts of researchers have also accelerated to explore the relationship between the utilization of artificial intelligence tools and lecturers' professional development through data analytics, search engine and machine learning.

Data analytics is now one of the core functions within any data-driven organization. It enables researchers to convert raw data into useful insights that can drive better decision-making processes (Agasisti and Bowers, 2017). The best part about data analytics is that there are many tools on the market for both professionals and those with a limited background in the field. These tools help in visualize, analyze, and track data so that one can derive insights needed to achieve desired goals. AI is the driving force behind any effective data analytics strategy. Artificial intelligence examines massive amounts of data to find trends and patterns that can be used to derive insights for improving lecturers' professional development. AI also helps streamline data analysis by funneling all data into one solution, enabling researchers to

have a complete overview of the data. When AI and data are combined for predictive, AI researchers can develop, forecasts and analyze certain scenarios to determine chances of success. The benefits of AI-driven analytics are many, from providing actionable insights in minutes to eliminating errors or biases in self-service analytics (Baskaran, 2022). However, over the past few years, researchers across the globe have wrestled with just how much human error has permeated their analytics attempts, often ending with disastrous results. From crashing spacecraft to sinking ships, transferring billions of dollars to unintended recipients, and causing deaths due to overdose of medication, human error in data analysis has far-reaching ramifications for educational development but with the accurate use of analytics tools will eliminate the human error in data analysis. For instance, in term of computation like calculation of mean, standard deviation, analysis of variance, chi-square and so on cannot be determined accurately without using analytics tools that is built on the framework of artificial intelligence.

Search engine is a software system that is designed to search for information on the World Wide Web (WWW). It is an information retrieval system designed to help find information stored on computer system through AI principles, such as internet, inside a corporate or proprietary network. It is a kind of information retrieval program and it has two major tasks (Kabiru *et al.*, 2020). Searching through the billions of keywords recorded in the index to find information that match the query sent by the user and ranking retrieved records in order of importance so that the user can choose the most relevant. Search engine serves as source of information to researchers particularly lecturers in higher institutions of learning. They are the vehicles through which researchers can access past and current research publications and help to narrow and refine a search for tracing relevant information. Lecturers can also access information on various sources in the institution through these search engines. This will make them have different information resources and materials for their lectures and research work. Search engines also provide easy access to some reference materials like: gazettes, journals, conference proceeding, magazines and newspapers. University researchers use search engines for research and made evaluation on the quality and type of research materials being used (White, 2013). Search is one of the facilities available on the application to find the information we want. Search engines accommodate a database of sites from all over the world that number billions of web pages. Only by entering the keyword, the search process will be carried out, and the search engine will display several site links along with a brief description. One of the internet tools most frequently used by internet users around the world is the Search Engine. In educational world, search engines can facilitate lecturers in finding learning resources (Kabiru *et al.*, 2020). Besides that, Search engines have advantages in terms of practicality compared to other learning sources. Through search engines lecturers can find information of what they want to get by typing related keywords. Search engines allow lecturers to become alternative learning resources. Search engines have positively affected all the social and economic aspects of human development by improving work performance and productivity (Ashman *et al.*, 2014). Many search engine applications offered by certain sites on the internet, which are popular include google, yahoo, AltaVista and other sites. Google is the most widely used search engine service. Google currently has services including web, images, maps, news, books and others that make it easier for us to search any information based on keywords. With searching we can get a lot of learning resources both formal and informal.

Search engines have offered various facilities so that lecturers get a wider source of information.

Machine learning is a method through which big data can be analyzed and turned into the actionable information that can be of benefit to an organization (Daniel, 2015). A challenge a computer may face is that it does not know the nuances of language, and may thus fail to accomplish the same connections a human would easily piece together. One way to mitigate this is through the use of algorithms in which text mining is explained through the use of machine learning. These algorithms can be leveraged in either a supervised or unsupervised approach. For supervised machine learning, we have an idea of our model and attempt to feed data into the model to make predictions (Hudson, 2014). With unsupervised machine learning, we do not have our model in mind and instead, task the computer with organizing the data into groups or clusters, and form our interpretations from these stratification (Ezen-Can *et al.*, 2015). Machine learning is rapidly gaining influence in the education industry and can possibly strengthen many important areas of teaching, learning, research, and decision-making (Nair, 2019). Naïve Bayes decision tree and many other related algorithms have prognostic capabilities that are of great interest to medical educators and are being used to facilitate learning. Machine learning models learn from experiences or observations and then become very active to achieve human-like actions. Investigations have shown (Edeh, 2022) that machine learning has forecasting capabilities by gaining an understanding of each student's strengths and weaknesses, as well as reasons for why they may be struggling in the classroom. Forecasting of learning outcomes using the machine learning approach can help educational institutions to understand the learning patterns and behaviours of their students, which can be useful in improving school policies, curriculum preparations, and teacher methodology (Musso, 2013). Indeed, machine learning algorithms offer opportunities for organizations, including educational institutions to achieve minimal forecast errors (accuracy) and improve their decision-making process and operational performances. Machine learning provides improvements that help reduce forecast mistakes or errors that have been a source of concerns to many forecasters and their clients in recent times. Machine learning is about training machines to learn certain behaviours or traits and then think and make decisions based on the learned behaviour. It remains one of the promising areas of research to solve many societal problems and can be classified as supervised and unsupervised learning techniques. Through the use of an unsupervised method, you may see if a system can derive data and inferences even when there are not any results or training data. While in the supervised learning field, for each observation of the predictor, Hudson (2014). Supervised algorithms facilitate the understanding of the learning history of the system and the correctness of the output for future analysis.

Statement of the Problem

Through the advancement in artificial intelligence (AI), many countries in Europe and Asia are seriously advancing in breakthrough on lecturers' professional development, by their output of the scholarly research and publication in journal and textbooks but in Africa especially in Nigeria, universities seems not making significant breakthrough on lecturers' professional development through the use of artificial intelligence (AI) resources such as data

analytics, search engine and machine learning which can facilitate lecturers professional development. The researcher observed that these tools are not effectively utilized by most lecturers in the university due to inadequate research outcome and publication in international journals. One therefore wonders whether lecturers actually possess the required skills in the use of AI resources. Artificial intelligence (AI) is transforming various sectors and industries, including education in which AI can help address some of the challenges to lecturers' professional development. Having seen the universal conventional trends by which Educational global standard is built on, this research work is undertaken to determine how lecturers use of Artificial Intelligence (AI) tools is related to their Professional Development efforts in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Purpose of the Study

The main purpose of this study is to determine the relationship between Artificial Intelligence and Lecturers' Professional Development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Specifically, the study seeks to determine:

1. The relationship between utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.
2. The relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.
3. The relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Research Questions

The following research questions are formulated to guild the study:

1. What is the relationship between utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?
2. What is the relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?
3. What is the relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?

Research Hypotheses

The following research hypotheses are formulated to guide the study:

H_{O1}: There is no significant relationship between utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

H_{O2}: There is no significant relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

H_{O3}: There is no significant relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Research Methods

The descriptive survey design was adopted for the study. The design is considered suitable since information on the relationship between Artificial Intelligence and Lecturers' Professional Development was based on their opinions, observations and preferences.

The study will be conducted in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

The population of the study comprised all the 156 lecturers in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. See Appendix II

The sample for the study comprised all the 156 lecturers in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Uyo. Since the population of lecturers is of a manageable size, a purposive sampling technique was used for the study. This is in consonant with Osulate (2005), who stated that the entire population should be studied when the population is small.

The researcher developed forty (24) items research instrument tagged: "Artificial Intelligence and Lecturers Professional Development Questionnaires" (AILPDQ) for data collection for this study. The instrument is designed according to the independent and dependent variables of this study. The questionnaire is divided into three sections A, B and C. Section 'A' contains the demographic characteristics of the respondents. This section contains the categories of lecturers, age and sex. Section 'B' consists of 15 items that sought to provide information on the relationship between utilization of AI tools and lecturers professional development. The statements on the variables that is grouped in five clusters (1-5). Cluster one will seeks information on the relationship between utilization of data analytics and lecturers professional development. Cluster two will seeks information on the relationship between utilization of search engine and lecturers professional development. Cluster three will seeks information on the relationship between utilization of machine learning and lecturers professional development. Section 'C' consists of 9 items that sought to provide information on academic development. The statements on the variables that is grouped in five clusters (1-5). Cluster one seeks information on how data analytics measured academic development. Cluster two seeks information on how search engine measured academic development. Cluster three seeks information on how machine learning measured academic development. A five-point rating scale will be provided in each of the cluster for the respondents to make their responses as follows: Very Great Relationship (VGR), Great Relationship (GR), Moderate Relationship (MR), Little Relationship (LR), Very Little Relationship (VLR). The scale was weighed 5, 4, 3, 2, and 1 respectively.

The instrument was validated by three experts. These experts were staff of University of Uyo, Uyo. The experts were requested to read the items of the instrument one after the other, make corrections, indicate the suitability of the items, language used and the arrangement of the items in logical chronological sequence having attached the research questions, hypotheses and the objectives of the study as a guide. Their comments, suggestions, corrections, modifications, amendments and other inputs were integrated into the final version of the instrument.

The reliability coefficient of the instrument was determined using Cronbach alpha statistical tools to test the internal consistency of the items. The instrument was tested on 30 lecturers in University of Uyo who are not part of the sample of the study. The scores obtained from the test yielded the reliability coefficient of 0.89.

The questionnaire was administered on the respondents by the researcher together with two briefed research assistants. The research assistants were briefed on the procedures for administration and collection of the instrument from the respondents. To distribute and collect back the questionnaire, it took the researcher together with two briefed research assistants four days. The returned response 93.58 percent.

Simple regression analysis was used to answer the five research questions as well as test the five null hypotheses at 0.05 level of significance.

Real limit of r-squared values were used as decision rule for the research questions as indicate below:

Response Options	Points	R-Squared Value Limit
Very Great Relationship	(VGR) 5	0.80-1.00
Great Relationship	(GR) 4	0.60-0.79
Moderate Relationship	(MR) 3	0.40- 0.59
Little Relationship	(LR) 2	0.20-0.39
Very Little Relationship	(VLR) 1	0.00-0.19

In the test of hypotheses, if the p-value was less or equal to 0.05 ($p < 0.05$), the null hypothesis was rejected. Notwithstanding, where p-value was greater or equal to 0.05 ($p > 0.05$), then the null hypothesis was retained.

Results

This section presents the results of the findings based on research questions and hypotheses.

Research Question 1: What is the relationship between utilization of data analytics and lecturers professional in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?

Table 1:Simple Regression model summary of the relationship between the utilization of data analytics and lecturers professional development (N=146).

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Unstandardised Coefficent B	Remark
1	.79[a]	.61	.60	.36	.89	High

a. Predictors: (Contant), Data Analytics

b. Dependent Variable: Professional Development

Source: Field Study 2023

Table 1 presents the simple regression model summary of the relationship between the utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The table, indicates that R is .79 and $R^{\wedge 2}$ value is .61. It implies that 61 percent of lecturers professional development was dependent upon the utilization of data analytics. The adjusted R-Square is .60, which reveals that utilization of data analytics accounted for only 60 percent of the total variance observed in the relationship between data

analytics and lecturer's professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The unstandardized beta weight (β = 0.89) shows that there is a high relationship between the utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria such that a unit increase in utilization of data analytics (From small = 0 to large =1) leads to 0.89 increase in lecturer's professional development.

Research Question 2: What is the relationship between utilization of search engine and lecturers professional in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?

Table 2: Simple Regression model summary of the relationship between the utilization of search engine and lecturer's professional development (N=146)

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Unstandardised Coefficent B	Remark
1	.83[a]	.69	.69	.32	.95	High

a. Predictors: (Contant), Search Engine

b. Dependent Variable: Professional Development

Source: Field Study 2023

Table 2 presents the simple regression model summary of the relationship between the utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The table, indicates that R is .83 and $R^{\wedge 2}$ value is .69. It implies that 69 percent of lecturers professional development was dependent upon the utilization of search engine. The adjusted R-Square is .69, which reveals that utilization of search engine accounted for only 69 percent of the total variance observed in the relationship between search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The unstandardized beta weight (β = 0.95) shows that there is high relationship between the utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria such that a unit increase in utilization of search engine (From small = 0 to large =1) leads to 0.95 increase in lecturers professional development.

Research Question 3: What is the relationship between utilization of machine learning and lecturers professional in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria?

Table 3: Simple Regression model summary of the relationship between the utilization of machine learning and lecturers professional development (N=146)

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Unstandardised Coefficent B	Remark

1	.78[a]	.60	.60	.36	.88	High

a. Predictors: (Contant), Machine Learning

b. Dependent Variable: Professional Development

Source: Field Study 2023

Table 3 presents the simple regression model summary of the relationship between the utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The table, indicates that R is .78 and $R^{\wedge 2}$ value is .60. It implies that 60 percent of lecturers professional development was dependent upon the utilization of machine learning. The adjusted R-Square is .60, which reveals that utilization of machine learning accounted for only 60 percent of the total variance observed in the relationship between machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The unstandardized beta weight (β = 0.88) shows that there is high relationship between the utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria such that a unit increase in utilization of machine learning (From small = 0 to large =1) leads to 0.88 increase in lecturers professional development.

Research Hypothesis 1 (Ho_1): There is no significant influence of utilization of data analytics on lecturers professional development in Faculty of Education and Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Table 4: Summary of Simple Regression ANOVA Test of the relationship between the utilization of data analytics and lecturers professional development (N =146)

Model		Sum of Squares	df	Mean Square	F_{cal}	p-value	Decision
1	Regression	30.62	1	30.62	236.04	.000[b]	H0 is rejected p < .05
	Residual	19.98	144	.13			
	Total	50.59	145				

Significant at 0.05 level of significance

Table 4 presents the simple regression ANOVA test on the relationship between the utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The results in Table 4.6 shows that F_{cal} (1,154) = 236.04; p=.001. Thus, the p-value of .001 is less than the level of significance of 0.05 (p< .05), this implies that there is significant relationship between the utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Therefore, the null hypothesis which states that there is no significant relationship between the utilization of data

analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria was therefore rejected.

Research Hypothesis 2 (Ho_2): There is no significant relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Table 5: Summary of Simple Regression ANOVA Test of the relationship between utilization of search engine and lecturers professional development

(N =146)

Model		Sum of Squares	df	Mean Square	F_{cal}	p-value	Decision
1	Regression	35.15	1	35.15	342.61	.001[b]	H0 is rejected p < .05
	Residual	15.80	144	.10			
	Total	50.94	145				

Significant at 0.05 level of significance

Table 5 presents the simple regression ANOVA test on the relationship between the utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The results in Table 4.7 shows that F_{cal} (1,154) = 342.61; p=.001. Thus, the p-value of .001 is less than the level of significance of 0.05 (p< .05), this implies that there is significant relationship between the utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Therefore, the null hypothesis which states that there is no significant relationship between the utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria was therefore rejected.

Research Hypothesis 3 (Ho_3): There is no significant relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Table 6: Summary of Simple Regression ANOVA Test of the relationship between utilization of machine learning and lecturers professional development

(N =146)

Model		Sum of Squares	df	Mean Square	F_{cal}	p-value	Decision
1	Regression	30.41	1	30.41	234.77	.001[b]	H0 is rejected p < .05
	Residual	19.95	144	.13			
	Total	50.36	145				

Significant at 0.05 level of significance

Table 6 presents the simple regression ANOVA test on the relationship between the utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. The results in Table 4.8 shows that F_{cal} (1,154) = 234.77; p=.001. Thus, the p-value of .001 is less than the level of significance of 0.05 (p< .05), this implies that there is significant relationship between the utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Therefore, the null hypothesis which states that there is no significant relationship between the utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria was therefore rejected.

Discussion of Findings

The findings of this study were discussed based on the specific purposes of the study:

Relationship between utilization of data analytics and lecturers professional development.

The result of the study revealed that there is high relationship between utilization of data analytics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Also, the simple regression ANOVA Table indicated that there is significant relationship between utilization of data analyt ics and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. This could be as a result of the fact that success of educational interventions such as lecturer professional development is as a result of utilization of data analytics in education. This is because Data analytics is fundamentally an act of looking at datasets in order to draw inferences, helping to spot trends, patterns, and even connections to make future event predictions.

Relationship between utilization of search engine and lecturers professional development.

The result of the study revealed that there is high relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State,

Nigeria. Also, the simple regression ANOVA Table indicated that there is significant relationship between utilization of search engine and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. This could be due to the fact that search engine is the most popular artificial intelligence tool which have been in existence long ago and used by large community of people for development.

Relationship between utilization of machine learning and lecturers professional development.

The result of the study revealed that there is high relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Also, the simple regression ANOVA Table indicated that there is significant relationship between utilization of machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.This is simply as a result of the fact that machine learning has forecasting capabilities such as Forecasting of learning outcomes using the machine learning approach which help educational institutions to understand the learning patterns and behaviours of their students, which also could be useful in improving school policies, curriculum preparations, and teacher methodology.

Conclusion

On the basis of the findings of this study, it is concluded that there is a very high relationship between Artificial intelligence and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. It is further concluded that there is a high relationship between utilization of data analytics, search engine, machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria. Furthermore, there is significant relationship between the utilization of data analytics, search engine, machine learning and lecturers professional development in Faculty of Education and Faculty of Vocational Education, Library and Information Science, University of Uyo, Akwa Ibom State, Nigeria.

Recommendations

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

1. Lecturers should attend training sessions provided by educational institutions or technology companies to gain hands-on experience with AI tools and learn how to integrate them effectively into their teaching.
2. Lecturers should stay curious and commit to ongoing professional development. Attend workshops, seminars, and conferences focused on AI in education to stay updated with the latest trends and best practices.

3. Lecturers should engage with expert in the field of AI and education. Collaborate with researchers, technologists, and data scientists to gain insights into how AI can enhance the learning experience.
4. Universities Management and Curriculum Planners should advocate for the development of AI tools that are designed with inclusivity in mind. Ensure that technologies are accessible to all students, regardless of their ability or background.
5. Lecturers should continuously monitor emerging AI technologies and tools. They should prepare to adapt and evolve new teaching methods as new advancements become available.
6. Lecturers should regularly evaluate the impact of AI integration on teaching practices and student learning outcomes. Adjust approach based on feedback and data-driven insights.

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