



EXPLORING THE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN EDUCATIONAL MANAGEMENT SYSTEMS FOR LEADERSHIP DECISION – MAKING EFFICIENCY IN COLLEGES OF EDUCATION IN ANAMBRA STATE. NIGERIA

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Abstract

This Study explored the integration of AI in educational management system for leadership decision making efficiency in colleges of education in Anambra state. To achieve the purpose, two research questions were raised and one null hypothesis was formulated to guide the study. Descriptive survey research design was adopted for the study. A sample of 212 respondents were selected from a population of 492 through the use of Taro Yamane formula. Self-structured questionnaire titled 'Integration of AI for Managing Decision-making Questionnaire (IAIMDQ)' was used for data collection. The questionnaire was validated by two experts in education management unit and one expert in measurement and evaluation unit, all in department of Educational Foundation, faculty of education, Chukwuemeka Odumegwu Ojukwu University, Igbariam, cronbach Alpha was used to ascertain reliability of the instrument and it yielded co-efficient of 0.81. Mean and standard deviation were used to answer the research questions while t-test was used to test the null-hypothesis at 0.05 level of significance. Result indicated that AI is being integrated in Anambra State colleges of education for leadership decision- making effecting to a low extent. It was recommended among others, that AI powered educational management system features should be adequately provided in colleges of education by the government and the college management

Keywords: AI, Integration, Management, decision – Making, leadership.

Introduction

Education is very important for any nation that wants to aspire higher. On this note, Ogbonnaya (2008) stated that a nation that considers compulsory education for citizen sees it as an agent of sustainable growth and development. This was noted in FRN (2013) when it stated that education in Nigeria is an instrument par excellence for effective national development'. The general function of education is to enable people acquire skills and knowledge so they can become useful, productive and employable. This could be achieved in Anambra state college of education through efficiency in leadership decision making by the provosts. For a college of education to accomplish its program and attain its educational goals, the leaderships must be considered. Leadership is the ability of one to guide, direct and influence followers or members of an organization in order to achieve the stipulated goals.

The college provosts are the leaders in colleges of education. Leadership has a far reaching effect on planning, organizing and implementing school policies and programs. Educational leadership is the action of leading a group involved in educational process, organization and ability to recite positive energy in educational policies and process, motivating and supporting others toward a whole vision for the school (Susikala 2024). Educational leadership means the act of directing and organizing resources for the achievement of the stated educational goal. Leadership is very important in education because without someone directing and organizing the school affairs the school cannot have direction and the goals cannot be achieved. Therefore, leaders have the roles they should play for effective leadership. Through their day-to-day actions they plan, attend to staff personnel services, students' personnel services, curriculum and instructional



development, financial management, maintenance of school- community relationship and staff appraisals. The leaders are also expected to manage and control their schools and make efficient decisions.

Decision- making in school mostly depends on the types of school leadership. Different types of school leadership are autocratic, democratic, laissez-faire, transactional and transformational. Autocratic leader takes decisions alone, while democratic leaders seek staff advice and opinion before taking decisions. Transactional leaders tend to take decisions making powers away from those they supervise and to make decisions on their own, not yielding power to those beneath them in the hierarchy (McCartney and Parent 2015). This shows that any college of education provost that practices transactional leadership makes decision alone and this affects the management of the college negatively as this most times lead to poor decisions. Transformational leadership is the type of leadership that empowers subordinates to make operational decisions and is willing to risk the mistakes that result from these decisions (McCartney and Parent 2015). With this, transformational leader has the ability to take the college to the next level because of its specific leadership techniques. This type of leadership improves the educational management as it aids in building school vision, goals, develops intellectual stimulation and structures to foster participation in school decision-making processes.

Management is regarded as a process of supervising, controlling and organization of activities to achieve optimum results with organization resources. Educational management is stated to be controlling and coordinating the efforts of the people and material resources in order to achieve the school stated goals (Ezeokeke 2018). In managing colleges of education, provost is central with the other management team that includes, deputy provost, registrar, bursar, head of works department and the college librarian. The provost and the management team are at the helm of the affairs and they pilot these affairs for effective college management. To get this achieved, the college management team must be ready to be change agent by applying innovative and result oriented management strategies. These innovative strategies involve integrating Information and Communication Technology (ICT) and AI in managing education.

Artificial Intelligence (AI) should be integrated in management of colleges of education. AI is a rapidly evolving field of technology that involves the development of intelligent machines that can perform tasks that involves intelligences, that includes decisions making based on data. AI is a tool that work in partnership with administration professional, taking over mundane task and providing insightful data, thereby enabling us to make informed decisions (Soong 2023). Naqvi (2020) emphasized that AI is the field of computer science that involves creating computer programs capable of imitating intelligent behavior and ideally enhancing human – like abilities. Integrating AI in educational management will be of advantage to the college provost as it has the potential to revolutionise educational management by improving efficiency. AI integration into the school system will improve leadership decision making processes and efficiency in educational management practices, unlike traditional educational management system that is loaded with data overload and problem in taking accurate and timely decisions. With AI system, college provost can analyze vast amount of data, streamline administrative tasks and have valuable insights to make informed decisions. This could be done through the use of Machine Learning (ML) which is one of the types of AI. ML is a subset of AI that focuses on developing algorithms that enable computer to learn from data. As school management involves student enrolment, scheduling of teachers, attendance and records, establishment of ML an AI system that learns from datasets allows efficient decision-making. AI makes school administrators' job easier and more efficient by enhancing supportive education environment.

Integrating AI into School management shows embracing the future and harnessing technology to achieve the educational goals. Unfortunately, observation shows that decision- making in colleges of education seems not to be done efficiently. Uzoechina and Nwankwo (2016) found out that teachers are not allowed to participate in decision making on issues of finance and school management. More so, Adekunle (2012) stated that teachers are denied the opportunity to decide on issue pertaining to their professional well-being. It is on their background that the researcher wants to explore the integration of AI in management and decision making in colleges of education in Anambra State.

Statement of Problem

Leadership today has been a very complex issue because of the globalization and technological advancement especially in information technology. This is because of the roles of schools managers in establishing efficiency in leadership roles especially in decision- making. Efficient decision- making in Anambra state colleges of education appears to be problem to the college management. This seems to be as a



result of lack of reliable data, too many options, lack of time, inability to change amongst others.

Poor decision – making affects the college of education in achieving their educational objectives and most times leads to poor learning outcome and poor teaching. It is on this background that the decision – making in colleges of education in Anambra necessitates exploring the integration of AI into educational management systems.

Purpose of the Study

The main purpose of this study was to explore the integration of AI in education management system for leadership decision – making efficiency in Anambra State Colleges of Education. Specifically, the study sought to:

1. Examine the key features required in AI – powered educational management systems to support leadership decision – making in colleges of education in Anambra state..
2. To find out the extent AI is being integrated in educational management system to support leadership decision- making in Colleges of Education in Anambra state.

Research Questions

The following research questions guided the study.

1. What are the key features required in AI-powered educational management systems to support leadership decision-making in Anambra state colleges of education?
2. To what extent is AI being integrated in educational management systems for efficient leadership decision – Making Process in Anambra Colleges of education?

Hypothesis

The following null hypothesis were formulated at 0.05 level of significance.

1. There is no significant difference between the mean rating of management staff and lecturers on the extent AI is being integrated in educational management systems for efficiency in Anambra state colleges of education leadership decision- making.

Methodology

The study adopted descriptive survey research design and it was carried out in Anambra state. The study covered all the two public colleges of education in Anambra state, namely – federal college of education (Technical), Umunze and Nwafor Orizu College of education, Nsugbe. The population of the study was 12 principal officers from the two colleges of education and 480 lecturers from the two colleges of education (Personnel service unit and statistics and record unit of the colleges of education 2024.) All the 12 principal officers were sampled because the size was manageable while 200 lecturers were sampled in analysis which is 46% of the population. The sample size was statistically determined using “Taro Yamane formula. The choice of this formulawas supported by Uzoagulu to determine statistically the sample size of a finite or known population. Simple random sampling technique was used to draw a sample of 100 lecturers from each of the two colleges of education. Totaling 200 lecturers and 12 principal officers which is 212 respondents.

The instrument for data collection was a questionnaire constructed by the research titled: “Integration of AI in Managing Decision- Making Questionnaire (IAIMDQ). The instrument contained items from the research questions. The respondents were expected to indicate their responses on a four – point scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE) and Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) with values of 4, 3, 2, and 1 respectively. The instrument was face validated by three experts; two experts in Education Management and one in Measurement and Evaluation of department of Education Foundations from Chukwuemeka Odunegwu Ojukwu University, Igbariam. In order to ensure the internal consistency of the instrument, a trial test exercise was carried out with 4 principal officers and 20 lecturers in Enugu state. The reliability of the instrument was determined by the use of cronbach alpha which yielded 0.83 reliably co efficient. This was considered appropriate for the study. The data for the study were collected by the researcher and three research assistants who were briefed on how to interact and administer the instrument to the respondents. A total of 212 copies of the questionnaire were administered to the respondent and 203 copies were returned, indicating 96% return rate. The data collected were analyzed using mean and standard deviation to answer research questions and t- test was used for testing the null hypothesis formulated. In taking decision, 2.50 was used as the cutoff point. Any mean rating 2.50 and above is regarded as agreed or high extent while below is regarded as disagreed or low extent. Regarding the



null hypothesis, when the calculated t – value was greater than or equal to the critical value, the null hypothesis was rejected, while the null hypothesis was not rejected if the calculated t - value was less than the critical value.

Presentation of result

The results are presented in tables as follows:

Research Question I: What are the key features required in AI- powered educational management systems to support leadership decision – making in Anambra state college of education?

Table I: mean and standard deviation response on the key features required in AI- Powered educational management system.

ITEM	SA	A	D	SD	MEAN	SD	Decision
1	190	3	10	-	3.96	0.46	A
2	180	18	5	-	3.98	0.31	A
3	175	8	11	09	3.89	0.38	A
4	10	182	1	10	3.95	0.41	A
5	155	20	20	8	3.71	0.44	A
6	85	105	12	-	3.91	0.40	A
Grand					3.93	0.40	A

From table I above, the grand mean is 3.93. This implies that respondents agreed on the key features required in AI-powered educational management systems to support leadership decision – making in Anambra state college of education. Also the standard deviation value of 0. Suggests that the mean is a true repetition of respondent's response.

Research Question 2

To what extent is AI being integrated in educational management systems for efficient leadership decision- making process in Anambra state colleges of education?

Table 2:

Mean and standard deviation response on the extent of integration of AI in educational management systems for efficient leadership decision making process.

ITEM	VHE	HE	LE	VLE	MEAN	SD	Decision
7	30	03	160	10	2.22	1.05	LE
8	50	21	130	03	2.35	1.09	LE
9	21	80	70	32	2.48	0.97	LE
10	9	20	170	4	2.24	1.00	LE
11	10	18	174	1	2.31	0.99	LE
12	35	50	108	20	2.41	1.21	LE
Grand					2.34	1.05	LE

Table 2 shows the grand mean 2.34. This shows that the respondents agreed to a low extent on the integration of AI in educational management system for efficient leadership decision- making process. Also the standard deviation value of 1.05 suggest that the mean is a true representation of the respondents' responses.

Hypothesis I

Table 3:

The significant difference in the mean response of principal staff and lecturers on the extent AI is being integrated in educational management systems for efficient leadership decision make process in colleges of education in Anambra state.



Category	N	Mean	SD	DF	T-Cal	T-CIT	REMARK
Principals Officers	12	2.48	1.00	486	0.16	1.96	Not rejected
Lecturers	191	2.21	1.11				

The t-test table shows that that t-calculated is 0.16 while the t-critical (t-value) is 1.96 with 486 degree of freedom at 0.05 level of significance. Therefore, the t- calculated is less than the t-crit, the null hypothesis is not rejected which states that principal officers and lecturers will not differ significantly in their mean responses on the extent AI is being integrated in educational management systems for efficiency in Anambra state colleges of education in leadership decision- making.

Discussions of finding

The finding obtained from analysis of data in this study revealed that data analysis and reporting, predictive analytics, resource optimization, curriculum enhancement, communication and collaboration are AI- powered educational management systems required to support leadership decision – making in Anambra state colleges of Education. This implies that AI-powered features are required in management of colleges as they make decision making easier, faster and more efficient. This usually contributes in smooth and good management of Colleges of Education. This finding is in agreement with that Duvet (2024) who reported that information technology provides an immense amount of data to make your business decisions more informed and accurate. He also noted that ICT provides correct data at the right place at the right time making the administrative (Business) decision process much faster and more effective. This has shown that integration of AI – power features by the collegesof education management team in decision making will ease a lot of problems that are encountered in school decision. It will make collation and collecting of data easy, communication with the stakeholders, curriculum enhancement and resource optimization will be fast tracked and decision making easy.

The finding obtained from analysis of data and hypothesis one in this studyrevealed that the null hypothesis was not rejected. This implies that there was no significant differences in the mean rating of principal officers and lecturers on the extent AI is being integrated in educational management systems leadership decision- making process in Anambra state colleges of education. The respondent agreed that integration of AI in educational management systems for efficient leadership decision – making is to low extent. The reason forthis finding could be that electricity supply in those colleges is not adequate for effective use of these equipment. There could be also due to inadequate personnel to handle the AI equipmentand facilities. The finding of this study agrees with Ekanem, and Ajala (2023) who found out that effort geared towards integration of ICT into the school system have not had much effect on them. This finding does not align with Wichendu and Onyinyechi (2021) whose study discusses utilization of ICT in the administration of public senior secondary school in Rivers state. The finding reveal that ICT facilities were less utilized in the areas of staff salary, staff records, admission process and staff disciplinary matters. The different findings could be as a result of their locations and the levels of the schools.

Conclusion

The study concluded that there are some AI-powered educational management systems to support leadership decision making. The findings of the study also indicated that the integration of AI features in educational management system for efficient leadership in decision – making was to a low extent. This shows that decision making in colleges of education in Anambra state are not done swiftly and efficiently because of this.

Recommendations

Based on the finding of this study the following recommendation were made:

1. AI- Powered educational management system features should be adequately provided in colleges of education by the government and college management to enhance the use of AI in colleges of education management.
2. AI should be integrated in the management of colleges of education for leadership decision-makingefficiency to meet up with the demand in the digital age and for prompt and efficient decision – making.



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