EDUCATIONAL MANAGEMENT IN AN ERA OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

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Abstract

The study used a descriptive survey research design to examine educational management in an era of artificial intelligence, AI, and machine learning, ML. The area of the study was the University of Nigeria Nsukka. The population consisted of 272 principal officers and other staff in management positions. A census sampling technique was employed for the study. The instrument for data collection was a researcher-structured questionnaire titled Questionnaire on Educational Management in the Era of Artificial Intelligence and Machine Learning (QOEMEAM). The validity of the instrument was tested using content analysis. Reliability was tested using the Pearson correlation coefficient (r). It gave a reliability coefficient of r = 0.810. SPSS statistical tool was employed for analysis. Research questions were answered using mean scores and standard deviation. Findings revealed that AI and ML enhance effective and efficient educational management ***(SD=1.2588 < 1.402; $\bar{x}$ = 3.84 > 3.0);*** *AI and ML threaten the position of educational managers in educational management* ***(SD=1.2588 < 1.402; $\bar{x}$ =3.84 > 3.0).*** *It further revealed that educational managers should integrate AI and ML into educational management* ***(SD=1.2588 < 1.402; $\bar{x}$ =3.84 > 3.0).*** *The finding implies that the integration of AI and ML is important at this time but the implementation may lead to job loss by education managers. It was recommended that AI and ML be integrated into educational management but in phases, to the extent that it will not take over human roles and create job loss.*

Keywords: *Artificial Intelligence, AI, Machine Learning, ML, Educational Management.*

INTRODUCTION

Educational management is the process of planning, organizing, directing, and controlling an educational institution's human, financial, and material resources to achieve optimal educational goals. Girard, J. (2018); Kumar, A. (2019) and Hill, Song, and West, (2020), suggest that educational management involves activities such as curriculum development, training and development, budgeting, and student assessment. The efficiency and effectiveness of educational management are essential for ensuring that educational institutions provide quality education and meet set goals. These have often been done using the traditional approach until the technological revolution and subsequent emergence of artificial intelligence and machine learning.

Amidst technological traversing of all sectors and spheres of human existence and endeavors, artificial intelligence (AI) and machine learning (ML) have emerged as a change agent or force within the education sector. These technological breakthroughs have transformed how we live, work, and interact with the educational world. Scholars such as Holmes, Hui, Miao, and Ronghuai (2021) and Igbokwe (2023) are in alignment on the position that the impact of these technologies on the education sector cannot go unobserved as they have the potential to revolutionize how educational institutions are

managed, their operations, content delivery and the way they support student learning. These technologies have the potential to transform educational management practices such as planning, organizing, directing, and controlling; providing new ways of enhancing student learning outcomes, streamlining administrative processes, and empowering educators. As educational institutions navigate this era of artificial intelligence (AI) and machine learning (ML) integration era, it is imperative to understand what AI brings to the table for educational management, its benefits and their implications, challenges, and best practices associated with leveraging these technologies for effective and efficient management of educational institutions.

There are various values or benefits that artificial intelligence brings to the table for educational management. The advent of artificial intelligence (AI) and machine learning (ML) brings about a drastic change in educational management. It brings about new ways of enhancing personalized learning experiences and data-backed decision-making; reshaping the way educational institutions are run including the manner of delivering education to students. AI can influence the management and administration of education to be more efficient, develop feasible and cost-effective plans, formulate responsive policies, and monitor and evaluate educational outcomes. Through data analysis of students' learning styles, preferences, and performances, artificial intelligence (AI) algorithms can adapt educational content and activities to meet the individual needs of each student. It could therefore be said that one of the outstanding features that AI brings to educational management includes the ability to personalize learning experiences for students. Nye (2015); Timms (2016); and Aftab, Mohammad, and Mousuf (2022) all agree that artificial intelligence and machine learning also can identify patterns and trends; automate administrative processes, and provide valuable insights to educators and administrators. By leveraging artificial intelligence (AI) and machine learning (ML), educational institutions can optimize resource allocation, improve decision-making processes, and enhance overall operational efficiency.

Analytics is a critical component of the full package of advantages of artificial intelligence and machine learning**.** The use of artificial intelligence (AI) in educational management will enhance budget performance appraisal and monitoring, program assessment, prediction, or forecast, and can help to identify students at risk of academic failure. Igbokwe (2023) opines that data analytics can be used to predict which students are at risk of dropping out or falling behind academically. It can also be used to intervene and provide targeted support to students, teachers, and programs thereby improving their chances of success and sustenance. In all, the integration of AI in educational management has the potential to improve the accuracy and timeliness of predictive analytics and effective support for at-risk students.

Artificial intelligence and machine learning can improve administrative procedures in the area of educational management. It can help administrative procedures in the areas of program mapping, resource allocation, student enrollment, and communication. AI systems when deployed for educational management can help to streamline and automate administrative processes. This will result in having more time to engage in other strategic activities thereby becoming more resourceful. It is the view of Sadiku, Ashaolu, Ajayi-Majebi, and Musa (2021) that artificial intelligence will also free up more resources for educators and administrators to engage in more strategic initiatives.

Personalized Learning Experience remains a component of the values that artificial learning and machine learning bring to the table for educational management. In their view, Hill, Song, and West (2020) believe that **o**ne of the most significant benefits of AI and ML in educational management is the ability to deliver personalized learning experiences to students. By analyzing student data, such as learning preferences, performance trends, and engagement, artificial intelligence systems can adapt educational content to meet individual needs. This personalized approach can help students learn at their own pace, teachers can tailor materials to suit the need and deliver on focused areas of weakness, and receive targeted support, ultimately leading to improved academic outcomes. Mason, and Rennie (2018), and Mandernach, Gonzales, and Garrett (2020) believe that no two students are the same and

should be tutored and assessed based on their pace. This is essential because every student is unique, with different learning paces and comprehension rates. Therefore, the best of each student comes out when learning activities are tailored to suit the character temperament, and learning pace of such a student.

Artificial intelligence and machine learning can enhance administrative efficiency and resource optimization. AI and ML tools can streamline administrative processes within educational institutions, reduce manual workload, and optimize resource allocation, (Ihmeideh, 2020). A typical example is the automation of routine tasks. AI-powered systems can automate routine tasks like data entry, grading, and scheduling, allowing educators and administrators to focus on more strategic initiatives. More so, predictive analytics can help institutions during forecasts; allocate resources effectively, and identify areas for improvement, leading to cost savings and operational efficiencies.

However, the potential benefits of artificial intelligence (AI) and machine learning (ML) integration into educational management notwithstanding, there are significant challenges that will militate against ethical, equitable, and effective implementation if not duly considered and properly addressed. Some of these challenges include data security and privacy, ethical considerations, inclusion and equity for artificial intelligence in education the issue of bias inherent in AI systems, and the elimination of the role of humans in educational management.

The integration of AI technologies into educational management may eliminate the role of humans. VanLehn, (2011) and Girard, (2018) maintained that the integration of artificial intelligence and machine learning into educational management might as well erase human judgment and empathy in administration. It will question the role of humans in decision-making, problem-solving, and interpersonal interactions and relationships. This might threaten the employment of education managers if and when not properly checked. On the contrary, Zawacki-Richter and Anderson (2014) and Ihemeideh (2020) posit that the integration of artificial intelligence and machine learning holds opportunities for educational managers to gain further skills through need-assessed training programs; gain mastery of their roles, discharge their responsibilities within the shortest possible time while having more time to focus on other important issues such as all-inclusive and equitable education for all.

Inclusion and equity for AI in education have remained a subject of debate as it affects developing countries. Nye (2015) and Aftab, Mohammad, and Mousuf (2022) hold the view that **t**here are remote villages within developing countries that are at risk of being left behind with the integration of AI in educational management. Examples of such towns and villages abound in Africa in general and Nigeria in particular. The main obstacles that will be faced include basic technological infrastructure which must be considered and provided to establish the basic conditions for implementing new strategies that take advantage of artificial intelligence in educational management and in improving learning and outcomes generally. The absence of these basic needs will adversely affect the equality of chance to education and heighten tension resulting from bias.

Bias **is** one of the key challenges facing AI integration, (Zawacki-Richter, *et al*, 2014). Besides the issues of bias in inclusion, AI seems to come with an inherent bias as AI algorithms maintain the biases and inequalities embedded in the data used to train them. This may eventually result in unfair outcomes and prejudiced practices. Thereby perpetuating the existing inequalities and biases in the education system in the form of favoring certain groups of students over others.

In their views, Zawacki-Richter and Anderson (2014); Veletsianos (2019 and Smith (2022) agree that the consideration of the issue of data privacy or data security in AI systems integration is a work in progress since data is needed and updated daily for AI to remain current. There's no gainsaying that AI algorithms rely on data to function optimally. And this raises the concerns about data privacy, security, and consent and it points to the potential legal impediments that might arise as a result.

There is the subject of legal constraint which stems from the issues of cyber security, biases and discriminations, impersonation, intellectual property rights issues, issues of data protection and privacy

rights, lack of accountability, and defamation as some of the different legal issues that may likely arise from the integration of artificial intelligence in educational management. Kulkarni, Shabadi, and Hulipalled, (2019) suggest that the advancement of AI technologies and integration in educational management, vulnerabilities, and the attendant impact on human rights may heighten litigation. These issues of consideration captivated the attention of the researcher to begin to think about the possibility of integrating the new technology while exercising caution to avoid the challenges or pitfalls that could lead to failure in implementation while upholding the values that the advancement in technology brings.

Statement of the Problem

Educational management is known to be a human-based activity that involves planning, organizing, directing, and controlling both human, financial, and material resources of an educational institution to achieve optimal educational goals. Educational managers engage in such as curriculum development, training and development, budgeting, and student assessment, (Girard, 2018; Kumar, 2019 Hill, Song, & West, 2020). The efficiency and effectiveness of educational management have sustained teaching and learning, and the provision of quality education till recent times. These have often been done using the traditional approach until the technological revolution and subsequent emergence of artificial intelligence and machine learning.

Meanwhile, artificial intelligence (AI) and machine learning (ML) is a technological breakthrough that has the potential to transform educational management practices by providing new ways of enhancing student learning outcomes, streamlining administrative processes, and empowering educators. It brings enhanced personalized learning experiences and data-backed decision-making; it can influence the management and administration of education to be more efficient, develop feasible and cost-effective plans, formulate responsive policies, and monitor and evaluate educational outcomes. Aftab, Mohammad, and Mousuf, (2022), opine that AI and ML can adapt educational content and activities to meet the individual needs of each student and personalize learning experiences for students. It also can identify patterns and trends; automate administrative processes, and provide valuable insights to educators and administrators. These capabilities point to the reason it has become a subject of global discussion.

However, this technology is not without significant challenges that will militate against ethical, equitable, and effective implementation or integration of AI and ML into educational management in Nigeria if not duly considered and properly addressed. There are issues of data security and privacy, ethical considerations, inclusion and equity for artificial intelligence in education, the issue of bias inherent in AI systems, and the elimination of the role of humans in educational management. Consequently, this study seeks to know whether the integration of AI and ML into educational management will constitute a threat to the position of educational managers, and to what extent should this technological concept be accepted. It also seeks to examine the ethical and legal implications of its adoption and seek ways to check it.

The main purpose of the study is to examine educational management in an era of artificial intelligence and machine learning in Nigeria. Specifically, the study sought to:

i. Investigate the extent to which artificial intelligence and machine learning enhance effective and efficient educational management;
ii. Ascertain whether artificial intelligence and machine learning threaten the position of educational managers in educational management.
iii. Examine the extent to which educational managers can integrate artificial intelligence and machine learning to enhance educational management.

The following research questions were formulated to guide the study:

1. To what extent does artificial intelligence and machine learning enhance effective and efficient educational management?

2. Does artificial intelligence and machine learning threaten the position of educational managers in educational management?
3. To what extent should educational managers integrate artificial intelligence and machine learning into educational management?

Research Methodology

The study employed a descriptive survey research design. The area of the study was the University of Nigeria Nsukka. The population consisted of 272 principal officers and other staff in management positions. A census sampling technique was employed for the study. The instrument for data collection was a researcher-structured questionnaire titled "Questionnaire on Educational Management in the Era of Artificial Intelligence and Machine Learning (QOEMEAM)". The validity of the instrument was tested using content analysis. Reliability was tested using Pearson correlation coefficient (r) yielding a reliability coefficient of 'r' = 0.81. The questionnaire had two sections, A and B. While section A, deals with information about the respondents, section B is the question set on the topic of study. It consists of statement items employed in three clusters. The researcher adopted 4 (four) Likert's points scaling techniques where responses were graded from, "Very Great Extent (VGE) 4 points, and Great Extent (GE) 3 points, to Low Extent (LE) 2 points and Very Low Extent (VLE) 1 point. The method of data collection adopted by the researcher was the administration of the questionnaire by the researcher and the use of proxies to reach the respondents. Data was presented and analyzed by mean score and standard deviation.

Results and Analyses

One-Sample Kolmogorov-Smirnov Test was carried out to check the uniformity of test distribution before the analysis was carried out and the result showed that the test distributions were uniform and calculated from data.

Research Question I: To what extent does artificial intelligence and machine learning enhance effective and efficient educational management?

Table 4.1.1: Responses on the extent to which artificial intelligence and machine learning enhance effective and efficient educational management (n = 247)

		4 VGE	3 GE	2 LE	1 VLE	∑FX	- X	SD	Decision
1	There are potential long-term impacts of artificial intelligence and machine learning on the future of education and educational management.	450 90 33.1	426 130 47.8	74 37 13.6	15 15 5.5	965 272 100%	3.55	1.232	Agree
2	Artificial intelligence and machine learning technologies contribute to the optimization of resource allocation and budgeting in educational management	700 140 51.5	279 81 29.7	70 35 12.9	16 16 5.9	1065 272 100%	3.92	1.313	Agree
3	To a great extent, artificial intelligence and machine learning technologies support teacher professional development and training in the educational planning of human resources.	540 108 39.7	381 315 42.3	50 25 9.2	24 24 8.8	995 272 100%	3.66	1.319	Agree

4	Artificial intelligence and machine learning technologies contribute to the identification and support of students with special needs.	605 121 44.5	401 110 40.4	46 23 8.5	18 18 6.6	1070 272 100%	3.93	1.234	Agree
5	Artificial intelligence and machine learning tools enhance personalized learning experiences for students in educational institutions	765 153 56.3	296 81 29.7	52 26 9.6	12 12 4.4	1125 272 100%	4.14	1.196	Agree
	Total Grand mean and standard deviation						**3.84**	**1.2588**	

Source: Field Survey, 2024

From Table 4.1.1, 220 of 272 respondents which represent 80.90% of the sampled population opine that there are potential long-term impacts of artificial intelligence, AI, and machine learning ML on the future of education and educational management. This is against the opinion of 52 of the 272 respondents which represent 19.1% of the sampled population who believe that there are no potential long-term impacts of AI and ML on the future of education and educational management in Nigeria. While 221 (81.2%) respondents held the opinion that AI and ML technologies contribute to the optimization of resource allocation and budgeting in educational management to a great extent, 51 other respondents (18.8%) believe that AI and ML technologies have a very low contribution. More so, 423 (82.0%) respondents indicate that to a great extent, AI and ML technologies support teacher professional development and training in educational planning of human resources, while 49 (18%) respondents indicate that AI and ML technologies have very low support. 231 respondents (84.9%) indicate that AI and ML technologies contribute to the identification and support of students with special needs, while 41 (15.1%) respondents indicate a contrary position. Also, 234 (86%) indicate that AI and ML tools enhance personalized learning experiences for students in educational institutions as against the opinion of 38 (14%) other respondents who suggest that AI and ML tools do not enhance personalized learning experiences. Overall, with the standard deviation, SD of 1.2588 (SD = 1.2588 < **1.4**02) which shows the homogeneity of the scores clustered around the mean of 3.84 ($\overline{x} = 3.84 > 3.0$), we accept that artificial intelligence and machine learning enhance effective and efficient educational management to a very great extent.

Research Question II: Does artificial intelligence and machine learning threaten the position of educational managers in educational management?

Table 4.1.2: Responses on the extent to which artificial intelligence and machine learning threaten the position of educational managers in educational management

		4 VGE	**3 GE**	**2 LE**	**1 VLE**	**∑FX**	**-X**	**SD**	**Decision**
1	Integration of artificial intelligence and machine learning technologies absorb the roles and responsibilities of educational managers.	732 184 67.7	144 36 13.2	74 37 13.6	15 15 5.5	965 272 100%	3.55	1.232	Agree
2	To what extent do artificial intelligence and machine learning technologies reduce the leadership and strategic planning capabilities of educational managers in educational settings?	700 140 51.5	279 81 29.7	70 35 12.9	16 16 5.9	1065 272 100%	3.92	1.313	Agree

3	Educational managers perceive the integration of artificial intelligence and machine learning technologies as threats to their relevance within the educational sector.	777 164 68.7	144 36 13.2	50 25 9.2	24 24 8.8	995 272 100%	3.66	1.319	Agree
4	Artificial intelligence and machine learning have potential implications for the job security and job prospects of educational managers in the future.	605 121 44.5	401 110 40.4	46 23 8.5	18 18 6.6	1070 272 100%	3.93	1.234	Agree
5	To what extent do artificial intelligence and machine learning algorithms automate tasks traditionally performed by educational managers, potentially reducing the need for human intervention?	849 181 66.6	212 53 19.5	52 26 9.6	12 12 4.4	1125 272 100%	4.14	1.196	Agree
	Total Grand mean and standard deviation						**3.84**	**1.2588**	

Source: Field Survey, 2024

From Table 4.1.2, 184 of 272 (67.70%) respondents indicate that to a very great extent, the integration of AI and ML technologies absorb the roles and responsibilities of educational managers, while 36 (13.2%) respondents indicate that to a great extent, the integration of AI and ML technologies absorb the roles and responsibilities of educational managers. This is against the opinion of 37 (13.6%) and 15 (5.5%) who indicate the integration of AI and ML technologies absorb the roles and responsibilities of educational managers to a low extent and a very low extent, respectively. 140 (51.5%) respondents believe that AI and ML technologies reduce the leadership and strategic planning capabilities of educational managers in educational settings to a very great extent. This is contrary to the position of 16 (5.9%) respondents who indicate that AI and ML learning technologies reduce the leadership and strategic planning capabilities of educational managers in educational settings to a very low extent. 164 (68.7%) respondents indicate that educational managers perceive the integration of AI and ML technologies as threats to their relevance within the educational sector to a very great extent. This position is at variance with position 25 (9.2%) indicating that educational managers only perceive the integration of AI and ML technologies as threats to their relevance within the educational sector to a low extent. Notably, 231 (84.9%) respondents believe that AI and ML have potential implications on the job security and job prospects of educational managers in the future, as against the belief of 41 (15.1%) respondents who indicate that AI and ML have very low potential implications on the job security and job prospects of educational managers in the future. More so, 234 (86.1%) of the respondents indicate that artificial intelligence and machine learning algorithms automate tasks traditionally performed by educational managers, potentially reducing the need for human intervention. while 38 (14%) of the respondents disagree with this position, indicating that it occurs to a very low extent. With the standard deviation, SD of 1.2588 (SD = 1.2588 **< 1.4**02) which shows the homogeneity of the scores clustered around the grand mean of 3.84 ($\bar{x}$= 3.84 > 3.0), we accept that artificial intelligence and machine learning threaten the position of educational managers in educational management to a very great extent.

Research Question III: To what extent should educational managers integrate artificial intelligence and machine learning into educational management?

Table 4.1.3: Responses on the extent to which educational managers can integrate artificial intelligence and machine learning to enhance educational management

		4 VGE	3 GE	2 LE	1 VLE	∑FX	-X	SD	Decision
1	To what extent should educational managers adopt and integrate AI and ML technologies into the educational system?	450 90 33.1	426 130 47.8	74 37 13.6	15 15 5.5	965 272 100%	3.55	1.232	Agree
2	Integration of AI and ML into educational management will save cost, and create more time for managers to focus on other important courses to create more value for all stakeholders.	700 140 51.5	279 81 29.7	70 35 12.9	16 16 5.9	1065 272 100%	3.92	1.313	Agree
3	Educational managers can be trained and supported to develop the necessary skills and competencies to effectively utilize AI and ML technologies at full scale while in their roles.	540 108 39.7	381 115 42.2	50 25 9.2	24 24 8.8	995 272 100%	3.66	1.319	Agree
4	AI and ML algorithms can be used to enhance data analytics and forecasting for making informed decisions	605 121 44.5	401 110 40.4	46 23 8.5	18 18 6.6	1070 272 100%	3.93	1.234	Agree
5	Educational managers can leverage artificial intelligence and machine learning technologies to improve decision-making processes and strategic planning.	765 153 56.3	296 81 29.8	52 26 9.6	12 12 4.4	1125 272 100%	4.14	1.196	Agree
	Total Grand mean and standard deviation						**3.84**	**1.2588**	

Source: Field Survey, 2024

Table 4.1.3 shows that 220 (80.9%) respondents opine that educational managers should adopt and integrate AI and ML technologies into the educational system to a very great extent, while 52 (19.1%) of the respondents indicate that integration of AI and ML technologies into the educational system should be to a very low extent. 221 (81.2%) of the respondents also indicate that integration of AI and ML into educational management will save cost, and create more time for managers to focus on other important courses to create more value for all stakeholders to a very great extent. This is in disagreement with the opinion of 51 (18.8%) respondents who opine that the integration of AI and ML into educational management will save cost, and create more time for managers to focus on other important courses to create more value for all stakeholders to a very low extent. The table further shows that 223 (81.9%) of the respondents believe that Educational managers can be trained and supported to develop the necessary skills and competencies to effectively utilize AI and ML technologies at full scale while in their roles, while 49 (18%) of the respondents hold a contrary opinion. Notably, 231 (84.9%) respondents believe that AI and ML algorithms can be used to enhance data analytics and forecasting for making informed decisions, while 41 (15.1%) are in disagreement with that position. More so, 234 (86.1%) indicate that educational managers can leverage artificial intelligence and machine learning technologies to improve decision-making processes and strategic planning to a very great extent while only 38 (14%) of the respondents are in disagreement indicating that educational managers can only leverage artificial intelligence and machine learning technologies to improve decision-making processes and strategic planning to a very low extent. Overall, with the standard deviation, SD of 1.2588 (SD=1.2588 **< 1.4**02) which shows the homogeneity of the scores clustered around the mean of 3.84

($\bar{x}$=3.84 > 3.0), we accept that educational managers should integrate artificial intelligence and machine learning into educational management to a very great extent.

Summary of Findings

1. Artificial intelligence and machine learning enhance effective and efficient educational management to a very great extent **(S =1.2588; $\bar{x}$ = 3.84 > 3.0)**.
2. Artificial intelligence and machine learning threaten the position of educational managers in educational management to a very great extent **(SD=1.2588; $\bar{x}$ =3.84 > 3.0).**
3. Educational managers should integrate artificial intelligence and machine learning into educational management to a very great extent **(SD=1.2588; $\bar{x}$ =3.84 > 3.0).**

Discussion of Findings

While research question I above sort to establish the extent to which artificial intelligence and machine learning enhance effective and efficient educational management, the result obtained From Table 4.1.1, indicates that artificial intelligence and machine learning enhance effective and efficient educational management to a very great extent (SD=1.2588; $\bar{x}$ = 3.84 > 3.0). The value of standard deviation SD of 1.2588 shows the homogeneity of the scores clustered around the grand mean, $\bar{x}$ = 3.84. This implies that the adoption and integration of AI and ML technologies into educational management will result in efficiency and effectiveness. The finding is in alignment with the view of (Ihmeideh, 2020) who opines that AI and ML can enhance administrative efficiency and resource optimization; streamline administrative processes, reduce manual workload, and eliminate administrative bottlenecks.

Research Question II sought to know the extent to which artificial intelligence and machine learning threaten the position of educational managers in educational management. Results obtained from Table 4.1.2 revealed that artificial intelligence and machine learning threaten the position of educational managers in educational management to a very great extent ($\bar{x}$ = 3.84 > 3.0). The standard deviation, SD of 1.2588 shows the homogeneity of the scores clustered around the grand mean, $\bar{x}$ =3.84, and gives credence to the finding. The finding implies that the adoption of AI and ML into educational management may result in job loss. This is in alignment with the position of VanLehn, (2011) and Girard, (2018) who maintained that the integration of AI and ML into educational management might as well erase human judgment and empathy in administration; and question the role of humans in decision-making, and interpersonal relationships and threaten the employment of education managers. However, the finding contradicts the position of Zawacki-Richter and Anderson (2014) and Ihemeideh (2020) who posit that the integration of AI and ML holds opportunities for educational managers to gain further skills through need-assessed training programs; gain mastery of their roles, discharge their responsibilities within the shortest possible time while having more time to focus on other important issues.

Research Question III sought to examine the extent to which educational managers should integrate artificial intelligence and machine learning into educational management. Results obtained from Table 4.1.3 revealed that educational managers should integrate artificial intelligence and machine learning into educational management to a very great extent. The standard deviation, SD=1.2588 shows the homogeneity of the scores clustered around the grand mean, $\bar{x}$ =3.84 > 3.0). The finding implies that the adoption and integration of AI and ML technologies should not be relegated but should be given immediate attention. The finding is in alignment with the findings of Sadiku, Ashaolu, Ajayi-Majebi, and Musa (2021) who are of the view that AI and ML can optimize resource allocation and free up more resources for educators and administrators to engage more strategic initiatives.

In conclusion, flowing from the findings and the subsequent discussion of results, the researcher concluded that AI and ML enhance effective and efficient educational management to a very great extent **(S =1.2588; $\bar{x}$ = 3.84 > 3.0)**. It was further concluded AI and ML threaten the position of educational managers in educational management to a very great extent **(SD=1.2588; $\bar{x}$ =3.84 > 3.0),**

even as educational managers should integrate artificial intelligence and machine learning into educational management to a very great extent **(SD=1.2588; $\bar{x}$ =3.84 > 3.0).** The findings imply that the integration of AI and ML is important at this time but the implementation may lead to job loss by education managers. To a great extent, the success of adoption and integration hinges on a holistic and well-informed approach that prioritizes the need for effective and efficient discharge of management roles and the broader interest of educational management in an era of AI and ML while navigating the complex landscape of this technological advancement.

Based on the findings of the study, the researchers recommended that AI and ML technologies should be integrated into educational management but in phases, to the extent that it will not take over human roles and create job loss.

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