

RELATIONSHIP BETWEEN ARTIFICIAL INTELLIGENCE AND THE PERFORMANCE OF ACADEMIC STAFF AT A SELECTED INSTITUTION OF HIGHER LEARNING IN NIGERIA

VALENTINA ANULIKA ETELE ¹, VERA NKIRU NWADINOBI ²,
JULIANA AZUKA AKUEZUILO ³, NKECHI CHINWE EZEBUBE ⁴,
FRANCIS EZIESHI MONYEI ⁵ and WILFRED ISIOMA UKPERE ⁶

^{1,2,3} Department of Guidance and Counselling, Faculty of Education, Nnamdi Azikiwe University, Awka, Nigeria.

⁴ Department of Educational Foundations, Chukwuemeka Odumegwu Ojukwu University, Igbaram, Nigeria.

^{5,6} Department of Industrial Psychology and People Management, University of Johannesburg, South Africa.

Abstract

It seems plausible to argue that artificial intelligence (AI) can be viewed as a digital platform that utilises advanced systems to tackle difficult issues in a manner akin to the human intellect. This study aims to investigate the relationship between academic staff performance at a tertiary institution and the utilisation of AI. 1026 staff academic members from a university in South-Eastern Nigeria, were included in the study's population set, which was conducted using the descriptive research survey methodology. A statistically significant positive correlation between the research variables was found through the analysis of the responses obtained from the distributed survey instrument using Pearson's Product Moment Correlation Coefficient. This paper therefore concludes that given the seeming complexities of tertiary institutions and their significant consequences on staff, the adoption and utilisation of AI will positively impact their performances. In terms of policy implications, institutions of higher learning now need to set clear policies and guidelines for the creation and application of AI-based devices, as these guidelines will address issues concerning ethics, data privacy, and security.

Keywords: Academic Staff, Artificial Intelligence, ChatGPT, Personalised Learning, Performance, Tertiary Institutions.

1. INTRODUCTION

Artificial intelligence (AI) has been viewed by numerous sources from different perspectives. It seems acceptable to argue that artificial intelligence (AI) can be viewed as a digital platform that mimics the workings of the human mind and uses advanced algorithms to tackle difficult issues. People frequently fail to complete these tasks, especially when there are hidden or subtle patterns that are challenging for them to recognise (Lainjo & Tmouche, 2023).

These findings provide compelling strategic solutions for various parties seeking to maximise different activities. From an academic perspective, this article looks at how far AI has advanced initiatives in higher education institutions. One could argue that the success of tertiary institutions is crucial for predicting, ascertaining, and evaluating the extent or level of staff development and outcomes. According to Elegunde and Shotunde (2020), regardless of employees' educational backgrounds, stakeholders can evaluate the effectiveness, efficiency, overall productivity, and profitability of higher education institutes by examining the staff's performances.

A growing number of sophisticated technologies, mechanisms, and inventions have been introduced to enhance staff and firm performance, support business operations in light of human deficiencies, and introduce new approaches to tasks. These stakeholders prioritise results to motivate and enhance this performance. Furthermore, it is asserted that these new technologies would transform perceptions of daily life, education, and human interactions. It is critical to assess the possible impacts of machine intelligence on society, business, and human life, as well as its advantages and disadvantages (Soni, Sharma, Singh & Kapoor, 2018).

Artificial intelligence, according to Ogunode, Edinoh & Okolie (2023), and Ogunode and Gregory (2023), is the creation of computerised systems and computers that can carry out tasks that ordinarily need human intelligence. Learning, comprehending spoken language, addressing problems, and cognitive functions are a few of them. Artificial intelligence technologies include things like robotics, computer vision, deep learning, machine learning, natural language processing, and more. With the help of these technologies, one may analyse enormous amounts of data, identify trends, predict results, and automate challenging jobs. AI is a machine made to operate similarly to a human being, claims Nwadinobi, Etele, Ezebube, Monyei and Ukpere (2024).

Its structure may resemble that of a computer, robot, or other type of machine, and its main objective is to assist in performing any function or work that promotes the social, political, and economic advancement of society. Artificial intelligence as a strategy, has its applications across many different areas, such as banking, healthcare, transportation, customer service, and education (Monyei, Aiyelabegun, Kelvin-Iloafu & Ukpere, 2023). Possible effects include university reform, higher production, and the emergence of new opportunities. It is also believed to be a group of programmes, methods, and applications built into computer-controlled robots or digital computers that give them the ability to carry out duties and assignments with a degree of intelligence comparable to that of a person. These technological developments lead to the creation of artificial intelligence. Universities seem to agree with Elegunde and Shotunde's (2020) assertion that these technological advancements and inventions are the primary drivers of a higher standard of life in the modern era. They are not alone, nor are they free from responsibility.

Creating computers with human-like cognitive, perceptual, auditory, gait, and surprisingly emotional capabilities is the aim of the scientific and technology field of artificial intelligence (AI). According to O'Brien (2003), a primary focus of artificial intelligence is the creation of computer programmes that can perform tasks like learning, thinking, and problem-solving. The idea that there could be intelligent thinking machines raises many fascinating questions. One such test to determine if machines are capable of thinking was developed in 1950 by British AI pioneer Alan Turing. To pass the Turing test, a computer must be able to distinguish between an unseen human interviewer and an invisible computer while both are present. It is worthy of note that literatures on artificial intelligence is presumably lacking in quantity, given that the field is still in its nascent stages. Most of the earlier studies concentrated on health and safety issues, data security, cognitive systems, robotics, work aspects, and automation in addition to financial objectives (Chen, Chen & Lin, 2020; O'Brien, 2003).

Therefore, it is imperative to close this gap by carrying out a comprehensive investigation of AI within the university system. Following the Federal Government of Nigeria's National Policy on Education, tertiary education ought to enhance national and international recognition and advancement, promote community service, scholarship, and entrepreneurship, and lessen skill shortages by producing skilled labour relevant for market demands (Federal Republic of Nigeria, 2013). People and material resources need to be available for tertiary education goals to be implemented and completed. Artificial intelligence has been a major topic of discourse in the field of education for over 50 years, and every year, more and more parties, researchers, and academics express interest in using AI in higher education institutions (Nwadinobi et al., 2024; Chen et al., 2020).

Alemu (2018) contends that the term "institutes of higher learning" should be used to refer to all post-secondary educational establishments, including universities, polytechnics, and colleges of education. Higher education encompasses all types of professional establishments. Unfortunately, not enough thorough evaluations and research articles have been written about this subject to meet the growing needs of tertiary institutions. Given that it is still difficult to fully comprehend how AI is affecting higher education, additional research is needed to expand our understanding of the subject and provide a larger forum for deliberative discussion of the potential effects of AI on education.

Scholars have discussed potential answers to the challenges of integrating AI in higher education institutions (Reese, 2019; Russell & Norvig, 2018). Further research is required to discover workable solutions to these issues because the ones that are already in place are based on insufficient data (Reese, 2019). This study attempts to undertake a complete, analytical, and comprehensive review of the integration of AI in higher education by highlighting present shortcomings, potential, beneficial, and practical lessons learned, as well as future research endeavours. By attaining such outcomes, managers and legislators can more effectively restructure, modify, and strengthen their institutional operations. Additionally, concurrently creating a more competitive learning system. Hence, this study is timely and important since it documents empirical results, which will help to close existing gaps and create avenues for subsequent studies.

1.1. Research Objective

To establish the relationship between Artificial Intelligence and the Performance of Academic Staff at a selected institution of higher learning in Nigeria.

1.2. Research Hypotheses

Based on the research objectives, the following null and alternate hypotheses have been formulated:

H₀. There exists no relationship between AI utilisation and the performance of academic staff in higher learning institutes.

H₁. There exists a relationship between AI utilisation and the performance of academic staff in higher learning institutes.

2. REVIEW OF RELATED LITERATURE

2.1 Artificial Intelligence

Thinking, reasoning, comprehension, learning, decision-making, and inference are some of the skills that make up intelligence. People can do tasks like responding quickly to a new circumstance, solving a variety of unclear problems, and learning from experience because of their intelligence (Cebeci, 2021; Sharda, Delen & Turban, 2020). The core uses of AI are these activities. Artificial intelligence encompasses any methods that can generate designs that are similar to those used to solve problems and attempt, when applied to computers, to mimic the intellect of living things, including humans. Its accomplishment in solving problems that are extremely challenging to tackle with conventional and/or classical methods is the primary benefit of its application for company and individual lives. Before the early 1950s, artificial intelligence (AI) was a somewhat obscure concept. Alan Turing was one of the first scientists studying artificial intelligence. Akman and Blackburn (2000) discuss the question of when an artificial system qualifies as intelligent. John McCarthy came up with one of the first definitions of artificial intelligence in 1956.

According to McCarthy, more studies into artificial intelligence should be done because it is clear that every aspect of human cognition and every attribute of knowledge acquisition can be fully characterised so that a computer can duplicate it (Russel & Norvig, 2018). Since the 1950s, numerous academics and researchers have offered varying definitions of artificial intelligence. Replicating human decision-making and problem-solving abilities through computers and robots is one of the most recent definitions of artificial intelligence (AI) (Monyei et al., 2023; Russel & Norvig, 2018). AI has grown at an exponential rate in the last few decades, and a large segment of the contemporary population is already affected by it in their day-to-day lives. Above all, its influence on the overall character of activities conducted in universities is noticeable. Several colleges are already using an early type of artificial intelligence to help lecturers and students solve problems. Students at Deakin University in Australia can obtain knowledgeable advice thanks to IBM's supercomputer Watson (Lainjo & Tmouche, 2023).

The impressive effects of AI on academic staff performance are exemplified by IBM's supercomputer - Watson. AI has completely changed the administrative workforce at universities by taking on a lot of chores, freeing up staff members to concentrate on other crucial responsibilities. Despite being one of the most widely utilised technologies across all industries, artificial intelligence (AI) in education is still relatively new (González-Calatayud, Prendes-Espinosa & Roig-Vila, 2021). Although it is said that the majority of higher learning institutes' stakeholders are ignorant of artificial intelligence, this will not prevent AI from taking over as the main teaching instrument. The primary uses of AI in education, according to González-Calatayud et al. (2021), are tutoring assessment, personalisation, and quality assessment. The study indicates that learning in hybrid, virtual, or one-on-one settings may benefit from and be facilitated by AI. Furthermore, it proves that when AI is included in course materials, students can achieve higher results. AI-based solutions can improve teacher and student evaluation and grading, as demonstrated by the study. Despite its many advantages,

artificial intelligence still needs to be humanised because machines cannot teach. AI simulates mental processes that humans are capable of, such as problem-solving, object recognition, language comprehension and response, and experience and practical-based learning (AI). These systems/robotics can be used in conjunction with other mental processes of humans to carry out tasks that humans could accomplish, for instance driving a car or checking into a hotel (O'Brien, 2003). In the case of academic institutions, they have experienced advances orchestrated by intelligent robots and state-of-the-art technologies. These robots can perform tasks and activities that were previously limited to humans with particular training, exceptional abilities, and specialised knowledge because of their programming. Living in this fascinating age is the best thing that humanity has ever experienced, particularly for people in the business domain. The modern age is defined by the quick advancements in technological conceptions, inventions, and breakthroughs (Wisskirchen, Biacabe, Bormann, Muntz, Niehaus, Soler & Brauchitsch, 2017). As a result, a few of the innovations brought about by artificial intelligence are progressively becoming standard. In the workplace, these include robots performing tasks, self-driving automobiles, specialist cameras serving as security, and many more.

In the case of institutions of higher learning, according to Ogunode et al. (2023), they are a planned and structured system that uses teaching, research, and community service to promote social order and the growth of mankind as a whole. Research, community service, and advanced teaching are all part of postsecondary education. Producing skilled professionals for the advancement of technology and society is the aim of higher education institutions, which constitute the third tier of education (Luhana, Memon & Khan, 2023; Hughey, 2020). In their claim, Nwadinobi et al., (2024), and Soni et al., (2018) assert that technology is used in many colleges and universities daily. Stressing that it has changed knowledge-sharing operations throughout time to the point where tertiary institutions now assert that artificial intelligence is necessary for them to function and complete tasks.

Numerous researchers have empirically assessed how artificial intelligence affects academic staff performance (Wisskirchen et al., 2017). Many indicators and dependent factors were used in these previous studies, which revealed inconsistent outcomes. Artificial intelligence represents one tangible resource that can be efficiently employed in the administration of tertiary institutions. The majority of employees in higher education institutions require continual training and development to achieve the institution's strategic objectives, which is one of the factors that improve management or administration effectiveness. The current labour shortage has made it exceedingly conflicting and challenging to locate skilled personnel. This means that to tackle this conflict, and improve employee performance and productivity, organisations need to utilise smart agents, expert systems, and artificial intelligence technology (Monyei, Ezinwa, Agbaeze, Ukpere, Ugbam & Ndu, 2023).

Artificial Intelligence is quickly changing university administration's personnel composition, time management, and service quality framework (Popenici & Kerr, 2017). Higher education institutions can hire fewer administrative staff members to handle associated tasks when an AI-enabled supercomputer provides reasonable feedback at any time of day. According to Cox (2021), an analysis of thirty academic articles on the use of AI in higher education revealed

that AI has compelled these universities to modify their curricula to prepare students for lives in a likely future economy. The way professors instruct students and the role that researchers and scholars perform in higher education have been altered by it. There is not much research on how AI affects higher education currently available. This subject is still largely unexplored in scientific discourse, despite being available for study for more than thirty years (Chrisley, 2013).

2.2 Job Performance

As the culmination of all activities conducted inside an organisation, both individually and collectively, job performance serves as the foundation of that institution and provides greater stability and long-term performance. Numerous definitions exist for the term job performance, which describes an individual's level of accomplishment and fulfilment of the duties that comprise their employment and indicates how they meet the demands of their position. Performance and effort can occasionally be at odds with one another or confused; performance is defined by the results that an individual achieves, whereas effort is the quantity of energy expended (Monyei et al., 2023; Pradhan & Jena, 2017). People's ability to complete tasks in a way that advances the objectives of the organisation is measured by their performance. According to Ramdani, Marliani, and Rahman (2019), these activities also include mental and physical pursuits including problem-solving and cognitive duties. Furthermore, rather than focusing solely on results, job performance is evaluated on a culture and conduct that is multifaceted and aligned with the objectives of the organisation.

Although there are some similarities between other concepts and performance, Koopmans, Bernards, Hildebrandt, De Vet, and Van der Beek (2012) contend that performance needs to be distinguished by trying to establish its limits. Effectiveness, efficiency, and productivity can be defined as how a person fulfils the demands of the tasks he completes. This definition applies to those ideas as well. Furthermore, the performance of a staff member is the culmination of their completion of all responsibilities allocated to them, according to Muda, Rafiki, and Harahap (2014). All goals, experiences, skills, and consciousness are transformed into outputs through this process, which is the flawless completion of activities at the necessary standard. On the other hand, it is asserted that it is the outcome of activities meant to accomplish organisational goals as well as motivation, effort, experience, and competence (Muda et al., 2014).

The staff's capacity to complete duties and activities assigned to them successfully and efficiently to meet the requirements imposed on them by organisational guidelines and statutory decrees is hence what is meant to be considered performance. The organization's ultimate aim is accomplished by combining these, which are detailed for every position and its responsibilities. While keeping in mind how long the task will take to finish. Regardless of the associated expenses, Abusalma (2021) highlighted the value of human resources management's job performance and its significance in attaining the company's goals. Any workplace's efficiency may be assessed by looking at how best to use the resources at hand for the least amount of money, as well as by comparing the ratio of inputs to outputs and the outcomes to the methods employed.

2.3 Components of Job Performance (JP)

The work output in a company that has essential features or elements that enable the company to measure and evaluate employee performance:

The worker and his skill set: their competencies are the knowledge, skills, interests, values, trends, and motivations that an employee possesses; on the other hand, their competencies are the information, skills, trends, and values that, when paired with dedication, are the essential attributes that allow an employee to excel. As well as the degree of responsibility and punctuality required in one's employment, as well as the seriousness with which one approaches work (Ramdani et al., 2019).

Work and the conditions surrounding it: these include the tasks, obligations, positions, and experiences in addition to the difficulties and specifications unique to the role. Included are also precision, organisation, mastery, creativity, technical proficiency, the ability to plan and execute activities, completion speed, and error-free performance.

The organizational environment and its components: It is made up of both external and internal components. Internal elements impacting performance encompass the organisation, its goals, structure, resources, strategic location, and employed methods. Regarding the external components that comprise an organization's environment and impact its successful performance, they include political, legal, social, technological, cultural, and economic aspects.

Understanding the prerequisites for the job: this entails having a professional background, technical proficiency, and a general understanding of the position and associated subjects (Abusalma, 2021; Ramdani et al., 2019).

Work quality: is based on the worker's knowledge of the tasks at hand, as well as his drive, skill, creativity, and ability to organise and complete the task without taking unwarranted risks.

The amount of tasks finished: things an employee can complete during a regular workday and the speed at which they can be completed.

2.4 AI Adoption and Task Outcomes (in Institutes of Higher Learning)

The environment and structure of higher learning institutions were altered by the implementation of digital learning (Khoza & Mpungose, 2022). The future of education was examined by Carvalho, Martinez-Maldonado, Tsai, Markauskaite, and De Laat (2022) in a study that focused on artificial intelligence, performance, and student-teacher collaboration. According to Ge and Hu (2020), enhancing student instruction is one of the main uses of AI in higher education setups. Additionally, it has been observed that the application of AI has changed society's viewpoint on education (Chang, Lee, Wong & Jeong, 2022; Kelly, Kaye & Oviedo-Trespalacios, 2022). However, research has shown that implementing AI in the classroom has real implications for the demographic, cultural, and behavioural difficulties of users and learners (Chang et al., 2022). These studies made a solid case for the connection between society's acceptance of AI and its impact on user perceptions. As a result, how people use new technology is crucial in determining how they engage and work together with AI applications (Abumandour, 2022). Several research found that staff behaviour is a major factor

in changing higher education into an innovative digitalized mode (AL-Nuaimi, Al Sawafi, Malik & Al-Marouf, 2022; Müller & Leyer, 2023). Consequently, there is enough data in the literature to support the claim that staff behaviour is a major factor in the adoption of AI in higher learning institutes. Artificial intelligence, according to Rahiman and Kodikal (2024), has the power to completely change how lecturers interact with students and carry out their duties at institutes of higher learning. Numerous institutions have employed AI tools to enhance the productivity of their learning operations (Cui, Xue & Thai, 2019). In addition, it is stressed that staff attitudes are demonstrable and impact how AI is adopted for course design, grading or assessment, student-staff support, and personalised professional development (Franzoni, Milani, Mengoni & Piccinato, 2020; Rahimi & Tafazoli, 2022). According to Ng, Leung, Su, Ng, and Chu (2023), recent research examined lecturers' attitudes and behaviours when interacting with AI-integrated systems and their digital competencies, which improve performance. Researchers Moreira-Fontán, García-Señorán, Conde-Rodríguez, and González conducted research in 2019 to learn more about the positive attitudes academic staff members have towards ICT-related elements that improve their work outcomes. This suggests that there will inevitably be interactions between the use of AI and job outcomes. Highly engaged lecturers are more likely to be receptive to innovations and digitalized teaching approaches since motivation and interest have a strong association with employment outcomes (Al Ajmi, 2022). The use of digital technology has improved business performance, according to Al-Takhayneh, Karaki, Hasan, Chang, Shaikh, and Kanwal (2022); Antonietti, Cattaneo, and Amenduni (2022). As a result, the information above emphasises the link between employment outcomes and enterprises' embrace of advanced technologies. Nevertheless, there is no conclusive proof of how the specific construct of this study interacts with one another.

2.5. Empirical Insight

Cebeci (2021) investigated the theoretical and practical uses of artificial intelligence. Its goal was to take a multifaceted, methodical look at how artificial intelligence approaches are used in management information systems literature. It used a methodical literature review approach backed by contemporary semi-automated techniques like text mining to accomplish this. The findings showed that research in the areas of swarm intelligence and deep learning has become more significant recently. It is believed that there is a trend in terms of applications towards cybercrime, security, and defect detection, even though information system support and information management remain at the forefront of informatics. It was determined that specialists and academics who would work in any field should be given a thorough guide.

While recognising its limits, Luhana et al. (2023) examined how artificial intelligence (AI) affected worker dedication and performance in the workplace. The study uses a random sample technique in conjunction with a qualitative research strategy. Online surveys that are used to gather data are created using Google Forms. Forty-two per cent of the one hundred participants were men and fifty-eight per cent were women. Twenty to thirty years old accounted for 19% of the responses. The findings demonstrate that worker engagement and performance can benefit from AI. Artificial intelligence refers to the use of computers with little to no human intervention to simulate intelligent activity. On the other hand, experts fear AI will lead to job

losses and higher unemployment rates. As a result, this might make it difficult to rebuild the infrastructure, guarantee vehicle safety, and modify rules and regulations.

The improved individual work performance measure, which has superior psychometric properties, was examined by Ramdani et al. (2019). Targeted sampling methods were used to select 303 campus faculty members who will participate in this investigation. The analysis of the data was done using a descriptive strategy. The individual work performance scale (IWP) was found to have a strong psychometric profile based on factors such as external and structural validity, fit model of the structure it generates, and high-reliability coefficient. It was suggested that the updated IWP be utilised for assessing an employee's performance at work generally, and in particular in educational settings.

Kharshi (2019) looked at the function that job performance effectiveness has in assisting staff members in the human resources division of sports institutions in the Wilayat of M'sila in achieving extraordinary performance. Included in the population were thirty employees of the Directorate of Youth and Sports. The findings showed that individual capabilities play a part in helping people perform to the level that is wanted for managing the sports institution's human resources. It is therefore advised that building a system for evaluating job performance aids in the process of administrative development and that this system's criteria centres on elements about job performance levels.

2.6. Theoretical Foundation: Personalised Learning Theory

Hughey (2021) aver that learners who require individualised attention in terms of pace and style of instruction are said to be engaged in customised learning. It may be necessary to make adjustments to the learning objectives, instructional methodologies, instructional content, and their sequence based on the unique needs of each student. Moreover, learning exercises are often relevant to the student's interests, self-initiated, and meaningful. A person-centred approach, flexible learning, demonstrated competency mastery and an individual's holistic perspective are common features in most scholarly works that characterise personalised learning (Hughey, 2020). While self-determination theory (Ryan & Deci, 2000) and Gardner's (2011) Theory of Multiple Intelligences are commonly accepted as the theoretical underpinnings and beginnings of personalisation, Peng, Ma, and Spector (2019) connect personalised learning to Confucius, Socrates, and Dewey's propositions. According to multiple intelligence theory, people are not limited to the two types of intellect that are most commonly seen in educational settings: linguistics and logic.

Instead, they can relate instructional content to eight various "intelligences." Self-determination theory is one humanistic perspective that offers a framework for understanding people's motivations and personalities. Ryan and Deci (2000) state that the psychological norms of relatedness, competence, and autonomy serve as the foundation for this idea. The two previously mentioned philosophies are closely related to the instructional technique that is utilised to implement personalised learning successfully. Combining the two allows for the creation of a layer for personal development that incorporates both the viewpoint of data-informed decision-making and a personal vision and judgement. With individualised learning,

one hopes to address people's disengagement and contribute to the closing of the all-too-common growing achievement gaps. Individualised learning seeks to foster intrinsic motivation for achievement by including people/learners in the process and making use of their skills, interests, and capabilities. Those who set goals and collaborate to make decisions feel more empowered. Actively engaging with one's surroundings to foster people's natural curiosity is a crucial component of successful personalised learning. This learning paradigm's activities are intended to foster personal development while also being pertinent and significant. A strong focus on learners' talents is necessary to engage and empower them in this learning process. A prime illustration of how paradigms are shifting and learning opportunities are expanding is the widespread use of videos in teaching sessions covering nearly any topic. In 2012, Detlor, Booker, Serenko, and Julien conducted a study that examined the range of learning settings and resources available to students in the 21st century to improve their knowledge, skills, and competencies.

These days, web-based learning materials such as podcasts, ChatGPT, YouTube sessions, product and service evaluations, and others can help enhance learning opportunities in post-secondary education. Depending on the needs and learner demographics, different incentives and digital tools are applied. There are many different settings and ways individualised learning can occur. Thanks to technology, there are now more options and outlets available to meet an individual's desires. The ability to personalise learning in flexible settings has profoundly revolutionised education. Hughey (2020) further asserts that barriers to knowledge and information sharing, as well as the learning boundary, are eliminated by the convergence and growth of information technology.

Expanded potential is offered to individuals with physical and cognitive limitations by the distinctive opportunities provided by digitalized curricula and technology applications. Moreover, technology provides a framework for accessing global learning possibilities intended to enhance people's worldviews. Staff members in higher education institutions can utilise technology to assist customised courses that offer them a virtual classroom. Providing support to cross-cultural groups in their interactions and thought processes can be the main goal of this kind of customised learning. The end objectives of personalised learning, like those of other approaches, are to improve employability, performance, critical thinking, communication, and tolerance for diversity by cultivating a more profound understanding of the perspectives of others.

3. METHODOLOGY

Descriptive research, which focuses on particular phenomena, was the method adopted in this study. Utilising a representative sample of the population under investigation, the questionnaire helped gather data. The questionnaire was carefully designed and formulated using the five-point Likert scale method relevant to the topic matter to collect both factual and interpretive data. Members of the academic staff from Nnamdi Azikiwe University in Awka, Anambra State, Nigeria were chosen for the research. A total of 1026 academic staff make up the population as reported by the Office of the Vice Chancellor (Academic).

The institution and faculty that were selected were carefully considered based on several factors, including their viability, intellectual output, capacity to instil moral values in young adults, and their contributions to varsity administration. 202 of the 264 copies of the survey that were provided to the respondents were duly completed and returned, reflecting a completion percentage of 77%; the remaining 62 copies, or 23% were not. The instrument's item validity was determined using both content and face validation. Cronbach Alpha was used to conduct the reliability test, and the results showed good dependability and consistency with a score of 0.733. The research hypotheses were analysed using Pearson's Product Moment Correlation Coefficient Analysis, a tool included in the Statistical Package for Social Sciences. The decision rule states that if the computed P-value at a 5% significance level and with the proper degree of freedom is greater than the table value, the null hypothesis should only be rejected. Otherwise, there's no reason not to accept it.

4. DATA ANALYSES AND PRESENTATION

This section contains a summary of the answers that participants gave to the questionnaire's items, which are displayed in Tables 1-4.

Table 1: AI-based technology like the ChatGPT provides information and acts as a knowledge source

| RESPONSE | TOTAL | PERCENTAGE |
|-------------------|------------|------------|
| STRONGLY AGREE | 47 | 23 |
| AGREE | 96 | 48 |
| UNDECIDED | 17 | 8 |
| STRONGLY DISAGREE | 12 | 6 |
| DISAGREE | 30 | 15 |
| TOTAL | 202 | 100 |

Source: Field survey 2024

Table 1 shows that out of 202 respondents, 47 (23%) and 96 (48%) response rates, strongly agreed and agreed that AI-based technology like the ChatGPT provided information on learning, and also acted as additional sources of knowledge for academic staff. Whereas 12 (6%) and 30 (15%) of the respondents strongly disagreed and disagreed respectively with the propositions. While a meagre 17 (8%) of the respondents were undecided.

Table 2: AI technology adoption is considered unethical and substandard for classroom learning of undergrads in higher learning institutes

| RESPONSE | TOTAL | PERCENTAGE |
|-------------------|------------|------------|
| STRONGLY AGREE | 43 | 21 |
| AGREE | 93 | 46 |
| UNDECIDED | 22 | 11 |
| STRONGLY DISAGREE | 15 | 8 |
| DISAGREE | 29 | 14 |
| TOTAL | 202 | 100 |

Source: Field survey 2024

From the 202 respondents, Table 2 shows that 43 (21%) strongly agreed, 93 (46%) agreed, 22 (11%) were undecided, 15 (8%) strongly disagreed, and 29 (14%) disagreed with the statement that the adoption of AI technology is considered unethical, and of substandard for classroom learning of undergrads in higher learning institutes.

4.1. Study Hypotheses

H₀. There exists no relationship between AI utilisation and the performance of academic staff in higher learning institutes.

H₁. There exists a relationship between AI utilisation and the performance of academic staff in higher learning institutes.

Table 3: Descriptive Statistics

| | <i>Mean</i> | <i>Std. Deviation</i> | <i>N</i> |
|--------------------|-------------|-----------------------|----------|
| <i>AI</i> | 2.8253 | 1.27682 | 202 |
| <i>Performance</i> | 3.1613 | 1.37593 | 202 |

Table 4: Correlations

| | | <i>AI</i> | <i>Performance</i> |
|--------------------|---------------------|-----------|--------------------|
| <i>AI</i> | Pearson Correlation | 1 | .906** |
| | Sig. (2-tailed) | | .000 |
| | N | 202 | 202 |
| <i>Performance</i> | Pearson Correlation | .906** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 202 | 202 |

** Correlation is significant at the 0.01 level (2-tailed).

5. DISCUSSION

Table 3 displays descriptive information about academic staff performance and AI use. The standard deviation is 1.27682 and the mean is 2.8253 for the use of AI. For the entire sample of 202, the academic staff's performance is shown by a mean of 3.1613 and a standard deviation of 1.37593. Although standard deviation numbers are regularly monitored, they do not appear to have any effect on standard deviation scores. This implies that the variability of the data points for the independent and dependent variables is almost equal. The Pearson product-moment correlation coefficient is also used in Table 4 to illustrate the relationship between academic staff performance and AI utilisation.

A correlation value of 0.906 is found through data analysis. This finding indicates that there is a significant positive correlation between performance and AI at 0.05 level (2-tailed) and a strong positive relationship between the two variables. The correlation coefficient in the table, $r = .195$, with 200 degrees of freedom and $df = n - 2$, is lower at the alpha level than the estimated correlation coefficient for a two-tailed test, $r = 0.906$, $p > .05$. All the same, the null hypothesis (H_0) is rejected because the estimated $r = 0.906$ is greater than the computed P-value of 0.195 from the table.

The research aims to determine how AI usage by academic staff members in higher education institutions relates to their performance. Hence, a beneficial and positive relationship between the variables is indicated through data analysis conducted using Pearson's product-moment correlation coefficient ($r = 0.906, 0.000 < 0.05$).

These findings contradict the investigations of Şoniş, Kuleto, Gudei, Lianu, Lianu, Ilić, and Păun (2022) in Bucea-Manea and Chan (2023), which revealed a negative relationship between the artificial intelligence application and learning environment. This implies that the issues instructors face while carrying out their duties, which affect their routines and results, are the only factors influencing their motivation to use AI. Additionally, it did not find any support for, opportunity, or necessity to modify AI applications for higher education as they purport to demonstrate inadequate learning mechanisms. Thierry-Aguilera and Gerardou (2023), Michel-Villarreal, Vilalta-Perdomo, Salinas-Navarro, Chatterjee and Bhattacharjee (2020), and Slimi and Carballido (2023) have all noted particular challenges related to implementing AI in higher education. These studies highlighted potential adaption obstacles, ethical concerns, and knowledge gaps that arose from the integration of AI in higher education institutes, and therefore found no relationship.

However, this study's results are aligned with those of Luhana et al.'s (2023) investigation of how artificial intelligence (AI) affects the commitment of staff and their productivity in the workplace. By showing that staff commitment or their engagement to assigned tasks and performance have benefited from AI utilisation. Further, it highlights how AI apparatuses, such as computer use, simulate intelligent conduct with little help from humans. It is also consistent with Cebeci's (2021) research on artificial intelligence from theory and applications perspectives, which found that artificial intelligence systems have been found to support the theory propositions that effective administration is enhanced through digitalisation.

Thus, demonstrating a great interplay that indicates the current rise of scholarly interest in research on learning and intelligence. Khoza and Mpungose (2022) studied the relevance of digitalised curriculum and how it has rescued institutions of higher learning in their bid to attain effective knowledge sharing. Their findings revealed that the environment and structure of higher learning institutions were significantly altered positively by the implementation of digital learning in the curriculum. Also, in examining the future of education, Carvalho et al., (2022), and Ge and Hu (2020) found that the adoption of artificial intelligence not only avails higher learning institutes the desired performance but also heightens student-teacher collaboration, which has proven pivotal for the sustainability of education. Additionally, Chang et al., (2022), and Kelly et al., (2022) found that in recent times, the adoption of AI as a strategy is enhancing student's learning capacity and has now been observed to have changed society's viewpoint on AI in education.

5.1 Limitations and Prospective Research Areas

This study found that while AI can transform higher learning institutions and enhance academic staff's job performance, there are still pertinent issues that need to be investigated. AI is still not widely used or accepted since certain institutions have doubts about their ability to adopt it

successfully. This has given rise to worries regarding the ethics, cost/expense, bias, inconsistent results and complexity in adopting AI. Also, concerns regarding security and privacy are being raised on the utilisation of AI by tertiary institutions. For instance, answers to exam questions may be revealed if an AI tool like ChatGPT is used as an information source. Therefore, further empirical research should consider ethical considerations of AI adoption; mental health challenges in AI utilisation; and the effectiveness of undergraduates in adopting AI.

6. POLICY IMPLICATION

The application of AI in institutes of higher learning around the world has been on the rise in recent years. Several academic institutions, including universities, have begun to integrate artificial intelligence (AI) into their lecture delivery. ChatGPT, intelligent teaching systems, and automated grading systems are a few of these tools. However, the rate of use varies across different countries and organisations. Rendering from the reviewed literature, addressing privacy and security issues is one of the primary barriers preventing AI from being widely utilised. It therefore makes it critical to protect the confidentiality and security of professional and personal data that academic staff at higher learning institutes exchange via online learning platforms/environments.

Institutions of higher learning now need to set clear policies and guidelines for the creation and application of AI-based devices, as these guidelines will address issues concerning ethics, data privacy, and security. For this reason, universities and other educational establishments must allocate funds for academic staff's professional development and training to enhance their capabilities and know-how required to integrate AI-based tools into their teaching methods. Another policy perspective lies with higher learning institutes prioritising the support for students in the enhancement and proficiency of AI tools to meet the ever-evolving demands of employers. In providing this competence and support, higher learning institutions should be dedicated to creating systematic resource development programmes. This can be achieved by forming alliances/partnerships with leading AI research and development companies. Doing this provides insights into the workings of the industry, and avails higher learning institutes the curriculum to design AI-based programmes and courses that equip undergrads for the future with the knowledge and skill set required to thrive in an AI-driven workplace.

7. CONCLUSION

The study investigated the relationship between academic staff performance at a tertiary institution and the utilisation of AI. It was found that the use of AI relates to the performance of academic staff in the selected institution of higher learning. This demonstrates that AI's implementation alleviates the burden and complexities in academic staff's routines and endeavours. The literature revealed that factors such as unethical behaviour, malpractice-based conduct, knowledge hoarding, and inadequate classroom experience/training, amongst others were eliminated significantly by AI. Consequently, the deployment of AI solutions in several aspects of human endeavours has been made easier by the rapid advancement in technology. Hence, in line with the tested hypotheses and responses of the respondents, this study concludes

that given the seeming complexities of tertiary institutions and the significant consequences of such complexities on staff, the adoption and utilisation of AI positively impacts the performances of academic staff at the selected institute of higher learning in Nigeria.

References

- 1) Abumandour, E.S.T. (2022). Applying e-learning system for engineering education – challenges and obstacles. *Journal of Research in Innovative Teaching & Learning*, 15(2), 150–169. <https://doi.org/10.1108/JRIT-06-2021-0048>
- 2) Abusalma, A. (2021). The effect of implementing artificial intelligence on job performance in commercial banks of Jordan. *Management Science Letters*, 11, 2061–2070. Doi: 10.5267/j.msl.2021.3.003
- 3) Akman, V., & Blackburn, P. (2000). Editorial: Alan Turing and Artificial Intelligence. *Journal of Logic, Language, and Information*, 9(4), 391–395. <https://www.jstor.org/stable/40180233>
- 4) AlAjmi, M.K. (2022). The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait. *International Journal of Educational Research*, 112, 101928. <https://doi.org/10.1016/j.ijer.2022.101928>
- 5) Alemu, S.K. (2018). The meaning, idea and history of university/higher education in Africa: A brief literature review. *Forum for International Research in Education*, 4(3), 210-227.
- 6) AL-Nuaimi, M.N., Al Sawafi, O.S., Malik, S.I., & Al-Marouf, R.S. (2022). Extending the unified theory of acceptance and use of technology to investigate determinants of acceptance and adoption of learning management systems in the post-pandemic era: A structural equation modelling approach. *Interactive Learning Environments*, 1–27. <https://doi.org/10.1080/10494820.2022.2127777>
- 7) Al-Takhayneh, S.K., Karaki, W., Hasan, R.A., Chang, B.L., Shaikh, J.M., Kanwal, W. (2022). Teachers' psychological resistance to digital innovation in Jordanian entrepreneurship and business schools: Moderation of teachers' psychology and attitude toward educational technologies. *Frontiers in Psychology*, 13, 1004078. <https://doi.org/10.3389/fpsyg.2022.1004078>
- 8) Antonietti, C., Cattaneo, A., & Amenduni, F. (2022). Can teachers' digital competence influence technology acceptance in vocational education? *Computers in Human Behavior* 132, 107266. <https://doi.org/10.1016/j.chb.2022.107266>
- 9) Bucea-Manea-Țoniș, R., Kuleto, V., Gudei, S.C.D., Lianu, C., Lianu, C., Ilić, M.P., & Păun, D. (2022). Artificial intelligence potential in higher education institutions enhanced the learning environment in Romania and Serbia. *Sustainability (Switzerland)*, 14(10), 5842. <https://doi.org/10.3390/su14105842>
- 10) Carvalho, L., Martinez-Maldonado, R., Tsai, Y.S., Markauskaite, L., & De Laat, M. (2022). How can we design for learning in an AI world? *Computers and Education: Artificial Intelligence*, 3, 100053. <https://doi.org/10.1016/j.caeai.2022.100053>
- 11) Cebeci, H. I. (2021). Artificial Intelligence Theory and Applications. 1(1), 25-56.
- 12) Chan, C.K.Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, 20(1), 38. <https://doi.org/10.1186/s41239-023-00408-3>
- 13) Chang, Y., Lee, S., Wong, S.F., & Jeong, S.P. (2022). AI-powered learning application use and gratification: An integrative model. *Information Technology & People*, 35(7), 2115–2139. <https://doi.org/10.1108/ITP-09-2020-0632>

- 14) Chatterjee, S., & Bhattacharjee, K.K. (2020). Adoption of artificial intelligence in higher education: A quantitative analysis using structural equation modelling. *Education and Information Technologies*, 25(5), 3443–3463. <https://doi.org/10.1007/s10639-020-10159-7>
- 15) Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, 8, 75264–75278. <https://doi.org/10.1109/ACCESS.2020.2988510>
- 16) Chrisley, R. (2013). Embodied artificial intelligence. *Artificial Intelligence*, 149(1), 131– 150. [https://doi.org/10.1016/s0004-3702\(03\)00055-9](https://doi.org/10.1016/s0004-3702(03)00055-9)
- 17) Cox, A.M. (2021). Exploring the impact of artificial intelligence and robots on higher education through literature-based design fiction. *International Journal of Educational Technology in Higher Education*, 18(1). <https://doi.org/10.1186/s41239-020-00237-8>
- 18) Cui, W., Xue, Z., & Thai, K.P. (2019). *Performance comparison of an AI-based adaptive learning system in China*. The Chinese Automation Congress. CAC 2018. 3170–3175. Institute of Electrical and Electronics Engineers Inc. <https://doi.org/10.1109/CAC.2018.8623327>
- 19) Detlor, B., Booker, L., Serenko, A. & Julien, H. (2012). Student perceptions of information literacy instruction: The importance of active learning. *Education for Information*, 29, 147– 161.
- 20) Elegunde, A.F. & Shotunde, O.I. (2020). Effects of artificial intelligence on business performance in the banking industry. *IOSR Journal of Business and Management*, 22(5), 41-49.
- 21) Federal Republic of Nigeria (2013). *National Policy on Education*. 4th Ed. Lagos: Nigerian Educational Research and Development Council.
- 22) Franzoni, V., Milani, A., Mengoni, P., & Piccinato, F. (2020). Artificial intelligence visual metaphors in e-learning interfaces for learning analytics. *Applied Sciences (Switzerland)*, 10(20), 1–25. <https://doi.org/10.3390/app10207195>
- 23) Gardner, H. (2011). *Frames of mind: The theory of multiple intelligences*. New York, NY; Basic Books.
- 24) Ge, Z., & Hu, Y. (2020). *Innovative application of artificial intelligence (AI) in the Management of higher education and teaching*. The International Conference on Artificial Intelligence and Information Technology. ICAIIT 2020. Institute of Physics Publishing. <https://doi.org/10.1088/1742-6596/1533/3/032089>.
- 25) González-Calatayud, V., Prendes-Espinosa, P., & Roig-Vila, R. (2021). Artificial intelligence for student assessment: A systematic review. *Applied Sciences*, 11(12), 5467. <https://doi.org/10.3390/app11125467>
- 26) Hughey, J. (2020). Individual Personalized Learning. *Educational Considerations*, 46(2). <https://doi.org/10.4148/0146-9282.2237>
- 27) Kelly, S., Kaye, S.-A., & Oviedo-Trespalacios, O. (2023). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics*, 77, 101925. <https://doi.org/10.1016/j.tele.2022.101925>
- 28) Kharshi, F. (2019). *The effectiveness of the job performance of human resources management and its role in achieving distinguished performance*. Unpublished Master's Thesis, To Obtain a Master's Degree in Administration and Management Department, University of Muhammad Boudiaf Al-Masila, Algeria.
- 29) Khoza, S.B., & Mpungose, C.B. (2022). Digitalised curriculum to the rescue of a higher education institution. *African Identities*, 20(4), 310–330. <https://doi.org/10.1080/14725843.2020.1815517>
- 30) Koopmans, L., Bernaards, C.M., Hildebrandt, V.H., De Vet, H.C., & Van der Beek, A.J. (2014). Construct validity of the individual work performance questionnaire. *Journal of Occupational and Environmental Medicine*, 56(3), 331-337.

- 31) Lainjo, B. & Tmouche, H. (2023). The impact of artificial intelligence on higher learning institutions. *International Journal of Education, Teaching, and Social Science*, 3(2), 2809-0489.
- 32) Luhana, K. K., Memon, A. B., & Khan, I. (2023). The rise of artificial intelligence and its influence on employee performance and work. *Global Social Sciences Review*, 8(2), 463-479. [https://doi.org/10.31703/gssr.2023\(VIII-II\).43](https://doi.org/10.31703/gssr.2023(VIII-II).43)
- 33) Michel-Villarreal, R., Vilalta-Perdomo, E., Salinas-Navarro, D.E., Thierry-Aguilera, R. & Gerardou, F.S. (2023). Challenges and opportunities of generative AI for higher education as explained by ChatGPT. *Education Sciences*, 13(9), 856. <https://doi.org/10.3390/educsci13090856>
- 34) Monyei, F.E., Aiyelabegun, H.T., Kelvin-Iloafu, L.E., & Ukpere, W.I. (2023). Strategy sustainability of small and medium-sized ventures in the 4IR and post-covid-19 era. *Onomázein*, 62, 1258-1273.
- 35) Monyei, F. E., Ezinwa, P. N., Agbaeze, E. K., Ukpere, W. I., Ugbam, C. O., & Ndu, V. (2023). Workplace conflict and the productivity of employees in the healthcare sector: A case study. *Corporate Governance and Organizational Behavior Review*, 7(3), 70–79. <https://doi.org/10.22495/cgobrv7i3p6>
- 36) Moreira-Fontán, E., García-Señorán, M., Conde-Rodríguez, Á. & González, A. (2019). Teachers' ICT-related self-efficacy, job resources, and positive emotions: Their structural relations with autonomous motivation and work engagement. *Computers & Education* 134, 63–77. <https://doi.org/10.1016/j.compedu.2019.02.007>
- 37) Muda, I., Rafiki, A., & Harahap, M.R. (2014). Factors Influencing Employees' Performance: A Study on the Islamic Banks in Islamic Science University of Malaysia University of North Sumatera. *International Journal of Business and Social Science*, 5(2), 73–81.
- 38) Müller, W., & Leyer, M. (2023). Understanding intention and use of digital elements in higher education teaching. *Education and Information Technologies*, 28(12), 15571–15597. <https://doi.org/10.1007/s10639-023-11798-2>
- 39) Ng, D.T.K., Leung, J.K.L., Su, J., Ng, R.C. W., & Chu, S.K.W. (2023). Teachers' AI digital competencies and twenty-first-century skills in the post-pandemic world. *Educational Technology Research & Development*, 71(1), 137–161. <https://doi.org/10.1007/s11423-023-10203-6>
- 40) Nwadinobi, V.N., Etele, V.A., Ezebube, N.C., Monyei, F.E. & Ukpere, W.I. (2024). The impact of artificial intelligence on undergraduates' effectiveness in institutions of higher learning. *Educational Administration: Theory and Practice*, 30(4), 6989–6996. <https://doi.org/10.53555/kuey.v30i4.2501>
- 41) O'Brien, J.A. (2003). *Introduction to information systems: Essentials for the e-business enterprise*. 11th Ed. Avenue of the Americas, NY: McGraw-Hill/Irwin.
- 42) Ogunode, N.J. & Gregory, D.M. (2023). Artificial intelligence (AI) in educational administration. *International Journal on Orange Technologies*, 5(10), 7-16.
- 43) Ogunode, N.J., Edinoh, K. & Okolie, R.C. (2023). Artificial intelligence and tertiary education management. *Electronic Research Journal of Social Sciences and Humanities*, 5(4). www.eresearchjournal.com
- 44) Peng, H., Ma, S. & Spector, J. (2019). Personalized adaptive learning: an emerging pedagogical approach enabled by a smart learning environment. *Smart Learning Environments*. 6. 10.1186/s40561-019-0089-y.
- 45) Popenici, S.A.D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, 12(1). <https://doi.org/10.1186/s41039-017-0062-8>
- 46) Pradhan, R. K., & Jena, L. K. (2017). Employee performance at the workplace: conceptual model and empirical validation. *Business Perspectives and Research*, 5(1), 69–85. doi.org/10.1177/2278533716671630.

- 47) Rahiman, H.U. & Kodikal, R. (2024). Revolutionizing education: Artificial intelligence empowered learning in higher education. *Cogent Education*, 11(1), 2293431. Doi: 10.1080/2331186X.2023.2293431
- 48) Rahimi, A.R., & Tafazoli, D. (2022). The role of university teachers' 21st-century digital competence in their attitudes toward ICT integration in higher education: Extending the theory of planned behaviour. *The JALT CALL Journal*, 18(2), 238–263. <https://doi.org/10.29140/jaltcall.v18n2.632>
- 49) Ramdani, Z., Marliani, R., & Rahman, A.A. (2019). The individual work performance scale: A psychometric study and its application for employee performance. *Humanities & Social Sciences Reviews*, 7(5), 405–414.
- 50) Reese, D. (2019). Artificial intelligence. *Artificial Intelligence*, 27(1), 127–128. [https://doi.org/10.1016/0004-3702\(85\)90088-8](https://doi.org/10.1016/0004-3702(85)90088-8)
- 51) Russel, S., & Norvig, P. (2018). *Artificial Intelligence: A Modern Approach*. 31. Prentice Hall.
- 52) Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- 53) Sharda, R., Delen, D. & Turban, E. (2020). *Analytics, data science, & artificial intelligence: Systems for decision support*. Pearson.
- 54) Slimi, Z., & Carballido, B.V. (2023). Navigating the ethical challenges of artificial intelligence in higher education: An analysis of seven Global AI Ethics Policies. *TEM Journal*, 12(2), 590–602. <https://doi.org/10.18421/TEM122-02>
- 55) Soni, N., Sharma, E.K., Singh, N., & Kapoor, A. (2018). *Impact of artificial intelligence on business*. Paper presented at the University of Delhi, Delhi, India. Retrieved from <http://www.researchgate.net/publication/325644986-impact-of-Artificial-Intelligence-on-Business.pdf>
- 56) Wisskirchen, G., Biacabe, B.T., Bormann, U., Muntz, A., Niehaus, G., Soler, G.J., and Brauchitsch, B.V. (2017). *Artificial intelligence and robotics and their impact on the workplace*. A publication of IBA Global Employment Institute. Retrieved from: <file:///C:/Users/SMART/Downloads/AI-and-Robotics-IBA-GEI-April-2017.pdf>