The Impact Of Artificial Intelligence On Undergraduates' Effectiveness In Institutions Of Higher Learning

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ARTICLE INFO	ABSTRACT
	One could argue that artificial intelligence (AI) is best understood as a digital platform that employs cutting-edge techniques to solve complex problems in a way that is similar to human intelligence. The purpose of this study is to analyse how AI affects undergraduate effectiveness in higher learning institutions. The study's population set consisted of 600 undergraduate students from the selected institutions of higher learning in South-Eastern, Nigeria. The sample size obtained by the Krejcie and Morgan (1970) sampling procedure was 234, which reflected the quantity of survey instruments deployed. The Cronbach Alpha method was also employed to assess the instrument's reliability; the results showed a 0.899 coefficient, indicating that the items are dependable and internally consistent. 219 copies, or 94% of the total survey instrument were distributed; of those, 208 copies (88% of the returned copies) were valid and used in the study's analysis. Finally, the collected data set was tested and evaluated using the Descriptive (Mean) and Inferential Statistical tools of the Statistical Package for Social Sciences software. The outcome of the statistical analysis suggests that artificial intelligence positively impacts undergraduates' effectiveness in institutions of higher learning. Despite the ethical limitations that professional analysts see in performance and the commitment to excellence of aspiring young adults, it is discovered that the use and implementation of AI enhances effectiveness, and also guarantees greater viability for undergraduates. The study concludes that understanding AI and its capabilities not only gives undergraduates a great opportunity to progress in their chosen careers or jobs, but it can also be a veritable competency skill set required to shape young adults into strong professional characters.

Keywords: Academic staff, AI, Effectiveness, Human capital, Learning institution, Undergraduates. |

INTRODUCTION

The development of artificial intelligence (AI) has brought up some ethical and valuable issues for daily life. Artificial intelligence (AI) has the potential to boost productivity and raise people's effectiveness, but it also can disrupt educational opportunities and replace pre-existing knowledge. It is critical to evaluate the potential effects of AI technology on people's security, efficacy, and general well-being as it develops (Zameer, Arshad, Khan, & Raja, 2017). Data innovation is always improving, enabling organisations to present computerised functions as the new standard. As a result, individuals are facing novel professional obstacles that may weaken interpersonal relationships in favour of greater information technology (IT) collaboration (Charles, Emrouznejad & Gherman, 2023). Ultimately, these seemingly more effective strategies for functioning imply that individuals are unable to carry out their duties with the same attributes and convictions that they are accustomed to (Irshad, Liu, Arshad, Sohail, Murthy, Khokhar, & Uba, 2019). There is a constant shift that may have an impact on one's self-perceptions that comprise a competent personality at work, or how one views their position in the workplace (Kumar, Lim, Sivarajah, & Kaur, 2022). Meetings

situations that are inconsistent with one's values may lead to a lack of self-assurance, which can then pose a

threat to one's personality (Dhara, Chatterjee, Chaudhuri, Goswami, & Ghosh, 2022). This could involve taking steps to protect people's faith in their way of life while emerging innovations have altered the status quo and presented a variety of difficulties. The desire for enhanced performance as the new standard in workplaces is highlighted by the digitization of the work environment (Asqah, Leveraging, Alabdulatif, Al Asqah, Moulahi, & Zidi, 2023). These days, the true measure of 21st-century workplaces is how well an organisation can function in the face of an extraordinarily competitive market whereby shrewd positions are constantly emerging. Organisations have been compelled to integrate IT into their administrative procedures due to advancements in production or administration quality, client demands, and internationalisation and globalisation of educational/learning, or commercial sectors (Hou, Khokhar, Zia, & Sharma, 2021). Workplaces in fiercely competitive situations are found to need innovation to sustain their competitive edge (Ranjbar, Nejad, Zakeri, & Gandomi, 2020). Industries have long looked to assign more workers to machines to reduce expenses and boost production. Human labour took the place of manual labour for mechanical and repetitive tasks, starting with assembly lines. This is because of the digital revolution, the world has already transformed into a modern one where data dominates all human and economic activities. Data centres are no longer necessary for the storage of data (Luhana, Memon & Khan, 2023; Lam, 2018). Thanks to various gadgets, an object or environment can now measure and produce data. Financially, modern, computerised (data) revolutions impact every aspect of our personal, professional, and public lives. This suggests the adoption of electronic devices that place a greater emphasis on big data, augmented reality, 3D printing, and AI (Liu, Fan, Li, & Chen, 2014). This study is motivated by the ongoing development of computer-based intelligence, which is defined as the ability of devices to carry out mental functions such as learning, sighting, networking, cognition, decision-making, and coordination (HOU, Khokhar, Khan, Islam, & Haider, 2021). The greatest IT application available today is artificial intelligence, whose development over the previous few decades has seen unmatched advancements. It is defined as a collection of techniques and approaches used to provide machines with the ability to recreate knowledge (Khokhar, Iqbal, Hou, Abbas, & Fatima, 2020). Artificial Intelligence is defined as the capacity to imitate intelligent activity in a computer with minimal human intervention. Conversely, this has spurred discussion among academics and professionals alike. Experts predict AI will result in millions of jobs being lost and a rise in the unemployment rate (Chaudhuri, Chatterjee, Kraus, & Vrontis, 2023). This will result in additional challenges, including the requirement to reconstruct infrastructures, guarantee safety, and adjust rules and procedures. In addition, AI can support duties and activities related to human capital development, but it comes with several drawbacks, such as the tendency to replace humans with machines, subpar employee evaluation, and an overly mechanised workplace. AI, in any event, may result in value loss when disputes emerge between clients and stakeholders. Similarly, Castka, Searcy, and Fischer (2020) suggest that artificial intelligence can help undergraduates and companies alike to advance their effectiveness and productivity. According to a report by International Data Corporation, artificial intelligence was being used in 40% of advanced change projects as of 2019, and by 2021, 75% of commercial applications would be simulated intelligence-based. According to Castka et al. (2020), undergraduates, universities or workplaces should rely considerably more on artificial intelligence to enhance effectiveness and productivity, promoting efficient management. In light of this, the advancement of computer-based intelligence does not replace human labour; rather, it enhances it. Despite the empirical discourse surrounding artificial intelligence, the outcomes of Kardinal Jusuf, Sahabuddin, Billal Hossain, Khokhar, Sharaf, Ejaz, & Bálint Illés (2023) have become increasingly acceptable in recent times, which is the elimination of the fear associated with artificial intelligence and its ability to maintain the possibility of a human-AI synergy (Manis & Madhavaram, 2023). As such, it is believed that AI may or may not directly affect undergraduate effectiveness in higher learning institutes, other things remaining the same. The effectiveness of undergraduate programmes is determined by how higher learning institutions use this method, which also allows them to tap into the full potential of artificial intelligence.

Research Objective
The objective of the paper is to investigate the impact of artificial intelligence on undergraduates' effectiveness in institutions of higher learning.

Research Hypothesis
To support the research objective, the hypothesis below is formulated:
H1: Artificial intelligence does impact undergraduates' effectiveness in institutions of higher learning.

LITERATURE REVIEW

The Human Capital Theory
Scholars have studied human capital problems ever since the early Greek and Chinese civilizations realised how important human intelligence is. Although there are many ideas of human capital, the economic theory of human capital focuses on intelligence at the individual level (Fagan & Ployhart, 2015). The basic tenet of human capital theory, according to Rauch and Rijsdijk (2013), is that employees profit from their investments in knowledge and skills. Although human competence is still the foundation of this theory, it should be emphasised that as more study is done on the subject, human capital theory continues to evolve. According to Wright, Coff, and Moliterno

(2014), administrators of higher learning institutions today focus primarily on strategically managing undergraduates' career paths. While this approach has an impact on career excellence, it is important to pay attention to these individuals' classroom effectiveness as well. Supporting the aforementioned claims of this theory, research has also shown that when college students lack motivation for a career path, their quest for effectiveness will switch as they start to look for motivation elsewhere and prepare their exit strategy, or seek counselling (Luhana et al., 2023; Derby-Davis, 2014). The notion of the theory was applied by Denton and Maatgi (2016) in their suggestions for developing career and competence support for the integration of cutting-edge technologies in educational and manufacturing businesses. They proposed that effectiveness could be significantly enhanced by an internal motivation towards a specific job, as opposed to external pressure or anxieties. Furthermore, they pointed out that college administrators have the power to influence undergraduates' effectiveness in any career path they choose. This highlights the significance of AI techniques used to improve the effectiveness of undergraduates, and their career path choices for both professional and academic excellence (Denton & Maatgi, 2016).

Conceptual Understanding of the Variables

The modern professional landscape has seen considerable development with the rise of Artificial Intelligence. Among other things, AI has been used to improve data analysis and decision-making, automate and optimise operations, and offer insights into client behaviour. Research has demonstrated that by automating processes and doing away with tedious learning assignments, AI can increase undergraduates' effectiveness. For the fact that AI facilitates more accurate and effective knowledge collection, it can also aid in data analysis and information exchange (Wang, Li, Zheng, & Li, 2022). AI can also increase lecturer productivity by giving higher education institutions insights into the behaviour and learning patterns of their undergraduate students, which can lead to better learning outcomes (Hou et al., 2021). Since AI can give feedback on ideas and assist students in developing and improving their creative learning solutions, it can help students become more creative and innovative learners. Research by Rejeb, Keogh, and Rejeb (2022) indicates that AI can support the development of a collaborative and trustworthy culture inside any organisation. When lecturers and students believe that their roles are valued and that their thoughts and contributions are taken into consideration, they are more likely to be dedicated to their obligations, which can result in a more progressive institution. Furthermore, AI gives employees greater flexibility, since AI-enabled solutions facilitate workers to plan their tasks more intelligently and operate more productively (Hou, Khokhar, Sharma, Bakul, Mohammad, & Hossain, 2023). Artificial intelligence possesses the capability to augment undergraduates' involvement by providing insightful analyses of their performance and streamlining the process of providing feedback on their work. Furthermore, it is claimed that machine learning technologies improve human decision-making rather than merely substituting duties (Schafer, Ben, Konstan, & Riedl, 2001). However, the professional view about AI's impact on undergraduates can be divided into two categories, revolutionary and evolutionary, based on empirical facts. The radical group argues that the unanticipated potential of AI technology would affect undergraduates' tasks and responsibilities at all levels (Khokhar, Devi, Siddiqui, & Bhatti, 2022). However, the evolutionary camp contends that although AI may impact undergraduates in different ways and even take over some tasks, it will not result in any unanticipated changes to their tasks. According to Fossen and Sorgner (2019), there is general agreement that AI can be used as a tool to create or destroy.

It is neither conceivable nor desirable to stop or impede technological growth. However, skill is essential to guiding it along the intended course. In a different study, the impact of technology on undergraduates' daily activities and routines is investigated, along with the stress levels that arise from its use. According to Manis and Madhavaram's (2023) analysis, which also examines how technology impacts students' interpersonal connections, students are generally satisfied with technology and show a willingness to adopt innovations without reluctance. Furthermore, the study suggests that rather than negatively impacting interpersonal connections, technology improves undergraduates' functions and interpersonal skills. Three major factors, namely modifications to lectures, loss of status and the view of AI as a possible threat in the classroom were shown to be associated with the study conducted by Manis and Madhavaram (2023). Khaskhelly, Raza, Azhar, Zehra, Safdar, and Khokhar (2023) investigated artificial intelligence in the context of higher education institutions and found that its application supports undergraduates' book learning and cognitive development to improve quality and precision, which raises motivation levels. It also turned up data that refutes the idea that developing competencies without AI is just as vital. It is important to highlight that Schafer et al.'s (2001) analysis involved a thorough literature assessment on the effects of technology in the workplace, with the primary focus being on how the workplace influences employees' motivation. It was determined that technological advancements open the door for firms to implement motivating techniques that result in an inspired workforce as a whole (Khokhar, Hou, Rafique, & Iqbal, 2020). The results put forward suggest that the integration of AI has the potential to bring about a revolutionary shift in the human resource sector. It is anticipated that this transition will take place as a result of improved worker efficacy, improved decision-making processes, and automation of repetitive operations. The key elements that support AI's capacity to improve sustainability in businesses were investigated by Hou et al. (2023) study, which asserts that to improve the supply chain of businesses effectively will be through the integration of AI into every facet of operations, especially its sustainability management. In another context, while looking at how AI feedback affects

undergraduates' chances for professional achievement. A component of the research was presenting a model that evaluates the effect of benign stress on the career path choices of these undergraduates, which in turn indirectly affects their tasks and classroom effectiveness.

According to Hou et al. (2023), there have also been suggestions made about using AI to lessen the workload for undergraduates, which can be very successful even in the current unstable, uncertain, complex, and confusing learning environment—highlighting how AI has the potential to drastically impact the productivity of higher learning institutions through a variety of techniques, such as the automation of administrative activities, improved decision-making abilities, student feedback platforms, a decrease in study effort, and a rise in knowledge retention. Nonetheless, more research is needed to fully explore AI's potential in a range of sectors and situations. According to Luhana et al. (2023), emotional intelligence (EI) and artificial intelligence (AI) are two crucial ideas that have received a lot of attention in the literature. Numerous research studies have examined the effects of these ideas on employee performance, retention, and well-being, and the results indicate that emotional intelligence significantly influences both performance and retention. It was also discovered that staff performance is significantly moderated by AI. Likewise, research has shown that academic staff members benefit greatly from emotional intelligence training, which improves their ability to teach and promotes a healthy work-life balance. From the perspective of e-learning, Schafer et al. (2001) assert that higher learning institutions must prioritise the development of learning/knowledge intelligence because doing so can improve their career opportunities, job satisfaction, and dedication to accomplishing tasks.

RESEARCH METHODOLOGY

A set of questionnaires was utilised to gather data from a sample of respondents using the descriptive survey method, which was based on the study's construct. 600 undergraduate students from a selected institution of higher learning in South-Eastern Nigeria make up the study's population. These respondents' rationale is based on the fact that they are still registered undergraduates at an institution of higher learning, and also under the tutelage of parents or academics/lecturers. A sample size of 234 was obtained using the sampling technique proposed by Krejcie and Morgan (1970), which corresponds to the number of survey instruments deployed. As such, of the entire number of copies, 219 were returned, making up 94% of the total; of those returned copies, 208 were valid and used in the analysis of the study. Content and face validation were carried out to ensure the questionnaire items were designed in a way that would elicit the necessary responses for the study. Academics and professionals in the field validated this, ensuring that the questionnaire sections were properly organised to elicit factual and explicit responses necessary to ensure that data are utilised for inference-making. Additionally, the instrument's reliability was determined using the Cronbach Alpha method, which produced a 0.899 coefficient, showing that the items are reliable and internally consistent. Finally, the study's hypothesis is tested and analysed using the Descriptive (Mean) and Inferential Statistical tools of the Statistical Package for Social Sciences software (SPSS).

RESULTS

Table 1: Custom table of responses to questions related to the impact of artificial intelligence on undergraduates' effectiveness

S/N	Questionnaire Items	SA (5)	A (4)	D (3)	SD (2)	UD (1)	Mean
	Artificial Intelligence						
1	Competencies in artificial intelligence set your path to academic excellence.	78	91	20	-	19	4.00
2	The University's curriculum incorporates artificial intelligence skills required for your career path.	56	75	34	12	31	3.54
3	Learning and training opportunities in artificial intelligence are available at the University.	80	99	10	10	9	4.11
4	Artificial intelligence-based applications are permitted for classroom learning.	99	48	21	18	22	3.88
5	Platforms related to artificial intelligence are inculcated into knowledge-sharing.	50	125	7	11	15	3.88
	Undergraduates Effectiveness						
6	Curriculums designed, incorporating artificial intelligence enhance undergraduates' course contents and performances.	111	58	34	-	5	4.30
7	Industrial training opportunities on artificial intelligence motivate the career choices of undergraduates.	-	89	49	30	40	2.90
8	Personal development practices incorporating the use of artificial intelligence are available at your institution.	40	38	49	54	27	3.05
9	Artificial intelligence applications are utilised to enhance classroom teaching for undergraduates' effectiveness.	48	79	12	39	30	3.37
10	Lecturers provide mentorship on artificial intelligence to support undergraduates' learning outcomes.	44	59	39	34	32	3.24

Source: Field Survey, 2024

The distribution of responses from respondents about the impacts of artificial intelligence on undergraduates' effectiveness in institutions of higher learning is displayed in Table 1. With an acceptability threshold of three (3), the analysis is based on the mean of each questionnaire item. Any item on the questionnaire that has a mean score of three or greater indicates that the respondents agree with the question or that the question is relevant and supports their selections. A review of the survey instrument's mean statistical data shows that all were accepted except questionnaire item 7.

Test of Hypothesis and Interpretation
Restating the Hypothesis
H_{o1}: Artificial intelligence does not impact undergraduates' effectiveness in institutions of higher learning.
H_{a1}: Artificial intelligence does impact undergraduates' effectiveness in institutions of higher learning.

Table 2: Regression Analysis Result

Dependent Variable: Effectiveness
Method: Least Squares
Date: 10/01/24 Time: 21:25
Sample: 1 208
Included observations: 208

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Effectiveness	-2.230329	0.505440	-4.412651	0.0000
Artificial Intelligence	0.981913	0.024980	39.30763	0.0000
R-squared	0.882359	Prob (F-statistic)		0.000000
Adjusted R-squared	0.881788	Mean dependent var		16.84615
S.E. of regressi on	2.036602	S.D. dependent var		5.923456
Sum squared resid	854.4360	Akaike info criterion		4.270011
Log likelihood	-442.0812	Schwarz criterion		4.302103
F-statistic	1545.089	Hannan-Quinn criter.		4.282988

Source: Field Survey, 2024

Table 2 displays the Regression analysis for the study's hypothesis. An 88% variation in undergraduate effectiveness (dependent variable) can be attributed to changes in artificial intelligence (independent variable). This can be attributed to the study's obtained coefficient of determination (R2) of 0.882359, F-statistic of 1545.089, and probability value of 0.0000 < 0.05 level of significance. Subsequently, the alternate hypothesis is accepted, which indicates that artificial intelligence has a positive impact on undergraduate effectiveness in institutions of higher learning.

DISCUSSION

The outcome of the statistical analysis suggests that artificial intelligence positively impacts undergraduates' effectiveness in institutions of higher learning. Despite the ethical limitations that professional analysts see in performance and the commitment to excellence of aspiring young adults, it is discovered that the use and implementation of AI guarantees greater viability for these undergraduates, as well as a better degree of learning outcomes through mentorship. The respondents of the present study concur that competencies in artificial intelligence set their path to improved academic excellence. Also, curriculums designed, to incorporate artificial intelligence enhance undergraduates' course contents and performances. Furthermore, it was agreed that learning and training opportunities in artificial intelligence are available to undergraduates. For aspects regarding on-field experience, the respondents also concur that industrial training opportunities on artificial intelligence motivate the career choices of undergraduates, and lecturers provide mentorship on artificial intelligence to support undergraduates' learning outcomes. Thus, in adopting and utilising artificial intelligence, professionals, academics, undergraduates, and entities can still engage in and conduct activities, fulfil obligations, and handle responsibilities. The results of this study disapprove the findings by Manis and Madhavaram's (2023) study, which asserted that three major factors, namely modifications to lectures, status loss, and perception of the institution as a potential threat, diminish and truncate the learning environment of higher institutions and contribute to the risk posed by artificial intelligence in the classroom. Additionally, it runs counter to the conclusions of the studies carried out by Luhana et al., (2023), which show a negative relationship between the operating environment and artificial intelligence deployment. It implies that the problems workplaces have in carrying out their responsibilities are a result of routines and activities that are centred only on the use of artificial intelligence apparatuses. Furthermore, AI applications for higher education are said to reveal insufficient learning outcomes and found insignificant benefits in incorporating AI into undergraduates' course contents. Stressing its

numerous pitfalls and challenges regarding the integration of artificial intelligence in institutions of higher learning such as

information or knowledge gaps, and moral dilemmas (Chatterjee & Bhattacharjee, 2020; Slimi & Carballido, 2023). However, this study's results have aligned with the findings by Hou et al. (2021) that AI can increase lecturer productivity by revealing behavioural and learning tendencies in undergraduates, which can assist higher education institutions in offering better learning resources. In addition, AI can help students learn more creatively and innovatively by giving them feedback on their ideas and supporting them as they develop and improve original learning solutions. According to Wang et al. (2022), AI can aid in data analysis and information sharing since it facilitates more accurate and efficient knowledge gathering and sharing. Hou et al. (2023), also proffer that AI gives employees greater flexibility because these tools enable workers to plan their workloads more wisely and work more productively. Furthermore, this study suggests that the use of AI in technology-learning apps does not negatively impact the mentorship connections between undergraduates and academics; on the contrary, it promotes better communication between them. Khaskhelly et al.'s (2023) research on artificial intelligence supports this, showing that its application not only helps undergraduates learn from textbooks and course contents but that it helps to develop them cognitively, thereby improving quality and aptness, while also raising motivation levels. Moreover, it also showed that attempts have been made to utilise AI in reducing the workload of undergraduates, which has resulted in significant success despite the current unstable, unpredictable, complex, and ambiguous learning environment.

POLICY IMPLICATION/RECOMMENDATION

Administrators of higher education should actively begin to encourage the faculty and staff to utilise artificial intelligence in their teaching, and operational activities. This approach consistently leads students towards making good choices and being effective. Additionally, collaboration across universities is encouraged because the size or cost of AI equipment prevents its application. Thus, collaboration or partnerships with better financially supported universities will provide smaller underfunded institutions with a platform or opportunity to utilise AI in their quest to ensure the effectiveness of undergraduates enrolled in their universities.

LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

Although it was not possible to contact and investigate all undergraduates due to the size and geographic extent of the survey, a deliberate effort was made to examine the undergraduates of a higher learning institution that is in proximity to the researchers. Therefore, more research is suggested to include additional respondents, such as recent graduates of universities and aspiring professionals. To improve the inference of the research outcome and conclusions, it is suggested that evaluations of construct variables such as academic performance, career counselling and mentorship are advised as well.

CONCLUSION

In modern times, young individuals are plagued by psychological distress and mental health concerns when it comes to being effective in the classroom, and ultimately making career decisions. Due to these obstacles, many undergraduates' career expectations have been intimidated, and people's search for fulfilling careers has suffered greatly. Some disciplines do not trust AI's application or some of the processes for sharing knowledge and learning, which contributes to its lack of acceptance. Despite this, there seems to be a push for academics to offer unmatched learning experiences because of psychological constraints, work-family obligations, mental health concerns, and the demands of the global workforce. Therefore, to generate interest and positively influence attention and behaviour, higher learning institutes are encouraging the use of AI. Decreasing the difficulties undergraduates encounter while learning, and when making career decisions. This study further highlights the importance of recognising and understanding undergraduates' reactions to AI implementation and its consequences when it comes to effectiveness. AI clearly can improve undergraduates' motivation in learning, understanding and deciding on career perspectives. Thus, AI facilitates undergraduates' collaborative efforts to improve their academic performance by automating learning tasks, allowing them to work more efficiently in the classroom. It is also revealed that the argument concerning AI's potential to cause job losses for humans, which may increase the number of unemployed graduates, has been fuelled by the anxiety surrounding the technology. The technology will present new challenges, including the need to expand the economy, create jobs, improve infrastructure, and adjust laws and regulations about employment. Furthermore, undergraduates who study AI and acquire its competencies will have countless options to further their careers. All things considered, AI has the potential to significantly enhance institutional performance, help academics and undergraduates acquire new skills like data analysis and offer career counselling and training. Conversely, for higher learning institutions to successfully implement AI as a strategy, they must be provided with the means to comprehend, analyse, and predict contemporary administrative and learning challenges through a strong data-driven culture. This survey also shows that undergraduates' dispositions about AI-assisted career counselling are becoming more and more discussed. Based on the study's findings, it can be inferred that university administration and other stakeholders

favour academics who have integrated AI into career counselling for undergraduates because of the technology's significant ability to provide real-time knowledge and insights while also providing insight into young adults' modern thought processes. The desire to work safely, successfully and efficiently, while juggling mentoring and teaching responsibilities, drives this. Higher learning institutions must therefore establish rules and make investments in platforms that allow AI to be used in availing effectiveness because it is widely known that this affects undergraduates' general psychological well-being.

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