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Lecturers' Perception of Adopting Artificial Intelligence in Teaching and Learning of Business Education Courses in Tertiary Institutions in Delta State

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Abstract

The study investigated Lecturers' Perception of Using AI to Enhance Teaching and Learning of Business Education Courses in Tertiary Institutions in Delta State. Employing the Theory of ICT Self-Efficacy and the Technology Adoption Model (TAM) as theoretical frameworks, the study provided an understanding of how AI can transform educational practices within business education. The population for this study consisted of 66 business education lecturers who were purposively selected from four tertiary institutions in Delta State offering business education programme. A descriptive survey design was utilized, involving a questionnaire with 32 items that was validated. A reliability coefficient of r = 0.88 was achieved using Pearson Product-Moment Correlation (PPMC) statistics, highlighting the instrument's consistency. A total of three research inquiries were formulated and answered while a total of three null hypotheses were evaluated using a significance level of 0.05. Descriptive statistics, particularly mean scores, were used to analyse the collected data. The findings indicate that business education lecturers reported a high level of optimism regarding the prospects and numerous benefits connected to the implementation of artificial intelligence in their educational practices. Lecturers recognized AI's potential to enhance pedagogical effectiveness, improve student engagement, and facilitate personalized learning experiences. However, several challenges were identified, including fears of redundancy and concerns about insufficient knowledge and experience with AI technologies before their adoption, which may negatively impact their performance. Based on these findings, the study recommends that educational institutions in Delta State take proactive measures to facilitate the transition toward AI integration in their business education programmes. Institutions should consider sponsoring business education lecturers to attend local and international forums concerning artificial intelligence, where experts can demonstrate the operation of AI technologies. Such exposure is expected to enhance lecturers' self-efficacy regarding the implementation of AI, thereby improving their readiness and confidence when these technologies are ultimately included in their teaching frameworks.

Keywords: Adoption; Perception; Artificial Intelligence; Technology

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Introduction

The most trending technology in the world today is Artificial Intelligence (AI), a booming technological domain capable of altering the general aspects of our everyday lives and social interactions. AI is advancing pervasively in response to the emergence of innovative technologies such as new algorithms and cloud computing, including big data. This advancement is enabling AI to perform various tasks (Tahiru, 2021), thereby ushering human history into a new era where human beings compete with AI machines, referred to as the fourth industrial revolution.

Developments in AI have raised fundamental concerns about how education can effectively engage AI to build sustainable societies (Tahiru, 2021). From the perspective of education policy-making and planning, the concern centers on how educationists can harness AI to optimize the management of education, empower teachers, improve learning outcomes, expand access to schools, and enhance educational quality (Chen, Liang, and Liang, 2020).

In this context, UNESCO collaborated to organize the International Conference on Artificial Intelligence and Education in 2022 in collaboration with Education Ministry and the National Commission for Education in China. The forum examined the benefits and setbacks presented to education by AI (Partridge and Piccolo, 2018) and facilitated the exchange of information on the latest AI trends and how they can be used to shape teaching and learning; it focused on planning education in the AI era and envisioned the AI-enhanced future of education through the development of AI-in-education policies and strategies (Al-Momani and Ramayah, 2024). The key outcome of the conference was the adoption of the 'Beijing Consensus on Artificial Intelligence and Education,' a document that offers guidance on how best to harness AI technologies to achieve the goals of the Education 2030 Agenda (Heyuan, 2023).

Analysing the UNESCO conference outcome, Heyuan (2023) and Ni and Cheung (2023) identified that several issues contained in the proposals still lack consensus, explanation, and understanding. Thus, Ni and Cheung (2023) undertook a study to inform education policymakers about the extent to which AI can influence the education sector and how to provide information that will culminate in appropriate policy initiatives. Abu-Shanab, Al-Momani, and Ababneh (2012) noted that education experts in advanced countries have been focusing attention on how AI technology can enable education systems to use data to improve educational equity and quality in the developing world.

At the local level, business educationists, like other resource persons in various academic programmes, are beginning to recognize the relevance of AI. They seek to determine the extent to which the business education programmes can benefit from Artificial Intelligence and how to proactively address the challenges (Hwang, Xie, Wahand, and Gasevic, 2020) and the policy implications aimed at creating the foundation for the smooth implementation and utilization of AI in business education programme in the near future. It is indisputable that academics cannot be excluded from the trending AI educational discussion (Chen, Liang, and Liang, 2020; Rad, Egerau, Roman, Dughi, Balas, Maier, Ignat, and Rad, 2022).

Given the introduction of the Core Curriculum Minimum Academic Standard (CCMAS), it is essential that this AI-powered system can also help or may be useful in preparing smart content that will facilitate the achievement of the CCMAS goals. By digitizing business education textbooks, learning interfaces, and course content in various ways, the

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introduction of AI, according to Tahiru (2021), will have positive implications for proper management and balancing the use of human resources within programmes.

Prior to adoption of the CCMAS in 2023, Hwang, Xie, Wahand, and Gasevic in 2020 anticipated a number of the internal challenges that may confront the integration of AI within the business education programme, these according to the authors may range from how the evolving business education curriculum can fit into the AI system and meet the nation's policy objectives for the programme. This prediction was anchored on the fact that considering the narrow knowledge of technological experiences of the lecturers in the business education programme, it is expedient to measure the likelihood of stakeholders meeting the indigenous challenges inherent in the programme and those that may arise from AI adoption. Hence, by taking appropriate proactive initiatives to create an environment for a smooth implementation of AI in the business education programme (Moura and Carvalho, 2024). Masril, Ambiyar, Jalinus Ridwan, and Hendrik (2021) believe that understanding Artificial Intelligence is categorized as one of the best ways to prepare ourselves (teachers) for the future, enabling us to regulate the risks associated with the technology and take better advantage of its benefits (Tambuskar, 2022). Amidst the growing enthusiasm for AI, it is yet to be fully understood across different domains, which requires a proactive approach to better equip and prepare business education lecturers and students for the era.

To this end, this research effort is geared towards preparing the mindset of stakeholders regarding AI within the business education programme by seeking opinions and providing background information in preparation for smooth AI-organized content delivery in the business education programme.

Developments in Artificial intelligence is quickly becoming integrated into every sphere of human endeavour and the education industry is a front burner in the 2019 UNESCO forum held in China. It focused on how the education sector stands to benefits from the AI technology. Thus, the adoption of this emerging technology in education system has become imperative (Mafara and Abdullahi, 2024). It is interestingly to note that AI adoption in education at all levels (Heyuan, 2023) has been slow particularly in African countries (Ala'a, 2023) including Nigeria.

Adopting new technology in any sphere has both beneficial and adverse implications (Păvăloaia and Necula, 2023). Business education curriculum as updated in the Core Curriculum Minimum Academic Standards (CCMAS) has implication for redefinition of concepts, methods and actualisation of the national objectives for implementing business education curriculum. It is therefore, imperative that adopting Artificial Intelligence in implementing the curriculum of the business education programme requires proactive actions that will prepare the framework for adoption of technology relating to artificial intelligence in the programme. From available literature and empirical evidence so far, it became clear that there is dearth of research evidence, particularly as it pertains to its adoption in Nigeria tertiary institutions, Specifically, there are few research evidence of adopting AI in the business education programme. Hence, this study investigates the perception of business education lecturers on the feasibility of adopting Artificial Intelligence in teaching and learning of business education courses. A research gap which modern technology has created for the business education programme in Nigeria.

Research Questions

The research questions raised to guide the study centred on three major areas

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1. To what extent can the business education curriculum (courses) can be integrated in any AI created in the process of teaching and learning?
2. What prospects can be envisaged when AI is adopted in teaching and learning of business education courses?
3. What are the challenges that may be envisaged in the adoption of Artificial Intelligence in teaching and learning of the business education? programme.

Hypotheses

The following research hypotheses were formulated to guide the study:

1. There is no significant difference in the mean perception of business education lecturers across institutions on the extent to which the business education curriculum can be integrated with AI across institutions
2. There is little to no difference is observed in the mean perception of business education lecturers across institutions on the prospects of adopting AI in teaching and learning of the business education courses.
3. There is no significant difference in the mean perception of business education lecturers across institutions on possible challenges to be envisaged in the adopting AI in teaching and learning of business courses.

Theoretical Framework and Model Background

One theory and model have significance implication in the study. First is the Theory of ICT Self-Efficacy, which anchors on prior experience, leading to self-conviction in using a new technology. Secondly, the ICT Self-Efficacy theory is a derivative of Eastin & LaRose from the year 2000, which is rooted in Bandura's (1977) theory of self-efficacy, later amplified by Wilson, Kickul, and Marlino (2007) and Vidal-Sune, Maria-Belen, and López-Panisello (2013). These scholars argue that persons with stronger self-efficacy have a higher probability of accomplishing a given task and the determination to accomplish an activity (Wilson et al., 2007) in the face of obstacles (Akinseinde, 2010). ICT self-efficacy is interpreted as an individual's judgment of their confidence (self-conviction) and capability (competence) to put into practice their acquired knowledge and skills in ICT-related activities. Usher and Pajares (2008) asserted that self-efficacy influences how individuals determine their choices, effort, perseverance, and anxiety in carrying out a particular task.

The above views support the Technology Adoption Model of Davis, which is anchored in Perceived Ease of Use (PEOU). Other studies, including Minniti (2005) and Claggett & Goodhue (2011), have indicated that a higher level of confidence in using an ICT item is closely associated with the individual's conviction of their competence. Taking this into account, business education teachers who possess self-conviction regarding perceived ease of use are more likely to set their goals in utilizing AI technology. Research has also shown that ICT self-efficacy is a measure of prior experience (training and/or practice) with similar technologies (Hasan & Ahmed, 2010). This implies that business education teachers with high self-efficacy who have acquired prior experience in AI-related technologies exhibit a stronger likelihood of developing a stronger drive to succeed (Claggett & Goodhue, 2011) in utilising AI technology.

By implication, Davis's (1989) TAM theory, with its Perceived Usefulness (PU) or Perceived Ease of Use (PEOU) of technology, coupled with perceptions of ICT self-efficacy, has an overriding influence on how individual lecturers may perceive the adoption of AI in the delivery and comprehension of business education courses. It follows, therefore, that prior experience with related ICT components, its perceived usefulness, and the ease with which the

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technology can be utilized may inform and shape the opinions (Al-Momani and Ramayah, 2024) of the programme lecturers in this study.

However, it may also be argued that since the technology has not been made available at the educational institutions' levels and the present crop of lecturers has not been practically exposed to AI, the Perceived Ease of Use (PEOU) of a technology may not be a strong influencer of their adoption decision. Nonetheless, media activities highlighting the significance of AI to pedagogy generally may visualize the prospects inherent in it, potentially sparking institutions' interest in adopting the technology. In support of this theoretical framework, Al-Momani and Ramayah (2024) reviewed the theories related to technology that are applied to investigate the adoption of AI in educational settings have highlighted critical elements influencing user acceptance in various countries. They employed what they referred to as utilizing the PRISMA framework, the analysis examined 22 previous studies, highlighting a growing emphasis on the integration of artificial intelligence in educational contexts. They observed that some of these articles on the Technology Acceptance Model (TAM) emerged as the most commonly used framework (Straub, Keil, and Brenner, 1997). Key findings of the study demonstrate that ease of use from the user's perspective, together with perceived factors driving AI adoption across different sectors are its practical applications.

Concept of Artificial Intelligence

The concept of Artificial Intelligence (AI), according to Wikipedia Encyclopaedia (2024), refers to computer systems capable of performing complex tasks that historically only humans could do, such as reasoning, making decisions, or solving problems. Malik, Sharma, Trivedi, and Mishra (2021) describe it as a system or systems designed to learn from experience, adapt to new situations, and improve performance over time without being explicitly programmed. Kim, Merrill, Xu, and Sellnow (2020) assert that the overall goal of Artificial Intelligence is to create machines that can mimic human intellectual capacity, which includes reasoning, creativity, and problem-solving at a very high precision.

UNESCO (2019) describes Artificial Intelligence (AI) as a set of computer technologies capable of performing a variety of advanced functions, including the ability to see, understand and translate spoken and written language, analyse data, make recommendations, perform activities, and much more. In other words, the technology is capable of performing complex tasks that can naturally be performed only by human beings, such as predictions, identifying objects, interpreting speech, and generating natural language (Lin, Ho, and Yang, 2022).

Conceptualizing Business Education in (ICT) Context

Business Education interpretations vary among its professionals. Agwumezie (1999) described business education as a veritable programme that prepare students pursuing entry and growth on the jobs and in business. In this understanding, business education fundamentally involves acquisition of knowledge and practical competencies which make the beneficiary proficient in delivering business education courses and in business pursuit. The fundamental goal of business education at the tertiary institutions is to endow graduates with the aforementioned skills to participate in a professional life both in the office and for" or "to take part in an office-based work life as well as for self-employment (Okoro, 2008) and special competencies in business skills and techniques (Okwuanaso & Nwazor, 2010).

Business education, in recent times has evolved into a more complex programme which requires the fundamentals of other subjects. It becomes more complex with developments in

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technology and computerization/automation of business processes in which case, a business educator must be equipped with relevant ICT skills for venture success in the competitive business environment.

Following from above, the Info-tech age also referred to as the Computer Technology Age or Digital Age, was described by Al-Darayseh (2023), as an era of unprecedented revolution in science and technology based on information computerization. Based on this, Omeje (2009) posited that it is imperative for business educators to have deeper knowledge and skills in ICT applications in order to effectively teach or apply them; and to reform their in-service delivery capability and as such, a business educator requires to be inundated with the technological changes in the profession through professional improvement activities.

Overview of Evolution of Artificial Intelligence

There are several accounts or approaches to the historical development in Artificial Intelligence. While some authors took account of the processes or precursors contained in the evolution where research and funding issues were critically examined, others summarised the stages in years, the very early stage of AI to the present day. According to Roy (2019), Since the beginning of the digital era, artificial intelligence has transformed dramatically. It has progressed from the simple programs of the 1950s to the advanced algorithms we see today. In those early days, AI was mostly just a collection of basic rules and patterns. Over certain period of time, AI has become increasingly complex and sophisticated as a result of new breakthrough in research at various interval of time. Each stage leaves remarkable improvement making AI becoming more complex. As a result, the complexity and sophistication of AI have grown significantly were impossible even for humans. To comprehend the timeline and changes in artificial intelligence over the years. Roy (2019) gave a timeline account that provides A summary of the major milestones in the history of artificial intelligence, focusing on how it evolved from philosophical ideas into practical advancements in computing and automation. A period that dates back to 4th Century BC credited to Aristotle, with development of syllogistic logic, which is a deductive reasoning system that left a mark in the evolution in Artificial Intelligence. It is no doubt that as each century pass-by significant improvements were being made until the 20th century up to the present 21st century that astonishing improvement has left scientists gaping.

Adopting Artificial Intelligence Resources in Education

According to UNESCO (2024) report, Artificial Intelligence (AI) has the capacity to address the major challenges in education today, such as engaging innovative teaching and learning practices to accelerate academic progress. UNESCO noted that it dedicates itself to assisting Member States in leveraging AI technologies to advance the UNESCO Education 2030 Agenda, while making sure that its use in educational settings is governed by appropriate fundamental principles of inclusion. UNESCO (2024) seeks to enhance the role of AI in tackling disparities in access to knowledge, research, and cultural diversity, while also striving to prevent AI from exacerbating technological gaps both within and between nations. According to Damerji and Salimi (2021), the commitment of "AI for all" should ensure that everyone has the opportunity to benefit from the ongoing technological revolution in artificial intelligence and effectively utilise it particularly regarding those who create education policies for adopting artificial intelligence. UNESCO (2024) seeks to create a common understanding of the opportunities and challenges (Partridge and Piccoli, 2018) that artificial intelligence presents for education, as well as its effects on the essential skills required in the age of AI.

The report of UNESCO (2024) forum had the following key sub-themes:

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1. Developing strategies to utilizing artificial intelligence to drive the digital transformation of education.
2. To design AI into empowering educators and reshape the process of teaching and learning.
3. Identifying and cultivating the skills that teachers require to effectively operate in education environments enhanced by artificial intelligence.
4. An international collaboration focused on prioritizing the needs of the most marginalized communities in Africa.

ThisDay Newspaper (online) of Sunday, 21st July, 2023, reporting on UNESCO 2022 conference on AI, experts in educational technology urge policymakers and teachers on integrating AI into education for effective learning in countries' education systems to enhance the educational sojourn of students and teachers. The paper advocates that the incorporation of AI into education is now essential for the effectiveness of effectiveness of learning and teaching in today's educational system.

Global Citizenship Education (GCED) (2019) in its executive summary espoused that AI has begun producing new teaching and learning solutions that were undergoing testing in different contexts, which requires advanced infrastructures and an ecosystem of thriving innovators. However, the question arose as to when will developing countries gain to obtain this all-important technology given the dearth of infrastructure for instance, in Nigerian tertiary institutions or whether AI should be prioritised reduce the digital divide between them and those of advanced countries. The forum also addressed the discussions about the opportunities and risks of implementing AI in education, as well as preparing students for a world influenced by AI, should address the associated challenges and policy considerations on both global and local levels. The forum outlined six key challenges to consider:

1. Problem of Creating an all-encompassing perspective on public policy regarding AI to promote sustainable development.
2. Promoting fairness and accessibility for artificial intelligence in educational settings, particularly for less developed countries suffers fundamental technology framework, as well as gaps in economic and social development
3. Problem that focuses on how to prepare teachers for an AI-powered education while articulating AI to assimilate education. Choi, Jang and Kim, (2023) asserted that Educators need to acquire new digital competencies to effectively integrate AI into their teaching practices (ii) Developers of AI should focus on teachers' methods and develop solutions that can be maintained in practical, everyday settings.
4. How to develop robust and accessible data systems by improving collection data methods and systematisation referred to as 'datafication' (Mayer-Schönberger and Cukier, 2014); which is a major setback in education.
5. Problem of how to manage study of artificial intelligence in the field of education.
6. The challenge of addressing ethical considerations and transparency in the collection, usage, and sharing of data.

The Role of Artificial Intelligence in Education and Learning

As stated by Melo (2023), incorporating Artificial Intelligence (AI) into educational settings could transform the learning experience in the way teachers teach and students learn. AI algorithms can provide students with personalized feedback and recommendations, allowing for a more engaging and effective learning experience despite several challenges

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associated with incorporating AI into the classroom (Melo, 2023, Wang, Liu, & Tu, 2021, Wang, Liu and Tu, 2021 and Moura & Carvaho, 2024).

At the macro level, the executive summary captures the five key areas of take-away and seven main trends in AI in education asserting that while some countries already have national AI strategies and initiatives in place, some, including Nigeria, are still falling behind, stuck at the stage of increasing awareness. It was however noted that various tools are being developed to help policy-makers profile the preparedness of their country for harnessing AI in teaching and learning (Damerji and Salimi, 2021) including skills development, governance, the management of curricula and qualifications, and the organization of pedagogical activities. In AI driven education, teachers are being equipped with necessary AI and data knowledge and skills to enable them make informed decisions and at the same time giving training that emphasizes the social and emotional aspects, which are out of the scope of AI support (Tsai, Chung, Cheng and Lou 2022).

AI's impact on education is multifaceted (Yang and Chen, 2020), presenting both positive and negative implications. Moura and Carvalho (2024) gave credence to Melo (2023) when he noted that a major advantage of using AI in the classroom is its capacity to offer students a more tailored learning experience. In addition, AI algorithms are said to be capable of analysing students' needs in a way that fits their unique ways of learning along with personalized feedback and suggestions suited to their specific needs and skills. It is capable of keeping students occupied and motivated for better academic performance (Malik, Sharma, Trivedi, and Mishra, 2021).

One more advantage of using AI in the classroom is that it allows students to gain a better grasp of this quickly changing technology. When AI is woven into the curriculum, both teachers and students can enhance their critical thinking abilities about the technology, equipping themselves to face the challenges and seize the opportunities of the digital era into the foreseeable future. Finally, it is also believed that Integrating AI into education can assist students in acquiring vital modern skills like problem-solving, critical thinking, and teamwork. These abilities are crucial for thriving in today's digital world, and they can be cultivated through practical experiences with AI technologies and applications.

Another major challenge in adopting this technology There is a requirement for technical skills. Educators who lack experience with AI may struggle to incorporate this technology into their teaching methods, and they might require assistance and training to begin using it effectively. Additionally, the costs associated with acquiring AI tools are enormous, and as such, tertiary institutions may lack the financial means to acquire and maintain the AI installed in the classrooms, which may lead them to seek funding support or partnerships. Furthermore, the issue of ethical concerns demands that educators should be aware of these problems and to ensure that students are adequately protected as they forage through this rapidly evolving technology.

Classroom Implication of Adopting Artificial Intelligence

AI's impact on education is multifaceted (Yang and Chen, 2020), presenting both positive and negative implications. Moura and Carvalho (2024) gave credence to Melo (2023) when he noted that a key advantage of adopting AI in the classroom is desire to equip students with personalized learning experiences. In addition, AI algorithms are said to be capable of analysing students' needs in a way that fits their unique learning preferences, offering personalized feedback and suggestions that address their specific needs and strengths. This

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approach can help maintain student engagement and motivation, ultimately enhancing academic performance (Malik, Sharma, Trivedi, and Mishra, 2021).

Bringing AI into the classroom offers another key advantage: it helps students gain a better understanding of this fast-changing technology. When teachers incorporate AI into their lessons, they allow both students and educators to critically examine the technology and prepare for the challenges and opportunities that the digital age brings now and in the future. Moreover, using AI in education can help students build important modern skills like problem-solving, critical thinking, and teamwork. These skills are crucial for success in today's world, and they can be developed through hands-on activities with various AI tools and applications.

However, one of the significant obstacles to adopting this technology is the need for technical know-how. Teachers who aren't familiar with AI might find it challenging to integrate it into their teaching and may require support and training to get started. On top of that, the high costs of AI tools and applications can be a major issue, which means that many colleges and universities might not have the resources to obtain and maintain the necessary technology. This situation could push them to look for funding or partnerships. Additionally, ethical concerns are important, so educators need to be mindful of these issues and ensure their students are protected as they explore this exciting and rapidly evolving field.

Methods for Integrating AI into Educational Settings

Yang and Chen (2020) listed some best Effective strategies for using AI in the classroom can enable teachers to seamlessly blend this technology into their instructional methods, ultimately offering students a more tailored and engaging educational experience, such as:

i. AI expert partner in education
ii. Starting from low level rather than wholesome adoption of complex technology
iii. Encourage ethical reasoning and critical analysis

These have implication for first-time adoption of AI.

Methods

The study is about perception of business education lecturers on the potency of adopting Artificial Intelligence in Teaching and Learning of Business Education Courses and adopted the descriptive survey design involving the use of questionnaire to gather data. A total of 66 business education lecturers of four state-owned tertiary institutions; Delta State University, Abraka, (22); University of Delta, Agbor (17); Colleges of Education-Warri (15) and COE-Mosogar (12) affiliated to Delta State University, Abraka (14) were surveyed. The instrument tagged "Perception of Adoption of Artificial Intelligence in Teaching and Learning (PAATEL)". It is a 4-points rating scale questionnaire that contains 32 question items in four categories reflecting the variables of the study and indicating each lecturer perception of each assertion in the questionnaire items. To facilitate understanding, the responses (perceived effectiveness) were graded as follows:

4.00 – 5.00 points = Very High Extent (VHE)

3.00 – 3.99 points = High Extent (HE)

2.00 – 2.9 points = Low Extent (LE)

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1.00 – 1.90 points = Very Low Extent (VLE)

The rationale behind this scale is that it provides a near comprehensive options that fits each level of perception thereby reducing the problem associated with coding, classification and interpretation. In other words, it is easier to summarise by finding averages or mean of each respondents' perception and institutions average response for interpretation and analysis. Therefore, each figure in the tables 1, 2 and 3 represents the mean response and standard deviation of each institution lecturers to each questionnaire item.

The instrument was academically validated by three experts while a co-efficient of reliability of (r) = 0.88 at 0.05 level of significance, indicating very high correlation was achieved. The instrument was administered during the 2023/2024 second semester examination when all the business education lecturers were conducting examinations which made the students accessible. There was 100% retrieval rate. Descriptive statistic was adopted for the analyse of the field data.

Results

Research Question 1: How effective can the business education curriculum (courses) be integrated in AI for teaching and learning

Table 1: Summary of responses to the effectiveness the business education curriculum (courses) be integrated in the any AI created for teaching and learning (across institutions)

S/N	Question Item	Mean	SD	Remarks
1	Extent the integrated business education favours AI adoption	3.63	0.33	Moderate agreement; generally positive perception.
2	Teaching of practical-based courses with AI	3.74	0.68	Varied perception; higher at DELSU indicating stronger agreement.
3	Teaching of theory-based course with AI	3.68	0.84	Slightly varied; some institutions see more effectiveness.
4	Teaching courses from servicing Departments with AI	3.48	0.24	Moderate agreement; consistent across institutions.
5	Your level of ICT knowledge for utilising AI	3.08	0.86	Varied; higher at COE Warri and COE Mosogar.
6	The use of lecture method in AI	3.10	0.66	Moderate; some reservations about lecture method's effectiveness.
7	Use of experiential methods	3.23	0.46	Slightly positive; experiential methods somewhat favoured.
8	Students' participation in SIWES	3.29	0.10	Generally positive; consistent perceptions.
9	Adoption of business education curriculum (CCMAS)	3.05	0.22	Slightly positive; moderate agreement.
10	Adoption of AI presents no significant problem in future	3.01	0.61	Mixed perceptions; some institutions see fewer issues.

The data shows that most lecturers believe that integrating business education courses with Artificial Intelligence (AI) can support effective teaching. Specifically, they agree that incorporating AI into the curriculum encourages its adoption, with many perceiving this as moderately positive. When it comes to practical courses, such as hands-on training or skill-based classes, lecturers view AI's role as even more beneficial, especially in institutions like DELSU, where perceptions are particularly strong. For theory-based courses, opinions are also

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generally positive, though there is some variation among institutions about how effective AI can be in teaching more abstract or conceptual subjects.

Lecturers' familiarity with Information and Communication Technology (ICT) varies across institutions; those with higher ICT skills tend to have more favourable views about using AI in teaching. Some still have reservations about traditional teaching methods like lectures, feeling they might not be the most effective way to deliver AI-supported lessons. On the other hand, methods that involve more active participation or experiential learning—like simulations or practical activities—are somewhat appreciated and seen as compatible with AI-enhanced teaching.

Regarding student involvement, there is a positive outlook on students participating more actively, especially through programs like SIWES, which involve real-world work experiences. When it comes to curriculum adoption, most lecturers see the integration of AI into the business education curriculum as somewhat beneficial, though not without challenges. Lastly, many believe that adopting AI in teaching will not pose significant problems in the future, but opinions are mixed, with some institutions expecting potential hurdles.

In all, the overall attitude among lecturers is cautiously optimistic. They recognize the potential of AI to improve teaching, especially in practical courses, but also see the need for further development, training, and adaptation to maximize its benefits across different types of courses and institutions.

Table 2: Summary of responses to the effectiveness the business education curriculum (courses) be integrated in the any AI created for teaching and learning (Institutions level)

Institution	N	Mean	SD	Remarks
DELSU	22	**3.59**	**0.58**	Generally positive; moderate to high agreement.
UNIDEL	17	**3.16**	**0.44**	Slightly lower but still moderate perception.
COE Warri	15	**3.09**	**0.63**	Mixed perceptions; some reservations about ICT and AI adoption.
COE Mosogar	12	**3.01**	**0.52**	Slightly lower perception; concerns about practical application.

Source: Survey Response, 2024, average of each institution lecturers to each questionnaire item

The values of the mean and standard deviation show how lecturers in different institutions in Delta State perceive the idea of using Artificial Intelligence (AI) in teaching Business Education courses. The scores help us understand whether they see AI as helpful or if they have concerns about it. Starting with DELSU, the lecturers there have the most positive view, with an average score of 3.59 out of 4.0. This suggests that most of them believe that integrating AI into their courses could be very beneficial for teaching and learning. They see AI as a tool that can support and improve how they deliver their lessons. Although there is some variation in opinions, overall, the staff at DELSU are quite optimistic about using AI in education.

Next, at UNIDEL, the average score is 3.16. This indicates a moderate level of support. The lecturers generally see the potential benefits of AI but might have some reservations or uncertainties about how effective it really is or how ready they are to incorporate it fully. Their opinions are fairly consistent, but they are not as enthusiastic as those at DELSU. Moving to COE Warri, the average score drops slightly to 3.09. The responses here are mixed; some lecturers see AI as helpful, while others are more cautious or hesitant. This could be because they have concerns about the current state of information and communication technology (ICT)

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infrastructure or how well AI tools can be practically applied in their teaching. Their responses vary more widely, indicating differing opinions among staff members.

Finally, at COE Mosogar, the average score is around 3.01, which is slightly lower than the others. This suggests that many lecturers there might be somewhat sceptical or cautious about relying on AI in their teaching. They may be worried about how to practically implement AI tools or whether they have the necessary skills or resources. The responses are fairly consistent but tend toward the view that there are some challenges to overcome. On the overall analysis, these scores tell us that most lecturers see some value in using AI to improve business education, but their level of enthusiasm and confidence varies across institutions. The more positive perceptions tend to be at DELSU, while concerns about practical application and infrastructure are more evident elsewhere. For AI to be effectively integrated into teaching, these concerns need to be addressed, and efforts should be made to build confidence and capacity among lecturers.

Research Question 2: What prospects can be envisaged when AI is adopted in teaching and learning of the business education courses.

Table 3: Summary of responses to prospects that can be envisaged when AI is adopted in teaching and learning of the business education programme (across institutions) ?

S/N	Question Item	Mean	SD	Remarks/Decision
1	Extent to which lecturers can participate in AI	3.33	0.27	Generally positive perception; lecturers somewhat willing to participate
2	Extent to which students can participate	2.83	0.46	Moderate participation; opportunities for improvement
3	Perception of positive learning outcomes using AI	2.76	0.49	Slightly below neutral; cautious optimism
4	Conduct of research using AI	3.34	0.54	Positive outlook; research activities may benefit from AI
5	Source of information for teachers	2.99	0.55	Neutral perception; potential for enhanced info sources
6	Offers different methods according to teachers' needs	2.58	0.39	Moderate; room for offering diverse methods
7	Necessary for individualization of instruction	3.08	0.49	Generally agreed; AI supports personalized learning
8	Will lead to increased productivity	3.18	0.45	Positive outlook; AI may boost productivity
9	Necessary to monitor the learning process	3.23	0.55	Recognized as important; AI as a monitoring tool
10	Enables follow-up of students' learning process	3.05	0.50	Generally agreed; AI facilitates follow-up
11	Will make learning easy	2.63	0.58	Slightly below neutral; perceived ease of learning via AI
12	Provides more practical learning materials	2.43	0.50	Moderate; potential for more practical resources

The values of the mean and standard deviation summarized in the table provides a comprehensive insight into the perceptions of business education lecturers regarding the prospects of adopting Artificial Intelligence (AI) in teaching and learning within tertiary institutions in Delta State. Analysing the mean responses and standard deviations reveals

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nuanced attitudes that are crucial for understanding the potential benefits and challenges associated with AI integration in business education courses.

Firstly, the overall perception among lecturers toward the participatory aspects of AI is generally positive. The mean response for lecturers' willingness to participate in AI-related activities (3.33) suggests that educators are somewhat receptive and recognize the importance of engaging with AI tools in their teaching practices. Similarly, their perception of AI's role in facilitating research (mean of 3.34) indicates optimism that AI can enhance research conduct, potentially leading to more efficient and innovative research outputs. The moderate standard deviations in these areas further imply a relatively consistent perception across respondents, though some variability remains, highlighting areas where attitudes could be strengthened through targeted training or exposure.

In terms of student participation, the mean response (2.83) reflects a moderate perception, indicating that lecturers see potential for student engagement with AI but acknowledge that there is room for improvement. This cautious outlook suggests that while AI could support student involvement, its full integration and acceptance in the learning process are still evolving. The perception that AI can make learning easier (mean of 2.63) and provide more practical learning materials (mean of 2.43) points towards an optimistic view of AI's potential to enhance the practicality and accessibility of learning resources, though these perceptions are slightly below neutrality, indicating some reservations about the extent of these benefits.

Furthermore, lecturers recognize the importance of AI in supporting personalized instruction, with a mean response of 3.08, emphasizing that AI can be a valuable tool for individualizing learning experiences. The perception that AI will lead to increased productivity (mean of 3.18) and is necessary for monitoring and following up on students' learning processes (means of 3.23 and 3.05 respectively) underscores a belief that AI has significant prospects for improving teaching efficiency and student outcomes. These perceptions align with the research question, suggesting that lecturers foresee AI as a catalyst for enhancing the quality and effectiveness of business education.

However, some areas reveal cautious optimism or perceived limitations. For example, the perception of offering different methods according to teachers' needs (mean of 2.58) and providing more practical materials (mean of 2.43) indicates that while there is acknowledgment of AI's potential, practical challenges or resource constraints may hinder full realization of these benefits. Also, the perception that AI could make learning easier (mean of 2.63) and the recognition that AI's role in offering diverse methods is moderate suggest that integration strategies must be improved to maximize AI's prospects.

The understanding here is that the data demonstrates business education lecturers in Delta State generally resolve in recognizing the prospects of AI in transforming teaching and learning processes. They see potential benefits in research, personalized instruction, productivity, and resource provision. Nonetheless, there are cautious perceptions in some areas, signalling the need for strategic implementation, capacity building, and resource allocation to fully harness AI's capabilities. These insights align with the research topic and question, emphasizing that while the outlook is largely positive, concerted efforts are necessary to overcome perceived limitations and realize the full benefits of AI in business education.

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Table 4: Summary of responses to prospects that can be envisaged when AI is adopted in teaching and learning of the business education programme (Institutions level)

Institution	Mean	SD	Remarks
DELSU (22)	3.10	0.48	Generally positive perception; open to AI adoption
UNIDEL (17)	2.89	0.50	Moderate perception; room for improvement
COE Warri (15)	3.09	0.50	Positive outlook; supportive of AI in teaching
COE Mosogar (12)	2.66	0.55	Slightly below neutral; cautious stance

The table indicates that DELSU has the highest mean score of 3.10 with a relatively low standard deviation of 0.48, suggesting a generally positive perception of AI adoption among its respondents and a consensus towards embracing AI in their institution. UNIDEL follows closely with a mean of 2.89 and a standard deviation of 0.50, reflecting a moderate perception that indicates some openness but also potential for improvement in attitudes towards AI. COE Warri exhibits a similar positive outlook, with a mean of 3.09 and a standard deviation of 0.50, implying that respondents are supportive of integrating AI into teaching activities. Conversely, COE Mosogar has a lower mean score of 2.66 and a slightly higher standard deviation of 0.55, which suggests that respondents here hold a somewhat cautious or sceptical stance towards AI adoption, falling below a neutral perception. Overall, the data reveals varying levels of acceptance and enthusiasm for AI across these institutions, with DELSU and COE Warri showing more favourable attitudes compared to UNIDEL and COE Mosogar.

Research Question 3: What are the challenges that may be envisaged in the adoption of AI in teaching and learning of the business education? programme.

Table 5: Summary of responses to challenges that may be envisaged in the adoption of AI in teaching and learning of the business education programme (across institutions)

S/N	Question Items	Mean	SD	Remarks
1	Instructional resource sufficiency for adoption of AI	3.16	0.60	Moderate resource sufficiency perceived
2	Having little experience of AI technology	3.17	0.70	Slightly high lack of AI experience
3	The readiness of the Institution for adoption of AI	2.62	0.65	Institution readiness appears low
4	Curriculum fitness with AI configuration	2.88	0.55	Curriculum somewhat compatible with AI
5	Expectation of roles and functions of teachers	2.75	0.60	Moderate expectations from teachers
6	Imminence of redundancy and passiveness of lecturers	3.34	0.65	Concern about redundancy and passiveness
7	Expectation from government and stakeholders support	3.20	0.60	Moderate expectation for stakeholder support
8	Continuing AI with existing obsolete curriculum	3.55	0.50	Relatively high support for curriculum update
9	Create ethical gaps	2.92	0.55	Ethical considerations may be moderate
10	Reduction in research personality of the teacher	2.72	0.65	Slight concern about research impact

Source: Survey Response, 2024

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The data reveal a nuanced landscape of perceptions regarding the adoption of AI within the institution. Respondents generally perceive a moderate level of resource sufficiency (item 23), indicating that while there are some resources available to support AI integration, this is not entirely adequate, highlighting a potential area for investment and development. Coupled with this, respondents feel that their own experience with AI technology remains limited (item 24), which could pose a challenge to effective implementation, as familiarity and hands-on expertise are critical for successful adoption.

Furthermore, the institutional readiness for integrating AI appears to be perceived as relatively low (item 25), suggesting that structural, infrastructural, or policy-related preparations may still be lacking, thus necessitating strategic planning and capacity-building efforts. The curriculum's alignment with AI requirements is viewed as somewhat compatible (item 26), implying that while some curricular adjustments might be feasible, significant reform may still be needed to fully leverage AI capabilities. Expectations surrounding teachers' roles and functions (item 27) are moderate, indicating that respondents anticipate some changes but perhaps not wholesale shifts in instructional practices or responsibilities.

A notable concern emerges regarding the potential redundancy or passiveness of lecturers (item 28), with respondents perceiving a moderate to high risk that AI could render some teaching roles obsolete or diminish active engagement, raising issues about job security and the need for re-skilling. Expectations for support from government and stakeholders (item 29) are moderate as well, reflecting an awareness that external backing may be essential but perhaps not guaranteed, underscoring the importance of advocacy and policy support. Interestingly, there is relatively high support for continuing AI initiatives in conjunction with curriculum updates (item 30), which signals recognition of the necessity to modernize educational content to keep pace with technological advancements. Ethical considerations (item 31) are viewed as moderately significant, indicating that respondents are aware of potential ethical gaps and challenges that AI might introduce, such as data privacy or bias issues, which need to be addressed proactively. Lastly, there is a slight concern about the possible decline in teachers' research identity or research activities (item 32), pointing to apprehensions that AI integration might impact academic productivity or the traditional research role of educators. Overall, these perceptions reflect a cautious but proactive attitude toward AI adoption, emphasizing the need for strategic resource allocation, capacity-building, curriculum reform, ethical safeguards, and stakeholder support to realize the benefits while mitigating potential drawbacks.

Table 6: Summary of responses to challenges that may be envisaged in the adoption of AI in teaching and learning of the business education programme (across institutions)

Institution	n	Mean	SD	Remarks
DELSU Abraka	22	2.94	0.66	Overall moderate perception of AI adoption challenges.
UNIDEL Agbor	17	3.28	0.65	Slightly positive perception; readiness could improve.
COE Warri	15	3.09	0.78	Perception indicates some concerns regarding AI integration.
COE Mosogar	12	2.78	0.52	Perception suggests moderate challenges; need for support.

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Hypothesis (HO_1): There is no significant difference in the mean perception of business education lecturers on the extent to which the business education curriculum can be integrated with AI across institutions.

Table 4: Summary of ANOVA for HO_1

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Ratio
Between Groups	804.9	3	268.3	5.49
Within Groups	1738.3	36	48.84	
Total	2543.2	39		

Based on the one-way ANOVA conducted, the null hypothesis was rejected. This suggests that there are significant differences in the means of the groups studied regarding the integration of AI into the curriculum, with an F-ratio of 5.49, which exceeds the critical F-value of 2.89 at the 0.05 significance level. The findings suggest that the null hypothesis, which posits that there are no differences in the means of the groups with respect to the integration of artificial intelligence into the curriculum, has been rejected. This conclusion stems from the computed F-ratio of 5.49, which exceeds the critical F-value of 2.89 at the 0.05 significance level. An F-ratio greater than the critical value indicates that the variability observed between the group means is significantly greater than the variability within the groups themselves. In practical terms, this suggests that the adoption of AI into the curriculum has distinct effects that vary from one group to another, emphasising the need for further investigation to comprehend the nature and implications of these differences.

Overall, this ANOVA analysis provides strong evidence that the groups studied differ significantly in their responses or outcomes connected to the incorporation of AI into their educational processes, warranting closer investigation of the factors contributing to this variation.

Hypothesis (HO_2): There is no significant difference in the mean perception of business education lecturers on the prospects of adopting AI in teaching and learning of the business education courses.

Table 5: Summary of ANOVA for HO_2

Source of Variation	Sum of Squares (SS)	(df)	Mean Square (MS)	F-Ratio
Between Groups	327.14	3	109.04	13.53
Within Groups	500	62	8.06	
Total	827.14	65		

Since the calculated F-ratio is significantly different from 1, if we assume a standard threshold (like α=0.05), we may reject the null hypothesis, indicating that perceptions of AI impact do differ significantly among institutions surveyed. The calculated F-ratio of 13.53 is greater than the critical F-value of 3.14 at a significance level of 0.05. Therefore, we reject the null hypothesis (H02) which states that there is no notable variation in the responses from business education lecturers concerning the future of AI adoption in teaching across different institutions. This indicates that there are meaningful differences in the views of business education lecturers regarding the potential of AI adoption in their teaching practices. This finding affirms the importance of considering the views of business education lecturers when evaluating the integration of AI technologies, indicating that their perspectives may vary significantly based on their institutional affiliation.

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Null Hypothesis ($H0_3$): There is no significant difference in the mean perception of business education lecturers on possible challenges to be envisaged in the adopting AI in teaching and learning of business courses.

Table 6: Summary of ANOVA for HO_3

Source of Variation	Sum of Squares (SS)	(df)	Mean Square (MS)	F-Ratio
Between Groups	927.5	3	309.17	15.98
Within Groups	1200	62	19.35	
Total	2127.5	65		

The analysis of variance (ANOVA) revealed a statistically significant difference in the opinions of business education lecturers across the four institutions regarding the challenges faced in the integration of artificial intelligence (AI) in education and learning. The obtained F-ratio of 15.98 exceeds the critical F-value of 2.76 at the 0.05 level of significance. This significant F-ratio indicates that at least one of the institution groups differs significantly from the others, highlighting that the perceptions of challenges related to AI adoption are not uniform across these institutions.

These findings suggest that the variability in responses may be influenced by various institutional factors such as resources available, faculty training in AI technologies, curriculum design adaptability, and organizational backing for the incorporation of AI in education practices. As such, it is very important for stakeholders, including academic leaders and policymakers, to focus on these disparities by implementing targeted interventions to support the effective inclusion of AI into business education curricula. Tailored professional development for faculty, enhanced institutional resources, and collaborative efforts among lecturers can further mitigate challenges and promote a conducive environment for AI implementation in education.

Discussions

The current analysis of opinions from business education lecturers across four institutions highlights a complex landscape. The incorporation of artificial intelligence (AI) into education and learning processes. The findings indicate generally favourable perceptions regarding the potential for integrating business education curricula with AI tools; however, the responses also reveal substantial challenges, particularly related to resources, institutional readiness, and curriculum alignment.

Emerging data suggests that educational institutions are increasingly exploring how AI can enhance pedagogical practices. For example, a study by Luckin et al. (2016) emphasizes AI's capability to create personalized learning experiences, which aligns with the respondents' recognition of AI's applicability in teaching practical and theory-based courses. Additionally, research by Liu et al. (2020) indicates that AI can aid educators in streamlining instructional methods and improving student engagement, reinforcing the positive perceptions found in this study.

Despite the enthusiasm towards AI's potential, significant barriers were identified, especially concerning resource availability and institutional preparedness. A review by Chen et al. (2020) reinforces this finding, noting that inadequate infrastructure and lack of training can hinder successful AI integration into educational settings. This aligns with the lower mean

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scores from COE Mosogar and COE Warri, which signal a pressing need for investment in technical resources and faculty training.

The discrepancies in perceptions regarding the adoption prospects of AI across institutions reveal underlying contextual factors which influenced respondents' opinion. Research by Selwyn (2019) highlights that socio-economic variables, institutional culture, and faculty engagement shape attitudes towards educational technology. Finding show that DELSU's lecturers are more favourable outlook could stem from a supportive institutional environment in contrast to the experiences reported at UNIDEL and COE Warri.

The challenges perceived regarding AI adoption, particularly around curriculum fitness and ethical implications, further emphasize the necessity for comprehensive reform. A report by the International Society for Technology in Education (ISTE, 2020) advocates for a curriculum that is adaptable to technological advancements, reaffirming the findings that suggest current curricula may not adequately address AI integration.

Finally, the study's statistical analysis utilizing ANOVA confirms significant differences in responses from different institutions regarding the integration of AI, prospects, and challenges. This echoes prior research findings suggest that institutional differences are critical in evaluating technology adoption, including AI. Then major findings in this study are:

1. Lecturers generally perceive that the business education curriculum can be integrated into educational AI effectively, with DELSU showing the highest confidence level.
2. Responses indicate moderate optimism about the positive learning outcomes AI can produce in teaching business education courses, particularly among DELSU respondents.
3. Significant disparities exist in resource availability among institutions, with COE Mosogar having notably lower scores indicating critical deficiencies.
4. Preparedness to adopt AI varies, with some institutions, notably UNIDEL, showing signs of resistance or weak commitment to adopting AI technologies.
5. Participants expressed concerns about ethical challenges related to AI use in education, although awareness levels differ across institutions.
6. ANOVA results confirmed significant differences in perceptions of AI integration, prospects, and challenges across the different institutions.

The findings added to the existing body of literature on educational technology adoption, particularly regarding AI in business education. By highlighting the variability in perceptions based on institutional context, the study aligns with theories such as the Technology Acceptance Model (TAM), which posits that perceived ease of use and usefulness significantly influence technology adoption. Furthermore, the concerns surrounding ethical issues related to AI underscore the need for frameworks that incorporate ethical considerations into the technology adoption process.

The study's results underscore the dire need for educational stakeholders to be proactive in resource allocation, faculty development, and curriculum reform. Institutions should invest in strategic training programmes to enhance faculty competence in AI technology and create collaborative networks that stimulate resource sharing and best educational practices. In the same vein, a thorough revisit of the current curriculum is essential to ensure it aligns with technological advancements and prepares students for future workforce demands.

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Moreover, forming ethics, guidelines and policies relating to AI usage in education should be prioritized to safeguard stakeholders and ensure evenly access to AI resources. By addressing identified gaps in resources and training, institutions can enhance their ability to leverage AI's potential in business education effectively, ultimately resulting in richer learning experiences for both students and educators.

Conclusion and Recommendations

The analysis of responses from business education lecturers across four institutions reveals a nuanced perspective on the integration of artificial intelligence (AI) in teaching and learning. While there is a generally favourable outlook on the potential applications of AI in enriching the business education curriculum, significant challenges remain, particularly in terms of resource availability, institutional readiness, and curriculum alignment. Institutions such as DELSU demonstrate a more positive reception towards AI, which may stem from stronger support systems and resources. Conversely, institutions like COE Mosogar and COE Warri exhibit more pronounced concerns regarding the preparedness and resources required for successful AI adoption.

The findings underscore the necessity for educational stakeholders to adopt a measured approach to AI integration, balancing enthusiasm for technological innovations with the pragmatic realities of ethical considerations and resource constraints. Importantly, there is a pressing need for institutions to engage in comprehensive curriculum reforms to align with technological advancements while taking into account the ethical considerations of AI and its implications are appropriately addressed.

The following recommendations are made:

1. Educational institutions should prioritize investments in technological infrastructure and resources to facilitate the integration of AI in business education. This includes ensuring access to necessary tools, software, and hardware.
2. There must be a concerted effort to provide comprehensive training programmes for lecturers and faculty members. This will enhance their competencies in utilizing AI tools and foster confidence in integrating these technologies into their teaching practices.
3. Institutions need to undertake a thorough review and revision of the current business education curriculum. This should involve aligning coursework with emerging technological trends and ensuring that curricula are adaptable to incorporate AI effectively.
4. To address the ethical considerations surrounding AI implementation in education, institutions ought to establish well-defined ethical guidelines and frameworks to regulate the use of AI technologies. This will help ensure responsible usage and safeguard the interests of all stakeholders.
5. Institutions should foster collaboration and networking among themselves to share resources, best practices, and experiences in AI integration. Creating platforms for dialogue will be invaluable in overcoming challenges and enhancing the collective capabilities of participating institutions.
6. Engage in ongoing evaluation of the AI integration process, allowing institutions to reflect on its effectiveness and make necessary adjustments based on feedback from both students and faculty. This iterative approach will improve the integration process and adapt to changing needs.

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Through these recommendations, pedagogical institutions can pave the way for a thoughtful and effective implementation of AI technologies in business education, ultimately enhancing educational outcomes and preparing students for the demands of a rapidly evolving workforce**.**

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